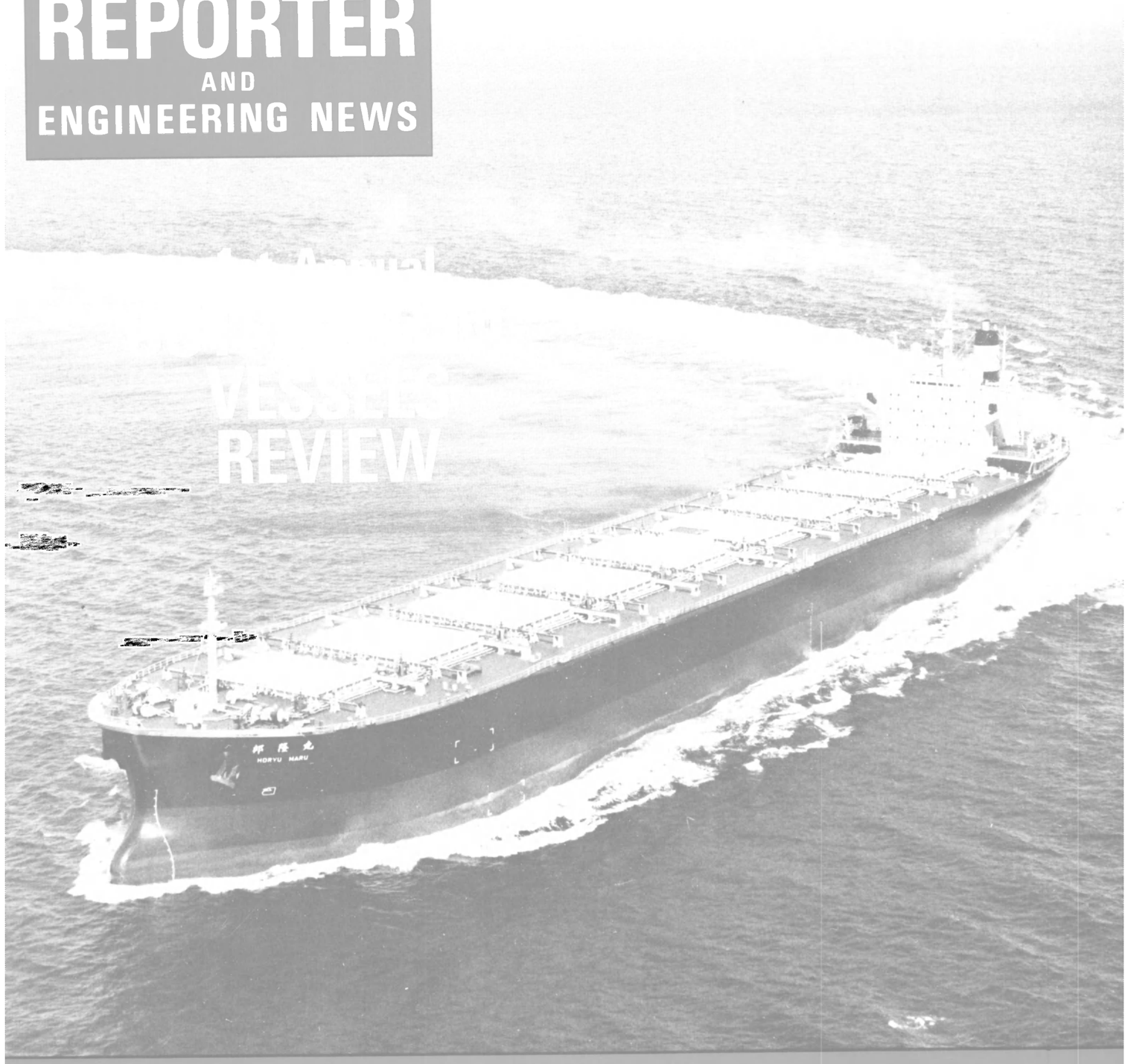
MARITIME
REPORTER
AND
ENGINEERING NEWS



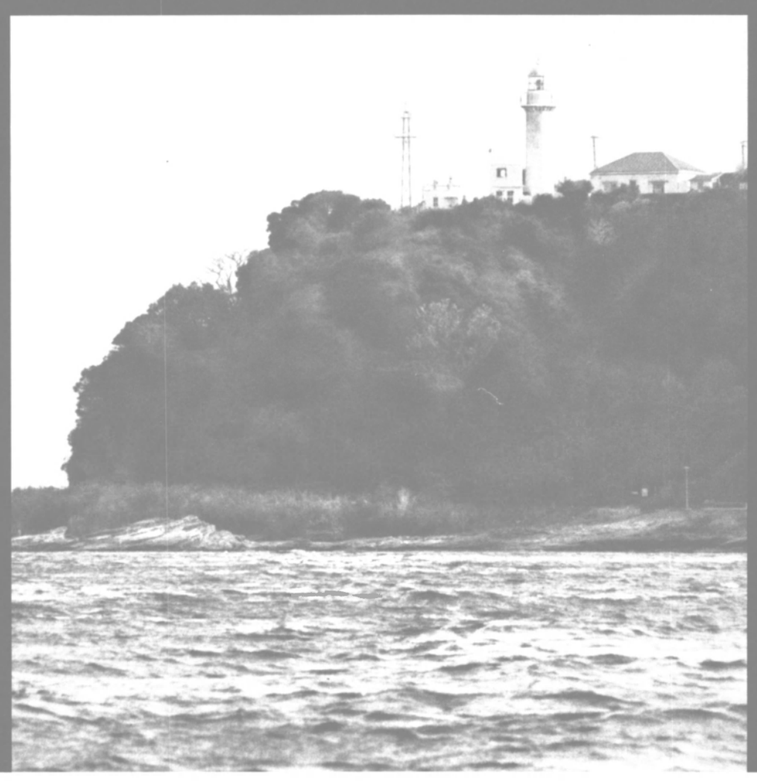
'Horyu Maru'

Hitachi Zosen Delivers Bulk Carrier To Nippon Kisen
(SEE PAGE 8)

1st Annual Outstanding Vessels Review
(SEE PAGE 18)

DECEMBER 1, 1980

Once you round the Kannon-zaki Light, you're not far from Gulf.



You've radioed your position to JGC: due West of the Hamakanaya-ko breakwater light. The Tokyo Wan Traffic Center already has you on their radar

You reduce speed and enter the Uraga Suido Traffic Route. Soon the Kannon-zaki Light bears to port.

You pass tiny Daisan-kaiho island and swing around Daini-kaiho into the Nakano-Se channel, and you're headed at last for the harbor.

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Gulf

Gulf Trading and Transportation Company
A Division of Gulf Oil Corporation

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Ogden Applies For CDS And Amended Title XI On Three LNG Carriers To Cost $861 Million

Ogden Marine Indonesia, Inc., a subsidiary of Ogden Marine, Inc., New York, has applied to the Maritime Administration for construction-differential subsidy (CDS), and amended its 1975 application for a Title XI guarantee to aid in financing the construction of three liquefied natural gas (LNG) carriers.

General Dynamics Corporation, Quincy, Mass., is the proposed shipbuilder, and anticipates delivery of the first 65,750-dwt (125,000-cubic-meter) vessel by 1986. Ogden Marine plans to use the ships to transport liquefied natural gas between Indonesia and the U.S. West Coast. Each LNG is expected to cost approximately $287 million. If approved, the Title XI guarantee would cover 75 percent of the shipbuilding costs not covered by Federal construction subsidies.

Ogden Marine's applications represent the second financing request received by the Maritime Administration within a month in connection with the transportation of LNG from Indonesia to California for use by Pacific Gas and Electric Company and Pacific Lighting Corporation. The first application, also involving three ships, was received from Zapata Western LNG Inc. of Houston.

Ocean Oil & Gas Merged With Subsidiary Of Ocean Drilling

Hugh J. Kelly, president and chief executive officer of Ocean Drilling & Exploration Company (ODECO), has announced that he shareholders of Ocean Oil & Gas Company (Ocean) have approved the agreement and plan of merger under which Ocean has been merged with a wholly owned subsidiary of ODECO, and each share of Ocean common stock not owned by ODECO has been converted into 1.5 shares of ODECO common stock.

ODECO, founded in 1953 and headquartered in New Orleans, is the world's largest offshore drilling contractor, explores for and produces oil and gas, provides deepsea diving services, and has international insurance interests.

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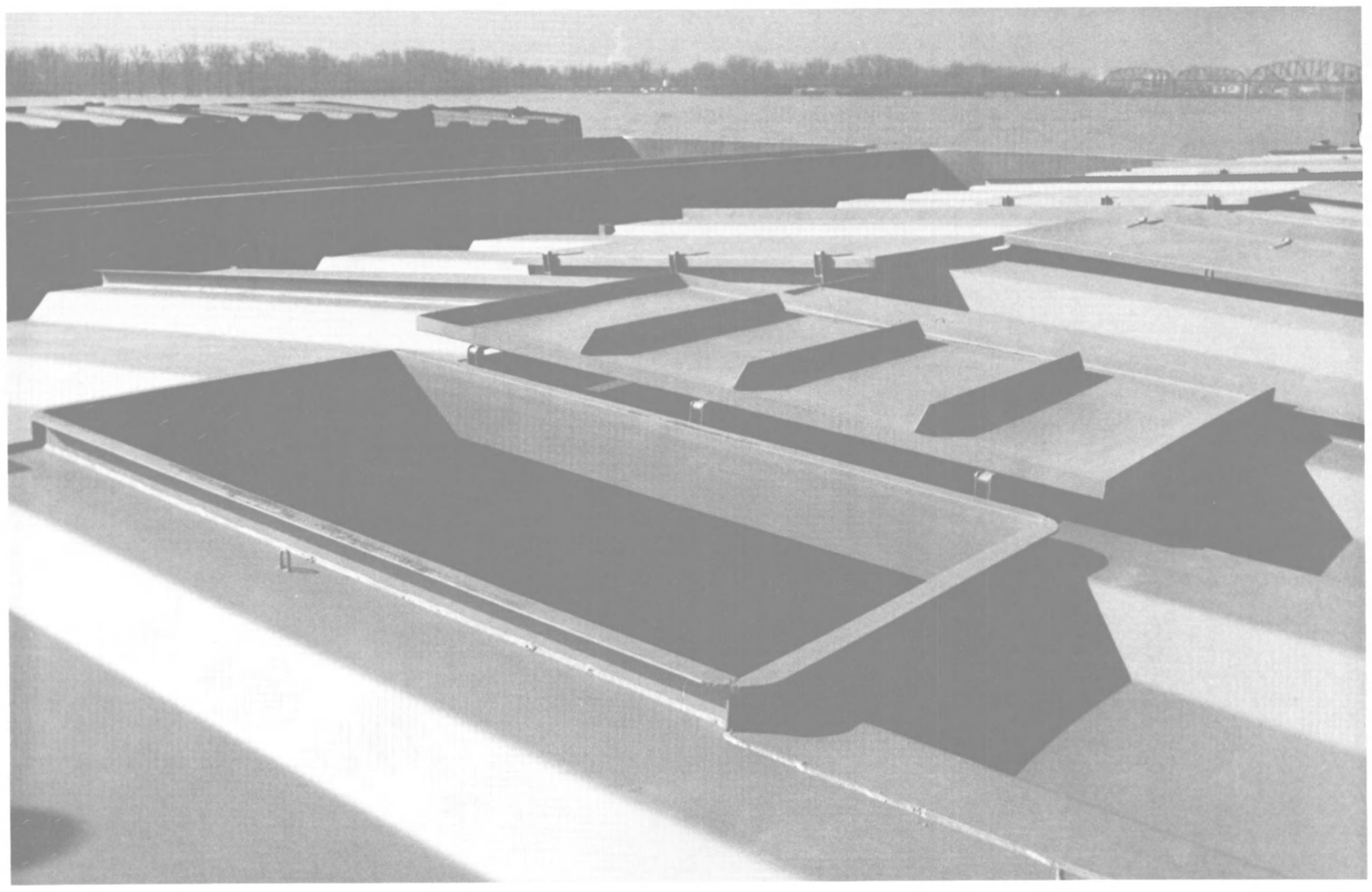

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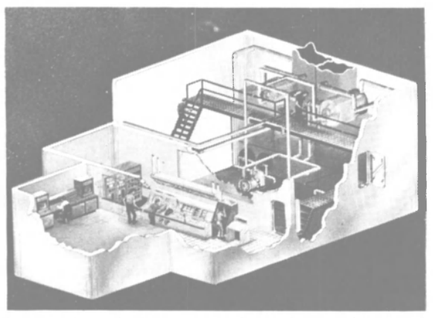
Texaco Engineers Will Get Advanced Training On MarineSafety Simulator

More than 300 senior Texaco marine engineering officers will receive advanced training on a unique 36,000-shp engine room simulator, **James A. Cole**, vice president in charge of Texaco's Marine Department, announced recently. "Under a four-year contract recently signed with MarineSafety International, Texaco's engineers will experience a training program that recreates the environment of a true tanker engine room so realistically, that even the heat, humidity, and sounds will be a part of the experience," Mr. **Cole** said.

The simulator is based on a dual-boiler steam turbine power plant, and duplicates the main console and switchboard, boilers, valves, pumps, and related equipment needed for system operation.

"The instructor is stationed behind a one-way glass where he controls the training experience through a high-speed digital computer, and can monitor the students' reactions to various programmed situations," explained Capt. **Douglas Hard**, director of MarineSafety International. He further explained that the simulator is designed around MSI's concept of "mental rehearsal" —preparing engineers for any shipboard situation through programming both normal and emergency operations. Emergency work in the simulator will be supplemented with intensive trouble-shooting practice and classroom instruction.

"Texaco is particularly interested in this new simulator because it can instruct our



This highly realistic, three-level simulator will be used by MarineSafety to train Texaco's ship's engineers to deal with critical propulsion plant emergencies at sea.

engineers through 'real-life' situations not possible for them to experience using the actual equipment," said Mr. **Cole**. "This program is in line with Texaco's long-standing efforts to maintain — at the very highest level — the efficiency and effectiveness of its marine officers," he explained. "Such training is vital to the safety of the ship, its crew, and its cargo," Mr. **Cole** added.

The training facilities of MarineSafety International, a wholly owned subsidiary of FlightSafety International, are located at LaGuardia Airport in New York City.

Vancouver Shipyards Delivers Log Barge To Seaspan Int'l

Seaspan International Ltd. of North Vancouver, B.C., Canada, recently took delivery of the Seaspan Rigger, a new log barge (pictured above) that was commissioned by **Mrs. William Sloan**, wife of the the president of Pacific Logging Company Ltd.

Designed by Robert Allen Ltd. to load and carry bundled logs, the barge was built by Vancouver Shipyards Company Ltd. in North Vancouver. It is 396 feet 3 inches long, with an 88-foot beam and depth of 25 feet. On a draft of 19½ feet its capacity is 14,300 short tons.

The barge is equipped with two 70-ton loading cranes supplied by Heede International Ltd. of Port Moody, B.C. Each crane is powered by two Caterpillar 3412 diesel engines with a total of 1,130 bhp, and is capable of lifting bundles of logs weighing 50 tons.

Two 18-foot boom boats that are carried aboard the barge to assist in the loading process were built by West Coast Salvage & Contracting Company of Vancouver.

The addition of the Seaspan Rigger to Seaspan International's fleet will enable the company to fulfill recently signed contracts with Pacific Logging, Doman Industries Ltd., and other companies. The new barge will operate between logging camps on the northern British Columbia Coast and the west coast of Vancouver Island to Booming Grounds in southern British Columbia.

Quincy Yard To Build $60-Million Collier For New England Electric

New England Electric System of Westboro, Mass., has announced plans for the construction of a 655-foot coal-carrying ship at General Dynamics' Quincy Shipbuilding Division. The $60-million vessel is the first of its type to be built in the United States in more than 25 years.

Viewing model of coal-carrying, coal-fired ship that General Dynamics' Quincy yard will build for New England Electric are (L to R): **Gary S. Grimes**, general manager of the Quincy shipyard; Governor **Edward J. King** of Massachusetts; and **Guy W. Nichols**, chairman and chief executive officer of New England Electric.

The coal carrier will go into service in 1983 and will transport 2.2 million tons of steam coal annually to New England Electric's Brayton Point Station in Somerset, Mass., from ports on the U.S. East Coast, probably Norfolk and Baltimore.

The collier will be the first coal-fired steam turbine vessel to be built in a U.S. yard since 1953. Four others were ordered recently by Australian interests, two to be constructed in Japan and two in Italy.

The machinery plant, which will be supplied by Foster Wheeler and General Electric, will feature mechanical stoker and ash disposal systems, and will incorporate the latest technology in coal-fired boilers. A self-unloading system will enable the ship to discharge its cargo of about 36,000 tons of coal in 11 hours.

Keystone Shipping Company of Philadelphia will operate the carrier for New England Electric.

Dravo Launches First Towboat For People's Republic Of China

The first of four Friendship class river pushboats ordered by the Chang Jiang Shipping Administration of the People's Republic of China from Dravo Corporation was launched into the Ohio River recently at Dravo's Neville Island shipyard near Pittsburgh. The twin-screw 6,000-bhp vessel, measuring 150 by 42 by 11.5 feet (45.7 by 12.8 by 3.5 meters) is named Long River. It will operate on the lower Yangtze River upstream from Shanghai.

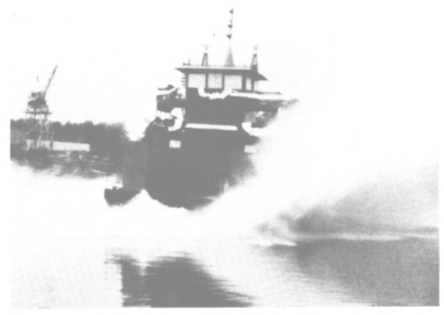
When all four towboats are completed, they will be towed down the Ohio and Mississippi Rivers to New Orleans, where they will be loaded on a submersible deck barge and shipped via the Panama Canal to China.

The vessel is powered by two General Motors Electro-Motive Division turbocharged diesels. The power plant system includes special fuel heating and treatment equipment to enable the engines to burn the exceptionally heavy diesel fuel used in China.

Several custom features were designed into the vessel by Dravo's Engineering Works Division. The main deckhouse has been outfitted with portholes instead of windows, and the deckhouse has been made watertight because the boat will operate in near-open water at wide portions of the Yangtze River.

Special navigation lights have been installed to conform to the navigation system in China, which differs from that used in the United States. The vessel's galley has been fitted with a wok and steam kettle for Chinese cooking. Normally, a crew of 14 operate the boat.

In addition to the four pushboats, Dravo is furnishing a fleet of 30 barges that will be assembled in China for river transportation.



Pushboat **Long River** makes big splash in Ohio River during recent launching at Dravo's Neville Island yard. First of four ordered by People's Republic of China, vessel is powered by two General Motors EMD engines.

ON THE COVER

Bulk Carrier Horyu Maru Delivered By Hitachi's Ariake Yard

The bulk carrier Horyu Maru, powered by a 20,500-bhp Hitachi/B&W diesel, was completed recently at the Ariake Works of Hitachi Zosen.

The 132,597-dwt bulk carrier Horyu Maru, which was constructed at the Ariake Works of Hitachi Zosen, was delivered to her owner, Nippon Kisen Co., Ltd., recently. The ship will be placed in service between Japanese ports and overseas ports in Australia, Africa, and the North American West Coast.

This bulk carrier was developed specifically to meet Japanese industry's growing raw material needs. The ship will be used to carry mainly coal and ore. Some measures incorporated to minimize fuel costs include a Hitachi Zosen-developed special nozzle to increase propulsion efficiency, a constant-pressure turbocharged main engine, a turbo power generator with exhaust gas economizer, and long-life paint. Machinery is highly rationalized to save labor through simplification of cargo handling and mooring work, as well as automation of engine room operations. The ship has a complement of 25.

The Horyu Maru has an overall length of 270 meters, beam of 43 meters, depth of 23.8 meters, and full-load draft of 16.3 meters (885.8 by 141 by 78 by 53.5 feet). Her Hitachi/B&W diesel type 6L90GFCA has a maximum output of 20,500 bhp, which produced a trial speed of 14.85 knots.

Utility vessel **Graysearch** was delivered recently by HUDSHIP to Gray MacKenzie Company of Bahrain. The 112-ft. boat is powered by twin Detroit Diesel 16V92 NA engines.

GM-Powered Utility Vessel Delivered By Hudson Shipbuilders

Hudson Shipbuilders, Inc. (HUDSHIP) of Pascagoula, Miss., recently delivered its second vessel, the Graysearch, to Gray MacKenzie Company, Ltd. of Bahrain. The new vessel will join the already sizable fleet now operated by Gray MacKenzie in the Arabian Gulf.

The design is HUDSHIP's standard 112-foot utility vessel hull, with some modifications to suit the owner's particular requirements. The forecastle house arrangement has been redesigned to accommodate 10 crewmen in six cabins. The upper house has been extended to accommodate charter's personnel in five two-man staterooms, with separate lounge and messing area.

The afterdeck has a Scott ATO 7½-ton crane mounted at centerline to service the entire cargo deck. To each side of the crane, are Hydradyne hydraulic winches, giving the vessel a 4-point mooring capability.

The Graysearch is powered by twin GM Detroit Diesel 16V92 NA engines with Twin Disc 527 gears with 5:1 ratio. On sea trials the vessel exceeded 10 knots in a loaded condition and logged almost 13 knots lightly loaded. The auxiliary power is provided by two 50-kw Delco generators powered by GM Detroit Diesel 4-71 engines. Engines are monitored by a 21-point Marine Electrical Design monitoring system and have Kobelt controls.

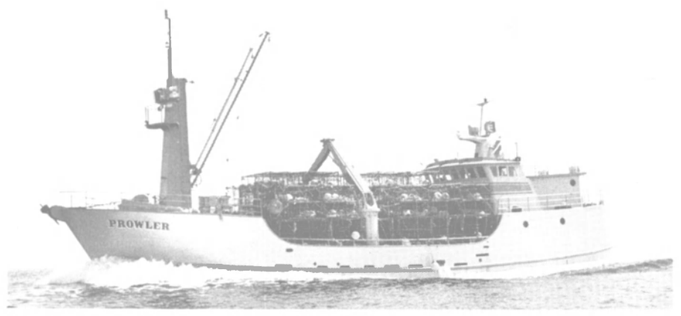
The Graysearch also features built-in oil spill disbursement tanks, firefighting capabilities, and drill water supply system.

The pilothouse was arranged for maximum all-around visibility. She houses an assortment of electronic equipment which includes one Decca 914 C Marine Radar, one Sailor SSB Receiver Model R-105, one Sailor SSB Transceiver Model T-216, one Sailor Model RT 144 AB VHF Transceiver, one Model AP-30 Autopilot, one Seafarer Model 60160 Depth Indicator, and a Sperry SR 130 gyrocompass with repeater.

Other equipment includes Red Fox sanitation system, Carlisle & Finch searchlights, Goodyear liferafts, Scott Midland crane, HBL anchor windlass, Kahlenberg air horn, SSI steering system, Quincy air compressors, and Ritchie magnetic compass.

The vessel and all its systems are built and tested to American Bureau of Shipping standards and is classed A-1 All Ocean Service.

Twin Nickum & Spaulding 'Schooners' Join Alaska Fishing Fleet



The 114-foot "schooner" type crabber/tender/pot fisher **Prowler** was built by Mitchel D. Phares Boat Construction Company in Wilmington, Calif., to a Nickum & Spaulding Associates, Inc., design.

The Prowler and the Sablefish — both wide-waisted, house-aft boats termed "schooners" by West Coast fishermen—recently headed north out of Seattle for the king crab season, their introduction to the working fish fleet. The twin boats joined a growing group designed by Seattle naval architects Nickum & Spaulding Associates, Inc. The boats were built in the Mitchel Phares Boat Construction Company yard in Wilmington, Calif.

Both 114 feet in length and 32 feet in beam, the Prowler will be registered out of Ketchikan and the Sablefish out of Friday Harbor, Wash. While initially equipped for crabbing, plans call for both vessels to return to Seattle for installation of specially designed processing equipment and modifications to deck gear to fit the boats for pot fishing.

Both boats have −30 degrees F air blast freezing units, with freezing holds in the forepeaks capable of freezing 25,000 pounds

(continued on page 10)

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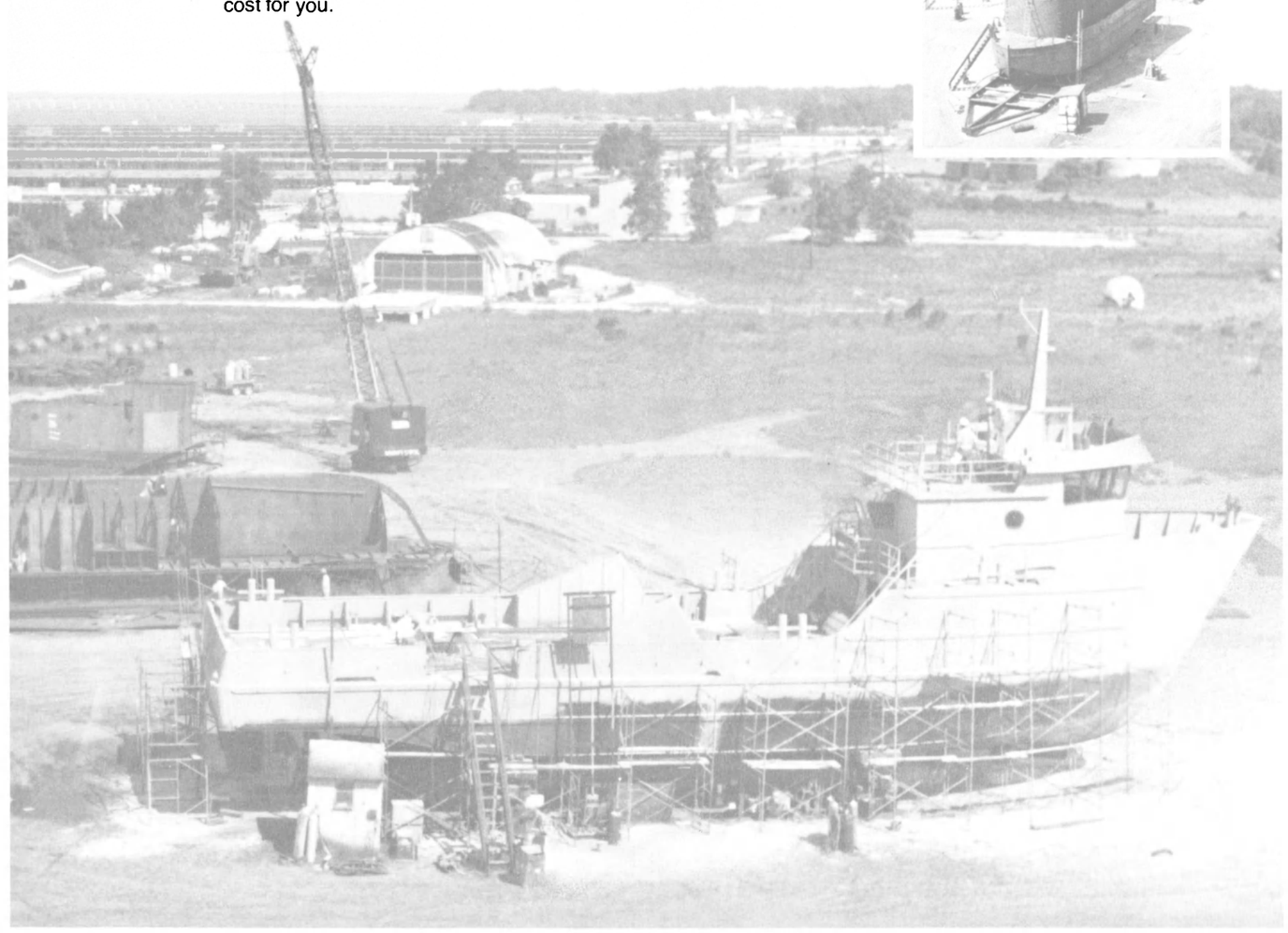

Nickum & Spaulding 'Schooners'

(continued from page 8)

of fish a day. Both differ only in the deckhouse layout and some machinery. The Nickum & Spaulding fish boat team, headed by **Paul Gow**, has designed a series of fish boats with similar lines in lengths ranging from 104 feet up. The firm also designed a 54-foot combination seiner/crabber now in use in Alaska. Mr. **Gow** said that fish boats ranging up to 140 feet and processors are now on the firm's drawing boards.

Co-owners of the Prowler include the skipper, **Lou Dodd; Rudy Johanson,** and **Virgil Gordin**. Co-owners of the Sablefish include Co-captain **Roger Bassett, Arch Campbell, Derry Gislason,** Mr. **Johanson,** and Mr. **Gordin**.

The skippers plan to keep the boats in action pot-fishing sable fish and other bottom fish nearly the year round, not only in Alaska but south to the California coast.

In addition to the blast freezer, the boats have 650-foot bait freezers. The forecastle also contains hydraulic power centers — Model 4-71 Detroit Diesel in the case of the Prowler, and electrically driven pumps for the Sablefish. The holding tanks comprise 7,535 cubic feet of space to accommodate 195,000 pounds of crab in circulating seawater or 300,000 pounds of fish. Ultra-Cold refrigeration systems, designed and installed by Fabten Corporation, involve freon chilled seawater systems.

A pair of 12V-149 Detroit diesels provide propulsion power, each engine delivering a continuous 675 bhp at 1,800 rpm. Kobelt provided the engine controls and Far West Marine Electronics the alarm monitors. The Aquamet 18 shafts are driven through Twin Disc MG 527 5.17:1 ration reduction gears. The twin propellers are 72-inch, five-bladed Coolidges.

On the Prowler, two Detroit Diesel 12-71 diesel/generators with Kato alternators put out 150 kw each at 1,200 rpm for main service power. In the Sablefish, the Detroit 12-71 diesels drive Delco generators delivering a continuous 300 kw at 1,800 rpm. Standby generators are Model 4-71 Detroit diesels putting out 50 kw at 1,200 rpm. Far West built the main switchboards. Wagner Pneumatic steering controls include the standard wheel amidships and jog levers port and starboard in the wheelhouse.

Overall, the boats have high houses aft, relatively high forecastles with good flair to the bow to keep the boat dry, and broad waists that allow a clean expanse of working area on deck. Forecastles carry the free-standing main mast and anchor windlasses — William Drury windlass to handle Danforth anchors on the Prowler, and Rowe windlass and Yaquina Boat anchors on the Sablefish.

Deck machinery includes Pullmaster winches for main topping, main cargo, and picking booms. Yaquina provided the pot haulers; Hansen Welding and Iron Works the pot launchers and bait choppers; and Marco the King Coilers. Slattery 12-ton, swing-boom deck cranes are placed about midships on the port side.

Wheelhouses are relatively compact with Skipper's consoles to starboard, wheels and Sperry gyros in the center, and second steering stations with jog levers and throttle controls to port. The automatic pilots are Sperry 8Ts. Common electronic equipment includes Furuno FR-1011 radar, RDI Bridgewatch and Radar Watch, Ross Fisherman depth sounder, Furuno depth recorders, InTech Mariner VHF/FM, SEA 106 SSB, and DynaMarine I.C. and Loud Hailer. Loran C equipment aboard the Prowler consists of two Northstar 6000 sets. Aboard the Sablefish, this equipment includes the Simrad LC123 with CC2 navigation computer.

Main cabins on the boat decks provide spacious master's suites with aft doors opening onto the aft decks. Main deck living spaces include two 4-man staterooms, one 2-man stateroom, galley and mess area, storeroom, and freezer, with galley and dinette forward on the Prowler and aft on the sablefish.

Port Of Portland Names Task Force To Aid Staff On Master Terminal Plan

Port of Portland (Oregon) Commission president **Joseph M. Edgar** recently announced the appointment of a citizens task force to aid Port staff in the preparation of a master plan to guide the development of Port marine terminals through the year 2000. He named **Robert F. Wallace**, chairman of the board, First National Bank of Oregon, to head the 30-member committee.

"The task force has been selected to represent a broad range of interests affected by marine terminal development," Mr. **Edgar** said. "We expect the committee to complete its work in about six months."

Mr. **Edgar** said the charge to the task force includes recommendations on the questions of space requirements, rehabilitation of existing facilities, developing more intensive use of existing terminals, and economic and environmental impacts associated with maintaining an efficient port. The task force also will look into appropriate means of financing future Port marine terminal development.

The master plan, a three-phase study, is scheduled for presentation to the Port Commission in March 1981, following a period of public review.

GE Gets $38-Million Navy Contract For Nuclear Components

General Electric Company, Machinery Apparatus Operation, Schenectady, N.Y., has been awarded a $38,176,000 modification to a previously awarded contract for Naval nuclear components. The Naval Sea Systems Command is the contracting activity. (N00024-74-C-5009)

Far East-Levingston Delivers Pool Rig 144

Pool Rig 144 was completed recently by Far East Levingston's Singapore yard for Pool Company of Houston.

Far East-Levingston Shipbuilding Ltd. in Singapore recently completed and delivered another jackup rig to Pool Company of Houston. Named Pool Rig 144, the 160-foot-water-depth jackup was towed to its location in the Arabian Gulf to operate for ARAMCO.

The platform consists of a triangular-shaped hull, 154 feet long by 132 feet wide by 15.75 feet deep. It is equipped with three triangular trussed legs with spud cans that can be lowered to the ocean floor and on which the platform can elevate itself above the water surface.

Elevating or lowering the legs and spud cans or platform is accomplished by mechanical gear units attached to the hull at each leg. Power supply is from diesel generator sets, which are installed inside the platform.

The platform has the capability of being buoyant, and elevating the hull on the spud cans, and lowering the hull to the water surface with a fixed and variable load totaling 7,200 kips (3,600 short tons) at an elevating speed of 1 foot/minute.

The bearing type spud tank fitted at the lower end of each leg serves as the primary load support member for the platform. An access opening with hatch cover is provided in the top and a flooding valve is provided in the tank. A spud jetting system and tank vent is also provided.

Pool Rig 144 is built to all applicable requirements of the American Bureau of Shipping for Class A-1, Self-elevating Drilling Unit.

REPAIRS?

SPAIN?

GREECE??

MEXICO???

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Radcliff Asks Title XI On 20 Steel Barges To Cost $6.2 Million

Radcliff Materials, Inc., a subsidiary of Southern Industries Corp., 61 St. Joseph Street, Mobile, Ala., has applied to the Maritime Administration for a Title XI guarantee to aid in financing 20 steel barges.

Twin City Shipyard, Inc., St. Paul, Minn., builder of the 200-foot-long vessels, expects to deliver the barges by next January. Radcliff Materials intends to operate them on the U.S. inland waterways.

If approved, the Title XI guarantee would cover $5,420,000 or 87½ percent of the $6,196,624 total estimated cost of all 20 barges.

Jeffboat To Build Two Tank Barges For Boston Fuel's Fleet

Vincent D. Tibbetts, president of Boston Fuel Transportation, Inc., has announced the signing of a contract with Jeffboat, Inc. of Jeffersonville, Ind. for the construction of two 40,000-barrel coastwise petreloum barges for Grade A and below products.

The contract calls for the construction of two 260-foot by 60-foot by 22.9-foot petroleum barges with coated and coiled tanks. The barges will also be equipped with the latest pumping and antipollution technology.

Delivery of the first barge is scheduled for late summer 1981, with the second to be delivered in late fall 1981. Both barges will be utilized in conjunction with Boston Fuel's other equipment servicing East Coast ports.

Omnithruster Awarded Contract For 5 Shipsets In Shuttle Tanker Program

Charles M. Aker, vice president and general manager of Omnithruster Inc., a Los Angeles-based manufacturer of marine maneuvering and positioning systems, announced a contract with Newport News Shipbuilding (a Tenneco Company), Newport News, Va., for five shipsets of Omnithruster™ Model PV 2900 1500 Horsepower Systems, including complete ac electric motor drives and Omnitro™ master and remote thrust control consoles. Delivery is scheduled through March 1981.

The thrusters are to be mounted in the bows of 40,000 and 50,000-deadweight-ton tankers employed in transporting crude oil from an offshore storage vessel to Gulf Coast refineries. The vessels are being retrofitted to enable them to approach the storage vessel, without tug assistance, which is located approximately five nautical miles in deep water off the California coast.

Garlock Introduces New Mechanical Seal— Literature Available

The RX-4000 mechanical seal has been recently introduced by Garlock Inc. Its new, universal design can handle approximately 95 percent of all seal applications, and it's safe for virtually all media, including glass lined and plastic pump service. Service specifications range to 250 psig pressures and temperatures to 400 F.

Other key features include a new, lighter weight design, 50 percent lighter than standard seal constructions, which is aimed at reducing seal vibration and eliminating torque damage at start-up. According to Garlock, the new seal also can be installed considerably faster than today's standard mechanical seals, which should substantially lower maintenance costs. Only three simple steps are required for installation. Its lighter weight effects energy economies. Its universal nature reduces the need for large seal inventories.

For additional information and free literature on the new Garlock RX-4000 mechanical seal,
Write **17** on Reader Service Card

Dotco Two Requests Title XI Guarantee On $2.7-Million Tug

Dotco Two, Inc., a subsidiary of Lee-Vac, Ltd., Morgan City, La., has applied to the Maritime Administration for a Title XI guarantee to aid in financing the construction of a twin-screw diesel tug.

The proposed builder is Bollinger Machine Shop & Shipyard, Inc., Lockport, La. Delivery of the 100-foot-long, 2,000-bhp vessel is scheduled for March 31, 1981. The tug is intended for use along the U.S. Gulf Coast.

If approved, the Title XI guarantee will cover $2,052,300, or 75 percent of the tug's $2,736,400 estimated cost.

Stephen Lombardozzi Appointed President Of Alco Power Inc.

Stephen A. Lombardozzi has been named president of Alco Power Inc., Auburn, N.Y. He succeeds **John V. Sylvester III** who retired recently.

Stephen A. Lombardozzi

Mr. **Lombardozzi** comes to Alco from General Electric Company, where he held the position of product general manager, insulating materials.

Alco is a leading manufacturer of medium-speed diesel engines used for marine propulsion, base load and standby electric power generation, onshore and offshore petroleum exploration, pumping, and locomotive application. The company is a wholly owned subsidiary of The General Electric Company Limited of England.

New Edition Of 'Ship Design And Construction' Published By SNAME

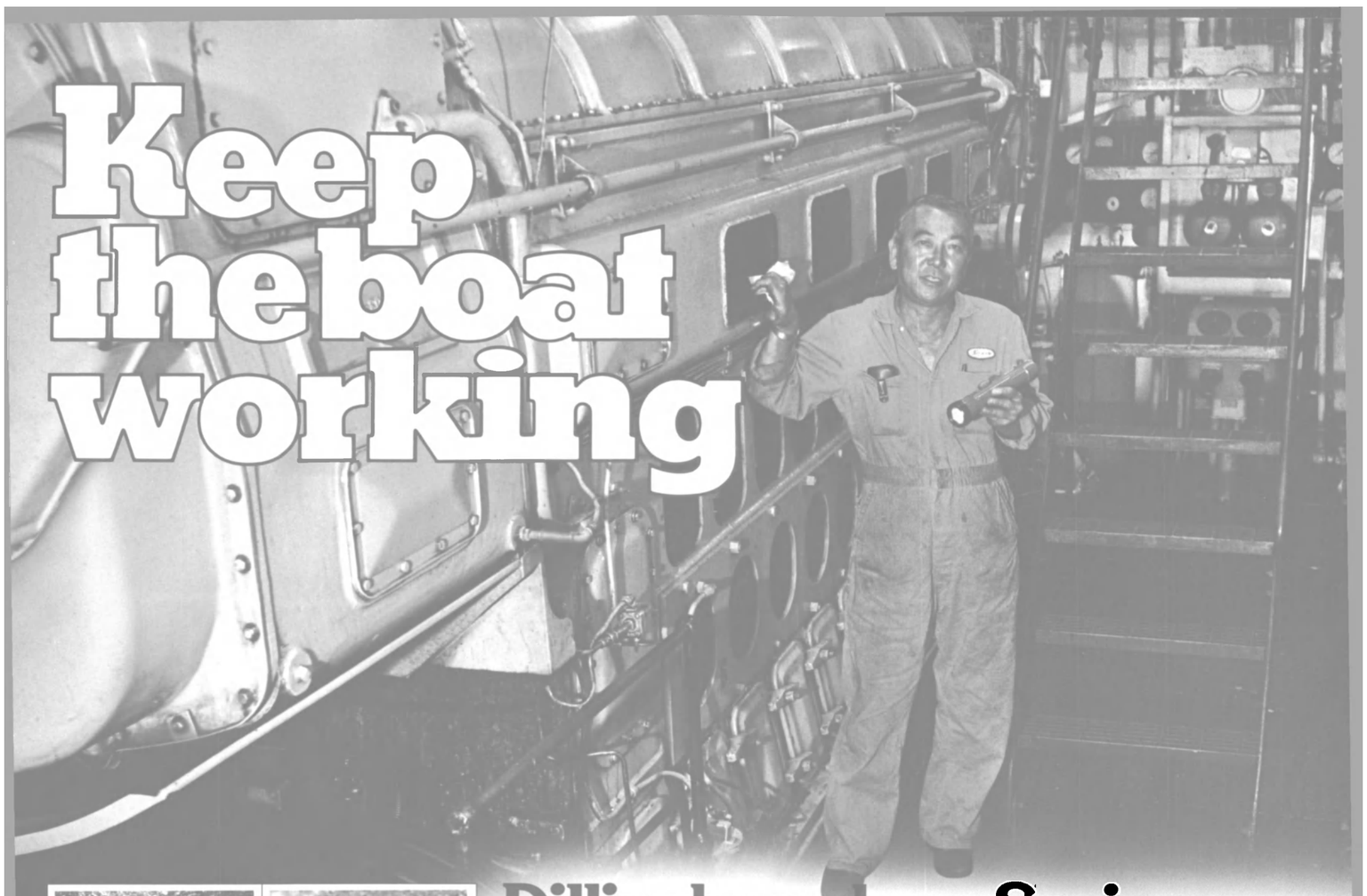
A virtually new book, the new edition of *Ship Design and Construction*, has just been published by The Society of Naval Architects and Marine Engineers. This book has been developed over nearly a five-year period by 27 authors, an expert control committee, and edited by **Robert Taggart**, the well-known naval architect and marine consultant of Fairfax, Va.

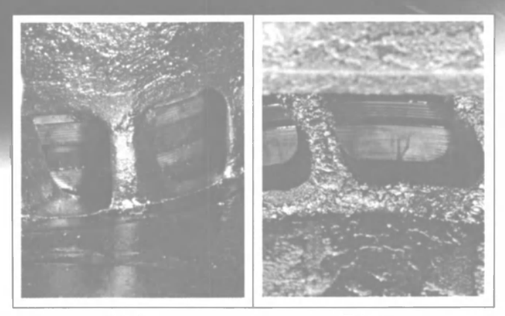
"Never before have the entire processes of ship design and construction been so thoroughly treated in one text," states **E. Scott Dillon**, chairman of the Society's Control Committee for the book. A total of 748 pages take the reader from the first concept of defining a ship's mission to the final guarantee survey after ship trials and delivery.

Up-to-date aspects of ship design methods and construction details can be found nowhere else in one volume. The text complements, but does not duplicate, theoretical treatments found in SNAME's *Principles of Naval Architecture*, and the machinery considerations described in SNAME's *Marine Engineering*.

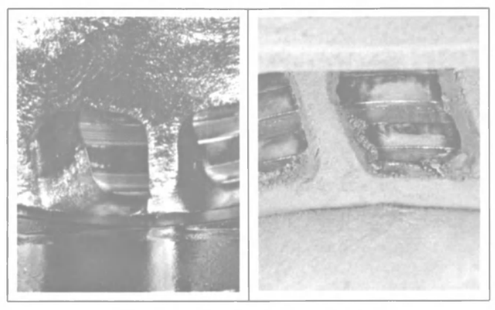
Nearly 1,000 drawings and photos, covering the designing, engineering, and building of all types of merchant ships illustrate the text. Tables and diagrams contain a gold mine of information. Students as well as practicing naval architects will find the Taggart Edition an invaluable reference to be kept close at hand.

The book, *Ship Design and Construction*, is available to members before January 1, 1981 at an introductory price of $37.50 and to nonmembers, $52.50. After the first of the year, the price will be $45 to members and $60 to nonmembers.





Intake 100% open — M.S. Mikioi — Exhaust 90% open



Intake 100% open — M.S. Mikiona — Exhaust 90% open

Dillingham does. Saving over $20,000 a year in each Fairbanks Morse engine with Shell's Caprinus® R Oil.

The "Mikioi", powered with twin Mdl 38D8 - 1/8 6-cylinder engines, and the "Mikiona", powered with twin Mdl 38D8 - 1/8 10-cylinder engines, have logged over 13,600 hours each since their last overhaul. In both boats, *Caprinus** R has been the engine lubricant for more than 3,000 hours — preceded by Shell's *Caprinus* T Oil.

Since Dillingham switched to Shell's *Caprinus* oil the boats have logged over 5,000 hours each without a single day of downtime to clean engine ports.

M. Kent Whitman, Vice President and Manager of Dillingham Tug and Barge Corporation in Hawaii, estimates *downtime costs* for each of Dillingham's ocean-going tugs at *$4,000 per day.* Shunsaku Hirano, Assistant Maintenance Supervisor, estimated that with the engine lube previously used, an HVI base oil, each of the two boats required a three-day downtime period every 1,500 hours (about three times a year) for cleaning of intake and exhaust ports due to excessive power-robbing deposits. *Labor costs* for the cleaning totaled about *$1900 each time* the boats were down.

With the previous oil — each boat averaged 9 days downtime a year, at $4,000 per day, *plus* 3 cleanings a year at $1,900 each — or about $41,700 every year for each boat.

Look at the pictures (left). They show intake and exhaust ports from the engines of the *Mikioi* and the *Mikiona.* Ports are clear. That's because *Caprinus* R with Shell's premium MVI base oil doesn't form hard deposits. It helps keep exhaust port deposits soft and friable. As power output varies, these deposits slough (break) off keeping the ports open and improving air scavenging efficiency.

Whitman stated, "...we looked for an oil that could help us reduce unscheduled downtime and *Caprinus* R has proved it can do it." And, Hirano added, "...with *Caprinus* R there has been a vast improvement over the HVI base oil we did use in keeping the engines clean and ports clear...wear rates are down and the boats run longer between service intervals. *Caprinus* R does the job for us."

Dillingham Tug & Barge has found out what *Caprinus* R can do in Fairbanks Morse engines and in its EMDs too. The high alkalinity, high dispersancy additives, in a premium MVI base oil provide the right combination for the protection the big medium-speed diesels need. Keep them clean, wear rates low and deposits at a minimum.

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Mobile
Midstream Fuel Service, Inc.
Location: Mobile River, Mile 1.5
Address: Fairhope 36532
Phone: (205) 433-4972
Radio: Ch 16, VHF
ARKANSAS
Helena
Helena Fuel & Harbor Service, Inc.
Location: Mississippi Service, Inc. Mississippi River, Mile 661 Riverfront & Bridge Road
Phone: (501) 338-8321
Radio: Ch 16
CALIFORNIA
Oakland
Bay Area Petroleum, Inc.
Location: 421 23rd Ave.
Phone: (415) 534-4517
San Diego
Tuna Clipper Marine
Location: San Diego Harbor Foot of Crosby Street
Phone: (714) 232-1838
San Pedro
San Pedro Marine, Inc.
Location: Berth 74
Phone (213) 832-1339
FLORIDA
Jacksonville
See Savannah Oil & Chemical Savannah, Ga.
Port Everglades
Belcher Oil Company
Location: Port Everglades 2401 Eisenhower Boulevard
Address: Fort Lauderdale
Phone: (305) 525-4261
Tampa
Belcher Oil Company
Location: Tampa Bay
Phone: (813) 247-4572, 247-4573
West Palm Beach
Belcher Oil Company
Location: Port of Palm Beach 1733 Hill Avenue
Phone: (305) 848-1495
GEORGIA
Brunswick
See Savannah Oil & Chemical Savannah, Ga.
Savannah
Belcher Oil Company
Location: Savannah River, Mile 17 Pier 50, Georgia Ports Authority
Phone: (912) 964-8821
Savannah
Savannah Oil & Chemical
Location: Savannah River 647 W. River Street
Phone: (912) 234-5402
ILLINOIS
Hartford
Ory Bros. Marine Service of America, Inc.
Location: Upper Mississippi River, Mile 197 Foot of Hawthorne Street
Phone: (618) 254-0626 (Illinois) (314) 741-2570 (Missouri)
Radio: Ch 16, KLC 791
Wood River
Hartford Fueling Service
Location: Upper Mississippi River, Mile 196
Phone: (618) 254-4333 (314) 741-3667
Radio: Ch 16 VHF KLG 280
KENTUCKY
Louisville
Wooten River Service
Location: Ohio River, Mile 603 2927 River Road
Phone: (502) 896-0317
Paducah
Molloy Marine Service, Inc.
Location: Ohio River, Mile 934 100 Husband
Phone: (502) 443-6456
Paducah
Walker Midstream Fuel and Service Co.
Location: Ohio River, Mile 934 532 South Second St.
Phone: (502) 442-2738
Radio: freq. 156
LOUISIANA
Amelia
Berwick Bay Oil Co., Inc.
Location: Bayou Boeuf Intracoastal Waterway 1/2 mile North 85 mile board
See Berwick listing under Morgan City, La.
Baton Rouge
Capital Marine Supply, Inc.
Location: Lower Mississippi, Mile 230 Foot of North Street
Phone: (504) 343-8379
Radio: Channels 16, 7a, 10, 66a VHF KFT 322.
Baton Rouge
Channel Fueling Service, Inc.
Location: Lower Mississippi, Mile 232 River Road
Phone: (504) 383-4691, 383-4814
Radio: freq. 156.8
Belle Chasse
Plaquemines Oil Sales Corp.
See Plaquemines Oil, Venice, La.
Berwick
Berwick Bay Oil Co., Inc.
Location: Atchafalaya River - 1/4 mile north of Hwy 90 bridge
See Berwick Oil Listing under Morgan City, La.
Cameron
Berwick Bay Oil Co., Inc.
Location: Calcasieu River
See Berwick Bay Oil listing, Morgan City, La.
Cameron
Cameron Marine Service, Inc.
Location: Calcasieu River
Phone: (318) 775-5206
Dulac
Berwick Bay Oil Co., Inc.
Location: Houma Navigation Channel 17 miles South of Houma
See Berwick Bay Oil listing, Morgan City, La.
Gretna
John W. Stone Oil Distributor, Inc.
Location: Lower Mississippi, Mile 96.5 87 First Street, Gretna Harvey 77059
Phone: (504) 366-3401
Radio: KGW 352
Houma
Houma Oil Company, Inc.
Location: Intracoastal Canal
Phone: (504) 872-0464
Intracoastal City
Berwick Bay Oil Co., Inc.
Location: Vermillion River - 1/4 mile north of Intracoastal Canal Mile 155
See Berwick Bay Oil listing, Morgan City, La.
Lake Charles
Channel Fueling Service, Inc.
See Channel Fueling Service, Sulphur, La.
Morgan City
Berwick Bay Oil Company, Inc.
Location: Young's Road
Phone: (504) 384-1610
Radio: Ch 16 VHF-KXR979
New Orleans
Gulf Outlet Fuel & Marine Supplies, Inc.
Location: Gulf Intracoastal Waterways Mile 8 East 3400 Jourdan Road
Phone: (504) 241-8680
Radio: KVF 893
Port Allen
Tri-State Marine Service Co.
Location: Lower Mississippi, Mile 227.5 River Road
Phone: (504) 749-3171
Radio: 156.8
Sulphur
Channel Fueling Service, Inc.
Location: Gulf Intracoastal Waterway West, Intersection of Calcasieu River
Phone: (318) 583-7215, 583-7384
Radio: 156.8
Venice
Plaquemines Oil Sales Corp.
Location: Mississippi River Mile 10.5 at Grand Pass Louisiana Hwy 23, Venice
Address: Belle Chasse
Phone: (504) 394-5555 (Belle Chasse) (504) 534-7403 (Venice)
Radio: WYZ 2375
MASSACHUSETTS
Gloucester
Progressive Oil Co., inc.
Location: Gloucester
Address: 92 Grove St.
Phone: (617) 283-2000
MINNESOTA
Winona
Waterways - Winona, Inc.
Location: Upper Mississippi, Mile 725 376 East 2nd St.
Address: 455 North St. Fountain City, Wi.
Phone: (608) 687-6931 (Wisconsin) (507) 452-5252 (Minnesota)
Radio: Ch 16-12
MISSISSIPPI
Biloxi
Ship Services Corporation
Location: Gulfport State Port and Biloxi Back Bay. Beacon ;7
Phone: (601) 374-1000
Greenville
Waterways Marine of Greenville, Inc.
Location: Lower Mississippi, Mile 537 Warfield Point Road
Phone: (601) 335-2526
Radio: KWS 617
Pascagoula
Fuel Services, Inc.
Location: Bayou Casotte Ingalls Avenue
Phone: (601) 762-0636, 762-0640
Radio: Ch 16
Vicksburg
Vicksburg Mid-River Services, Inc.
Location: Lower Mississippi, Mile 437 Foot of Lee Street
Phone: (601) 636-4814, 636-7731
Radio: 156.8
MISSOURI
St. Louis
St. Louis Fuel & Supply Co., Inc.
Location: Upper Mississippi, Mile 179
Address: Foot of Gratiot Street
Phone: (314) 421-3960
Radio: Ch 16, VHR-KDO 722 Fort Guage
NORTH CAROLINA
Elizabethtown
Campbell Oil Company, Inc.
Location: 1010 West Broad Street
Phone: (919) 862-4107
OREGON
all ports
see Lilyblad Petroleum listing under Tacoma, Washington
PENNSYLVANIA
Philadelphia
River Associates, Inc.
Location: Delaware River Pier 9 North
Phone: (215) 463-8100
SOUTH CAROLINA
Charleston
Charleston Oil Co.
Location: Ashley and Cooper Rivers, 1553 King St. Extension
Phone: (803) 577-5600
Charleston
See Savannah Oil & Chemical, Savannah, Ga.
Georgetown
See Savannah Oil & Chemical Savannah, Ga.
Port Royal
See Savannah Oil & Chemical Savannah, Ga.
TENNESSEE
Memphis
Memphis Boat Refueling Service, Inc.
Location: Lower Mississippi, Mile 735 Foot of Illinois Street
Phone: (901) 775-3131
Radio: Ch 16
Memphis
Waterways Marine of Memphis, inc.
Location: Lower Mississippi, Mile 736 Foot of Beale Street
Phone: (901) 525-5761
Radio: Ch 16, 156.6
TEXAS
Corpus Christi
Belcher Co. of Texas, Inc.
Address: 504 Navigation Corpus Christi, Tx. 78403
Phone: (512) 888-6311
Galveston
Grasso Marine Service, Inc.
Location: Galveston Ship Channel Pelican Island
Phone: (713) 744-2888 (dock) (713) 763-4343 (office)
Houston
Houston Marine Services, Inc.
Location: Beacon 126 Houston Ship Channel
Phone: Dock (713) 424-4502 Office (713) 455-8819
Radio: Channel 16
Lake Jackson
Channel Fueling Service, Inc.
Location: Gulf Intracoastal Waterway West, Mile 393 1400 Marlin Avenue
Phone: (713) 233-5321, 233-5322
Radio: 156.8
Port Arthur
Channel Fueling Service, Inc.
Location: Gulf Intracoastal Waterway West, Mile 282 5700 Proctor Street
Phone: (713) 962-5557
Radio: 156.8
Rockport
Berwick Bay Oil Co., Inc.
Location: Rockport Navigation Harbor, Intracoastal Canal, Mile 526
See Berwick Bay Oil Listing, Morgan City, La.
VIRGINIA
Norfolk
Marine Oil Service, Inc.
Location: Elizabeth River
Address: 71 Radar Street
Phone: (804) 622-0934, 622-3109
WASHINGTON
Seattle
Ballard Oil Co.
Location: Lake Washington Ship Canal
Phone: (206) 783-0241
Tacoma
Lilyblad Petroleum, Inc.
Location: Washington and Oregon - all ports
Phone: (206) 572-4402
Radio: KLB radio station Marysville, Wa.
WASHINGTON
all other ports see Lilyblad Petroleum above.
WEST VIRGINIA
Pt. Pleasant
City Ice & Fuel Co.
Location: Ohio River, Mile 265.3
Address: 224 First Street
Phone: (304) 675-2010

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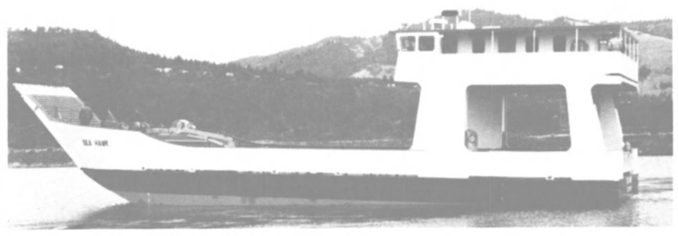
Name _____
Title _____
Company/Vessel _____
Address _____
City _____ State _____ Zip _____

Latest Krogen Design Delivered By Nichols Boat Works



The multipurpose, deck cargo landing craft Sea Hawk (pictured above) is the eighth design of its kind of various sizes from the Miami, Fla.-based James S. Krogen and Company, Inc., naval architects, for use on the rugged Alaskan coastline.

Built by the Nichols Boat Works of Hood River, Ore., the craft will be operated by its owner, Air Marine Company of Ward Cove, Alaska, to transport logging and construction equipment from site to site along the southern Alaskan coastline. Where docks are available, she can load from bow to stern. A raised pilothouse and quarters for six provide a 14-foot clearance. The aft portion of the deckhouse is designed to take on a landing load from a helicopter.

The 98-foot craft has a beam of 28 feet and draws 6 feet. Deadweight is 185 long tons, and gross tonnage 88. Two 330-bhp Allis Chalmers diesel engines produce a cruising speed of 10 knots. The craft carries 6,500 gallons of diesel fuel and 1,500 gallons of water.

Cheverton Workboats To Build Fiberglass-Reinforced Vessels

Pilot boarding launch **Sullom Spindrift** is an example of Rigships Limited's glass-reinforced plastic vessels that Cheverton Workboats of Cowes, Isle of Wight, will construct under license. This North Cape 65 model is powered by twin Caterpillar 3412TA diesel engines.

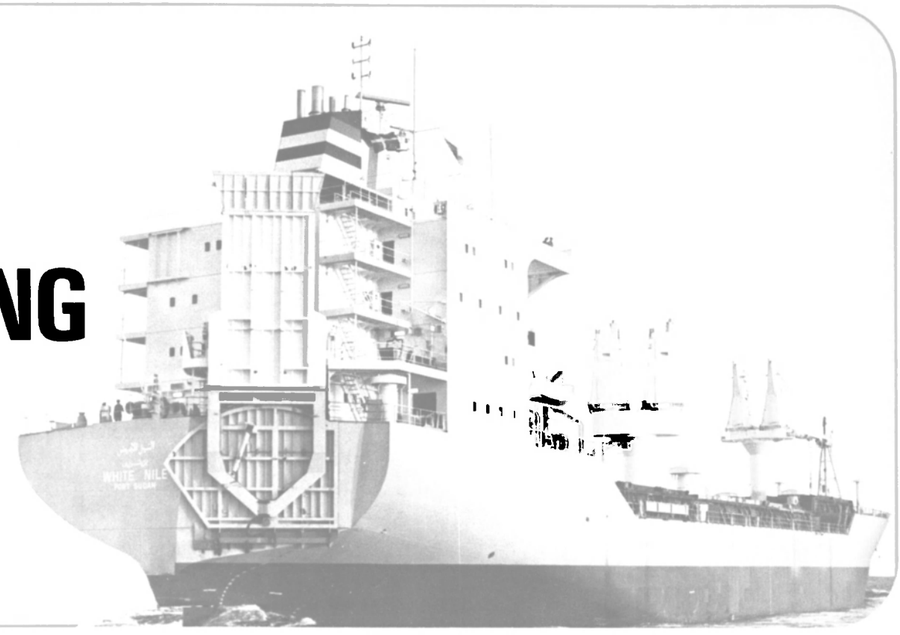
Cheverton Workboats of Cowes, Isle of Wight, England, have been licensed by Rigships Limited to produce the well-known North series of versatile glass reinforced polyester hulls designed by naval architects Murray, Cormack Associates. Cheverton will be the exclusive molders of the North Cape 65, North Voe 58, North Kyle 45, and the North Gael 40 hulls, decks, and superstructures. Under the terms of the licensing agreement, there will be a close technical liaison between David Cheverton (Design) Limited and Murray, Cormack Associates on these models.

The North hulls are a closely related series of fast, moderate-vee, semi-displacement designs; a generous beam provides spacious seagoing platforms for a wide variety of applications.

Extensive model testing revealed the North hulls to be particularly efficient, clean running, dry and easy riding. Notably stable and not given to heavy or excessive rolling, their design gives them the ability to cope with the realistic displacements of fast, working craft fitted with powerful diesel machinery and carrying a practical payload. North hulls have gained rapid acceptance with commercial operators, and are widely used for pilotage, harbor patrol, police surveillance, survey work, etc., both in the U.K. and overseas.

For Cheverton this major development represents a new phase in their marketing strategy for the 80s, and brings them to the fore as specialist commercial molders. Now, the availability of range of complementary glass reinforced polyester models from Cheverton, augmented by purpose-built steel vessels up to 26 meters in length, means that commercial operators requirements can be satisfied by dealing with one company—an important factor when a customer is several thousand miles away.

1st Annual OUTSTANDING VESSELS REVIEW



AMBASSADOR

In November this year the Jos. L. Meyer shipyard in Papenburg, West Germany, delivered the roll-on/roll-off ship Ambassador to Coordinated Caribbean Transport, Inc. (CCT) of Coral Gables, Fla., a subsidiary of Transway International Corporation. The $19.5-million RO/RO is the first vessel built in Europe in many years for registry under the American flag. CCT has subsequently placed an order with the Meyer yard for a sister ship, with delivery scheduled for the second half of 1981.

The 13,412-gt Ambassador has an overall length of 168.8 meters, beam of 21.6 meters, depth to A Deck of 13.9 meters, and draft of 6.45 meters (about 553.8 by 70.9 by 45.6 by 21.2 feet). Designed to operate at a speed of 17.2 knots, the ship has a capacity for 159 trailers and 110 automobiles carried on four decks—tank top, B Deck, A Deck, and 1st Superstructure Deck.

Loading is accomplished via a Von Tell stern ramp that leads to B Deck. Access to the other three cargo decks is by way of ramps. The ramp on A Deck is closed by a Von Tell ramp door, while the ramp opening in B Deck is closed by a Von Tell hinged cover.

Main propulsion is provided by a Stork-Werkspoor diesel engine, type 6TM620, with an output of 10,000 bhp at 425 rpm. A KaMeWa controllable-pitch propeller is driven at 175 rpm through a Renk reduction gear. Auxiliary power is provided by two Stork-Werkspoor diesel generators each with an output of 875 kva, one shaft-driven A. van Kaick generator, one emergency and harbor generator set (MWM diesel of 270 kva), one exhaust gas boiler system, and one thermal oil boiler system. Other equipment includes a Svendborg steering gear and Jastram bow and stern thrusters.

All crew members are accommodated in single cabins, each with toilet and shower. The complete superstructure, topped by the bridge, is located far forward. A Hamworthy water treatment plant and Electrolux vacuum plant have been integrated in the ship's sanitary system.

Electronics include two Selenia radars, ITT radio system type MRU 29B/30C, NCS series 2900 satellite navigation system, Sperry autopilot and gyrocompass, Furuno echo sounder, and Ben speed log.

The Ambassador has been built to American Bureau of Shipping Classification + A1E, + ACCU. According to her owner, she is the only U.S.-flag homeported in Miami.

Ambassador

ANTILLIA

With the recent delivery of the multipurpose cargo ship Antillia, Equitable Shipyards, Inc. of New Orleans completed a three-vessel contract for American Atlantic Shipping, Inc. of New York. Built at a total cost of $28.5 million, with a 48.5 percent construction differential subsidy from the Maritime Administration, the three motor vessels are said to be the most technologically advanced ships of their size in the American-flag merchant fleet. The first of the series, the America, was delivered near the end of 1979; the Amazonia was completed at mid-1980.

Designed to operate at shallow-draft ports with limited shoreside facilities, the Antillia has an overall length of 295 feet, beam of 45 feet, depth of 22 feet, and draft of 14 feet. The breakbulk/reefer/container vessel is designed for a high degree of cargo flexibility and fast turnarounds.

The main propulsion engine is a Fairbanks Morse 12-cylinder, opposed-piston diesel, type 38TD8-1/8, developing 3,960 bhp at 900 rpm driving a fixed-blade, 10-foot propeller through a reduction gear supplied by Philadelphia Gear. Operating at 85 percent of total bhp on the 14-foot design draft, trial speed was 13.75 knots and estimated average fuel consumption 12.5 tons per day. Electrical power is provided by two 400-kw generators driven by Caterpillar D379TA diesel engines.

Designed as a three-hold, 'tween-deck vessel with No. 3 hold refrigerated, the 2,000-dwt Antillia has a total bale capacity of 3,677.57 cubic meters, of which 736.24 cubic meters are refrigerated. Cargo holds and hatches are dimensioned to accept 20-foot containers in all three holds, and 40-foot boxes in No. 1 and No. 2 holds. Total container capacity is 99 TEUs, of which 16 can be reefers connected to deck outlets. Maximum deck loadings are 550

ARCO CALIFORNIA

The oil tanker Arco California, second of two 188,500-tonners built for Atlantic Richfield Company by National Steel and Shipbuilding, was delivered at the San Diego yard. Like her sister ship Arco Alaska, which was delivered to ARCO at the end of 1979, the new tanker is employed primarily in the Alaska to West Coast trade.

The principal destination is Long Beach, Calif., where ARCO has offloading and storage facilities to supply its 185,000-barrel-per-day refinery located at nearby Carson.

The tanker has an overall length of 952 feet 8 inches, beam of 166 feet, depth of 78 feet, and full-load draft of 59 feet 3 inches. She has a cargo capacity of 1,320,000 barrels, and a complement of only 27 men.

Main components of the power plant are the General Electric turbines and gears, and the Combustion Engineering boilers. When operating at 80 percent of the rated 28,000 shp, the ship has a service speed of 14¼ knots.

The Arco Alaska and Arco California, third and fourth in the

(continued on page 20)

pounds per square foot on the tank top, 350 on the 'tween deck and its hatch covers, and 332 psf on the main deck and hatch covers.

Cargo-handling gear comprises two Hagglund 20-ton cranes, one 8-ton boom, and two 5-ton booms. The Hagglund cranes are of the automated tandem type, which enables one operator to control both cranes simultaneously, thereby doubling the lifting capacity when necessary. Tandem crane operation is coordinated and synchronized by a mini-computer.

'ANTILLIA' MAJOR SUPPLIERS

Adrick, air conditioning
Alpha-Laval, L-O & D-O purifiers
Anixter, switchboards
Avondale, hatch covers, mooring fittings
Baldt, anchors & chain
Bird-Johnson, bow thruster
Boland Marine, kingposts
Buffalo Forge, vent fans & motors
Carlisle & Finch, searchlights
Carrier, package air conditioner
Caterpillar, generators
Con-Select, navigation light panel
Crane Deming, pumps
Crouse-Hinds, floodlights
Drake, marine band receiver
Engelhard, cathodic protection
Fairbanks Morse, main diesel engine 38TD8·1/8
Federal Pacific Electric, distribution panels
General Electric, motor controllers
Hagglund, cranes
Henschel, propeller rpm indicator
Honeywell, temperature controls
Hopeman Bros., joiner work, commissary equipment
Hose McCann, sound-powered telephones
ITT Mackay Marine, radiotelephone, radio direction finder
Marine Electric, public address system
Marine Safety Equipment, lifeboats
Microphor, sewage treatment plant
Navidyne, satellite navigation system
New England Trawler, cargo winches, capstans & windlass
Philadelphia Gear, reduction gear
Propulsion Systems, steering gear
RCA, broadcast antenna
Rampmaster, accommodation ladder
Raytheon, collision-avoidance radar, depth recorder, speed log, SSB radiotelephone
Simrad, Loran C
Singer Kearfott, windows, airports
Sperry, gyrocompass
Triton, distillers
Velcon, oil/water separators
Waukesha, sterntube bearing

1980 Outstanding Vessels Review— Arco California

(continued from page 19)

NASSCO-designed San Diego Class to be completed, are the largest vessels in ARCO's fleet of 14 tankers, and the first to have double bottoms to prevent oil spillage and to carry segregated ballast. They are fitted with collision-avoidance radar.

An inert gas system maintains all cargo spaces in a noncombustible condition, thus minimizing the chances of shipboard fires or explosions. The cargo system is designed with a holding tank to collect oil from tank washings for discharging to shore facilities. The bilge system also contains apparatus to separate and retain oil from the bilge waters for discharge to shore in accordance with Coast Guard requirements.

'ARCO CALIFORNIA' MAJOR SUPPLIERS

Buffalo Forge, fans & motors
Centritech, bearings
Combustion Engineering, main boilers
Cutler-Hammer, controllers
Demco, valves
Federal Pacific Electric, panels
Ferguson, propeller
General Electric, main turbines & gears
Hopeman Bros., joiner work
Hose McCann, telephone system
Johnson Pump, fire pump
Keenan Supply, valves
Lake Shore, lifeboats
Lawless Detroit Diesel, generators
Matsui, anchors & chain
Paul Munroe Hydraulics, topping winch
Reliance Electric, motors
Transamerica Delaval Turbine, air ejectors
Victor-Pyrate, fixed tank cleaning system
Worthington Pump, centrifugal pump

BENJAMIN HARRISON

The first of two combination lighter-aboard-ship/container carriers, the Benjamin Harrison, was delivered to Waterman Steamship Corporation earlier this year by Avondale Shipyards, Inc. She will be joined before the end of the year by sister ship Edward Rutledge. Like all LASH ships, they were designed by Friede and Goldman, Ltd. of New Orleans.

The LASH carrier is a single-screw, turbine-powered vessel designed for independent handling and carriage of 89 LASH type barges, each of which have a cargo capacity of 370 long tons, loaded in seven holds serviced by 16 large hatch openings, and on deck.

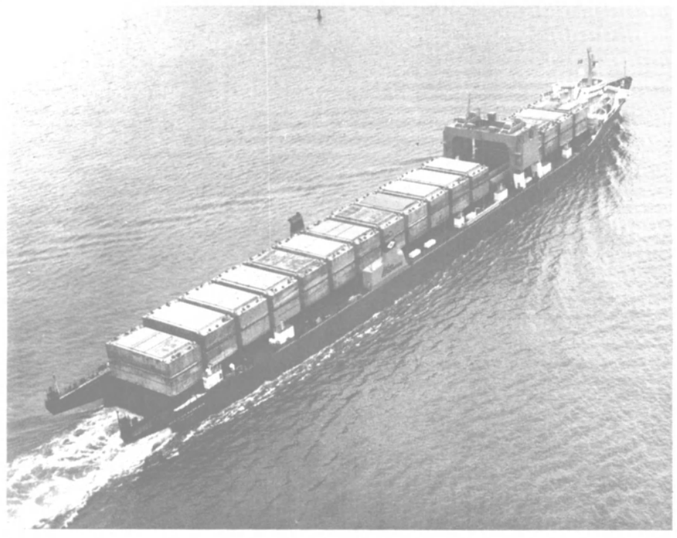
The Benjamin Harrison has an overall length of 845 feet 4 inches, beam of 100 feet, depth to main deck of 60 feet, and design draft of 28 feet. Her deadweight at design draft is 21,901 long tons.

The ship's 32,000-shp propulsion plant includes Transamerica Delaval steam turbines and gears, and Combustion Engineering boilers. Service speed at the 28-foot draft is 22 knots.

The superstructure containing all accommodations and the navigating bridge, which has 360-degree visibility, is located forward. All machinery is aft. The ship has its own 510-ton gantry crane mounted on rails running almost the full length of the ship for loading and unloading barges over the stern, permitting an operation independent of shoreside facilities.

'BENJAMIN HARRISON' MAJOR SUPPLIERS

Alco Power, standby diesel generator
Alexander Industries, air powered pilot hoists, searchlights, window wipers
Alfa-Laval, L-O purifier & motor
Alliance Machine, gantry crane
Appleton Machine, machinery & stores cranes
Aqua-Chem, distilling plant main L-O cooler, drain inspection tank cooling coil, F-W heat exchanger, heaters & pumps
Aurora Pump, pumps
Basic Engineers, spring hangers, sway braces
Bethlehem Steel, shafting forgings
Broehl Deck Machinery, anchor windlass, mooring winches, accom. ladder winch
Buffalo Forge, gland leak-off exhauster
Bull & Roberts, boiler water test outfit, feedwater sample cooler, hydrazine injection pump motor
Carrier-Transicold, air-conditioning plant
Combustion Engineering, main boilers
Comsat General, satellite communication system
Delaval IMO, pumps
Delaval Turbine, main turbines & gears, ss turbogenerator, turning gear & motor, aux. L-O pump
Dover, O/W separator pump & motor
Facet Industries, oil/water separator, oil content overboard monitoring
Federal Pacific Electric, power & lighting panels, connection boxes
FMC Coffin, main feed pump, L-O pump
General Electric, motor controllers, group control centers
George Engine, emergency diesel generator & muffler
Goulds Pumps, bilge pump
Harvey Division (Avondale), propeller
Henschel, shaft revolution indicator
ITT Mackay Marine, Loran C, radar systems, radio console, VHF radiotelephone, facsimile recorder, radio direction finder, telex, lifeboat radio, antenna systems
Johnson Controls, thermostatic controls
Joy Mfg., vent fans & motors
Kingsbury, main thrust bearing
Leslie Co., control valves
Lips, bow thruster
Magnetics, transformers
Mapeco, Pilgrim nut
Maricon Instruments, satellite nav. equipment
Marine Safety Equipment, lifeboat winch
Marlo Coil, cooling coils & heaters
Paceco, container crane
Perkins, navigation & signal lights
Red Fox, sewage treatment plant
Reliance Electric, electric motors & controls
Service Foundry Division (Avondale), line shaft & steady bearings
Simplex, elec. clock system



Sperry, collision avoidance system, speed log, steering control, gyrocompass, rudder angle indicator
Sperry-Vickers, steering gear hydraulic plant
Tano, bridge control console, engine room console, flame detector system
Bendix, wind speed/direction indicator
Warren, pumps — main circ., main condensate, bilge & ballast
Westinghouse Electric, forced draft blowers
Wilson Walton Int'l, cathodic protection system
Worthington, boiler hydrostatic test pump & motor

BURNS HARBOR

The motor vessel Burns Harbor, Bethlehem Steel's third 1,000-foot ore boat, entered service in the fall this year, having been christened earlier in ceremonies at the Sturgeon Bay, Wisc., yard of Bay Shipbuilding Corporation, a subsidiary of the Manitowoc Company.

Named in honor of America's most modern steelmaking plant—Bethlehem's Burns Harbor, Ind., complex on the southern shore of Lake Michigan — the new vessel has joined the Lewis Wilson Foy (also constructed by Bay Shipbuilding) and the Stewart J. Cort to make Bethlehem the only company with three 1,000-footers on the Great Lakes.

Addition of the Burns Harbor gives Bethlehem a seven-vessel Great Lakes fleet which, in terms of average age and average vessel capacity, is the newest, most efficient fleet on the Lakes. To achieve this distinction, Bethlehem has invested some $125 million in its Great Lakes fleet during the past decade.

Capacity of the new boat is 58,000 tons—the same as the Foy and 2,000 tons more than the Cort. Like the other two 1,000-footers, the Burns Harbor is a self-unloader. Equipped with a

Burns Harbor

250-foot unloading boom, the new boat is capable of discharging its cargo at a rate of 10,000 tons per hour.

Ten stories high from its engine room floor to the pilothouse, the vessel has a displacement (total weight of cargo and boat) of 73,000 tons. Propulsion power is supplied by four diesel engines with a total output of 14,000 bhp driving twin four-blade, 17½-foot-diameter controllable-pitch propellers. The boat has a top speed of 16 mph and a draft fully loaded of 27½ feet. Bow and stern thrusters improve the vessel's maneuverability.

Bethlehem's newest Lakes boat is fitted with the most modern navigation, steering, and control equipment available, including a computer and an automated hull stress monitoring system. It also has a complete sewage treatment plant that removes contaminants biologically and disinfects the effluent. A 30,000-gallon holding tank and transfer system backs up the treatment system.

The Burns Harbor has a total complement of 30, including 12 officers. Crew quarters are located in the deckhouse aft. All crew members are accommodated in private cabins with bath, and the entire crew space, including the pilothouse and galley, is fully air-conditioned.

With its 105-foot beam, the new vessel is locked into the Great Lakes. Like the other 1,000-footers on the Lakes, the Burns Harbor is able to sail to and from Lake Superior through the Poe Lock at Sault Ste. Marie, Mich., but is too large to pass through the Welland Canal leading from Lake Erie into the St. Lawrence Seaway.

'BURNS HARBOR' MAJOR SUPPLIERS

Electro-Motive Division, GM, main engines (4)
Falk, reduction gears (2)
General Electric, ship-to-shore radio
ITT Imperial, switchboards
Ohio Machinery, generators
Propulsion Systems, Inc. (PSI), propellers, engine controls, thrusters
Raytheon, radar, fathometer
R.L. Drake, VHF radio
St. Louis Ship (FAST), sewage treatment system
Sperry Marine, steering gear
Stephens-Adamson, unloading equipment
Westinghouse Electric, motor control equipment

CAPTAIN FRANK MEDINA

Delivered at midyear by Peterson Builders in Sturgeon Bay, Wisc., the big tuna seiner Captain Frank Medina departed immediately on her delivery trip to Panama via the St. Lawrence Seaway. Built for **Capt.** and **Mrs. Joe Medina** of San Diego, the new vessel represents Peterson's latest development of a design prepared by San Diego naval architect **Ivo Zaninovich.**

With an overall length of 225 feet, beam of 41 feet, and depth of 19 feet, the vessel can load 1,200 tons of tuna in her 17 refrigerated wells. The refrigera-

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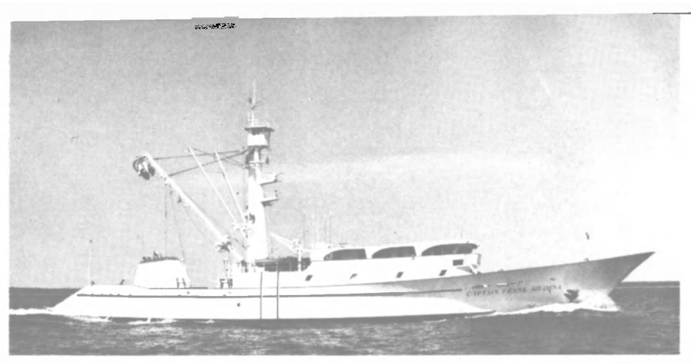

1980 Outstanding Vessels Review— Captain Frank Medina

(continued from page 21)

tion system was furnished by Vilter Manufacturing Company of Milwaukee, and includes four 8-cylinder compressors circulating ammonia through some 26,000 feet of galvanized pipe coils in the wells.

The Medina is powered by a General Motors Electro-Motive Division 20-645E7 diesel engine with an output of 3,600 bhp at 900 rpm, producing a top speed of 16 knots. Electrical power is supplied by three Caterpillar D353 diesels driving Kato 300-kw, 480-volt generators. A Schottel 48-inch bow thruster is driven by a Detroit Diesel 12V-71N engine rated 400 bhp at 2,100 rpm. The bow thruster is interfaced with the Sperry autopilot system to permit automatic heading keeping with the main engine shut down.

The deck machinery hydraulic system was designed and furnished by MARCO Seattle, and is powered by a dedicated Caterpillar D353E engine rated 470 bhp at 1,225 rpm. A standby main hydraulic pump drive is installed on the forward end of the port auxiliary generator, while an 80-hp electric motor/pump unit provides power for the anchor windlass, forward deck Husky crane, and speedboat davits. A MARCO WS444 Superseine winch and 54-inch power block with power grip are principal features of the deck machinery complement.

The electronic gear is unusually complete and includes two Sperry MK 126E radars, a Furuno 850B scanning sonar, Baymar recording depth indicator with Paragon digital readout, Taiyo marine band ADF and VHF automatic direction finders, two Hull single sideband radios (one with Northern N541 1-kw linear amplifier), a Morrow model SSB-150 emergency SSB radio with programmable scanner and emergency tone generator, a King K195 aircraft band radio, two Kenwood VHF radios, two Hygain model 655 VHF-FM radios, a Magnavox 1242 satellite receiver, Furuno weather facsimile receiver/printer, Yaesu all-band receiver, Regency VHF scanner, and a complete ham radio installation in the navigator's cabin.

The radio installation was engineered by Honor Marine Communications Inc. of San Diego and installed by Peterson technicians.

Other machinery and equipment on the vessel includes two Westphalia model OTA7B fuel oil centrifuges; Pacific Pumping brine circulating, transfer, bilge, condenser cooling, and general service pumps; Buffalo Forge fans; Red Fox sewage treatment plant; Federal Pacific switchboard; Cutler-Hammer controllers; Waukesha stern bearings and seals; Coolidge five-blade, stainless steel propeller; Star Machinery electric cargo hoists; Crosby blocks and wire rope rigring; and Marlite doors and paneling. The vessel is coated with epoxy and urethane paints applied using a system developed and supplied by Pro-Line Inc. of San Diego.

Peterson Builders fabricated the two speedboat davits and bridge deck speedboat crane that permit rapid launching of all five aluminum chaseboats, which are powered by Volvo Aquamatic inboard/outboard units. About 3,900 gallons of fuel is carried for the chaseboats.

The Captain Frank Medina is designed to carry a Hughes 300 turbine-powered helicopter; 12,000 gallons of turbine fuel is carried in double-bottom tanks for the helicopter, and a pumping and filtration system is provided to supply the fuel to the helicopter deck.

EDGAR B. SPEER

United States Steel's second 1,000-foot Great Lakes ore carrier, the motor vessel Edgar B. Speer, entered service recently transporting taconite pellets from Minnesota to the steel company's facilities along the south shores of Lake Erie and Lake Michigan. Constructed by the American Ship Building Company in its Lorain, Ohio, yard, the vessel was christened there earlier this year by **Mrs. Edgar B. Speer,** widow of the Corporation's former chairman of the board for whom the ore carrier is named.

The 1,000-foot self-unloader has a beam of 105 feet, depth of 65.8 feet, and draft of 28 feet when carrying in excess of 61,000 long tons of cargo. The Speer and U.S. Steel's first 1,000-footer, the motor vessel Edwin H. Gott, each can transport as much as seven of the older carriers in the USS fleet.

Two Colt-Pielstick 18PC2V diesel engines with a total of 19,260 bhp make the Speer and the Gott the most powerful ships on the Great Lakes. Designed for winter operations, these vessels are strengthened against ice damage with special steels—AH 36 high-strength steel in the hull plating and structural components, and impact-resistant T-1 type A steel for reinforcement of the bow and forward shoulder areas. More than 28,000 tons of these special steels were supplied for these two ships by U.S. Steel operations, including South Works in Chicago, Gary Works in Indiana, and U.S. Steel Supply Division.

The Speer and the Gott represent a marked departure in design from other ore carriers in the company's Great Lakes fleet. The bows are fuller to provide greater cargo capacity, and the sterns are squared. Both the pilothouse and the crew quarters are located aft, together with the engine room areas and the galley. The distance from keel to pilothouse is equivalent to the height of a nine-story building, and an elevator is installed to service the various levels.

The last U.S. Steel Great Lakes vessel designed traditionally with pilothouse and living quarters forward is the motor vessel Roger Blough, which was delivered by American Ship Building in 1972. The Blough is 858 feet long with a beam of 105 feet, and has a capacity of 45,000 long tons of taconite pellets.

KAUAI

In August this year Matson Navigation Company of San Francisco accepted delivery of its newest containership, the Kauai. Built by Sun Ship, Inc. in Chester, Pa. to the highest classification of the American Bureau of Shipping, the new ship cost about $76 million including related equipment and financing expenses.

The Kauai is powered by a 32,000-shp Delaval geared steam turbine that gives her a service speed of more than 22 knots. The 720-foot ship can carry 1,212 containers, including 1,030 24-footers and 182 40-footers. She also has the flexibility to carry 162 27-foot containers and 104 20-foot units in lieu of 24-footers.

The 26,350-dwt vessel was built from an advanced design of Matson's Manukai (ex Hawaiian Enterprise), Manulani (ex Hawaiian Progress), and Maui, delivered in 1969, 1970, and 1978, respectively. Advanced design features of the new ship include improved fuel economy and added capacity for carrying 51 automobiles in garage-type stowage. A special safety feature is the computer-controlled, anti-collision radar system developed by Sperry. A computer determines the course, speed, and closest point of approach by other

(continued on page 24)

Kauai

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(continued from page 23)

vessels within a 36-mile range; the results on a radar screen enable the watch officer to plot the safest course.

The ship's five cargo holds are fitted for stowing containers up to eight abreast and six high, without intermediate supports. Hold No. 1 has one container row, Holds 2 and 3 each have three rows, and Holds 4 and 5 have four container rows. This configuration could be modified in the future by appropriate relocation of bolted transverse box girders and watertight bulkheads.

Main propulsion machinery consists of a single cross-compound, geared steam turbine of non-reheat design, delivering propulsion power via a six-bladed propeller. Steam conditions at the turbine throttles are 850 psig and 950 F while exhausting to a vacuum of 1.5 inches Hg absolute. Maximum continuous power at these conditions is 32,000 shp at 110 rpm; normal power is 30,000 shp at 108 propeller rpm. The main reduction gear is of the locked-train, double-reduction, double-helical type; main condenser is scoop-circulated.

Two boilers are installed, each of the two-drum, bent-tube, single-furnace, single-uptake, air-encased type fitted with horizontal convection superheater, economizers, rotary air heaters, and internal submerged type desuperheaters. Boilers are roof-fired, with two steam-atomizing burners per boiler. Both boilers can operate fully automatic and unattended over the full range of steam demand at sea and in port. There are five stages of feedwater heating. The design includes features for reducing fuel consumption at power levels of about 50 percent of maximum without imposing any penalties at normal and maximum levels. A 1,250-hp bow thruster is fitted to assist in docking.

Electrical power is supplied by two 2,500-kw ship's service generators, one driven by a steam turbine, the other diesel-driven; and one 250-kw diesel-driven emergency generator.

A complete array of advanced navigation equipment has been installed aboard the Kauai. Included are Loran C, radio direction finder, echo depth sounder, and a satellite navigation system. Two radars are provided. The main one is a complete S-band surface search navigational radar system, the secondary an X-band surface search system. Both have 16-inch plan position indicators with heads-up relative motion, azimuth stabilization drive, electronic bearing and range markers, and variable range marker.

The Sperry collision-assessment system that is provided has interswitch capability between the main and secondary radars. Each radar system is complete and capable of operating independent of the other, so that failure of any part in one cannot affect the other.

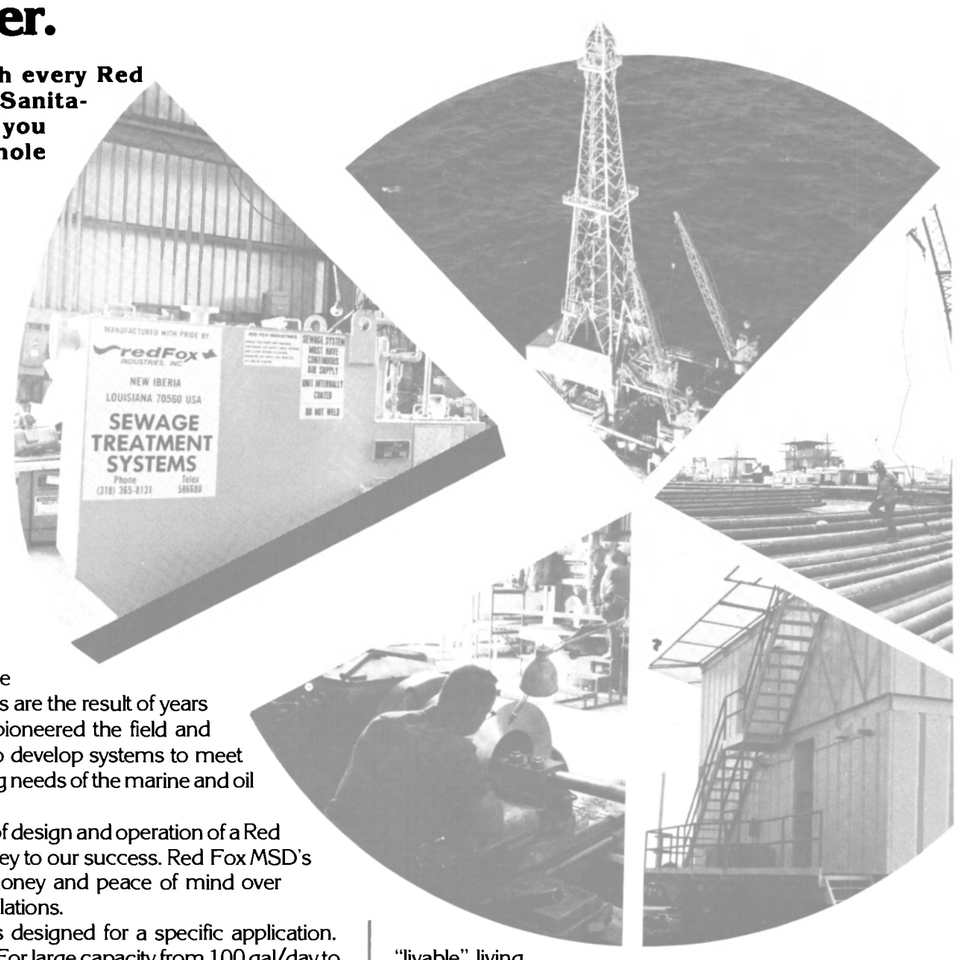
'KAUAI' MAJOR SUPPLIERS

Alco Power Inc., ship's service diesel generator
Alfa-Laval, L-O purifier, D-O purifier
Ametek, desuperheaters (external)
Aqua-Chem, distilling plant, distiller feed pump, 1st stage feedwater heater, F-O heaters, main L-O coolers, deaerating feed tank, feedwater sample cooler, L-O purifier heater, contaminated evaporator
ASEA, horsepower meter
Aurora, contaminated evaporator feed pump, potable water pumps, fresh water pumps
Babcock & Wilcox, main boilers
Bird-Johnson, bow thruster
Blackmer, molasses pumps
Buffalo Forge, forced-draft blowers, vent fan
Bull & Roberts, clarity indicators
Camar, gland exhaust fan
Cutler-Hammer, motor controllers
Delaval, main condenser
Delaval Turbine, main propulsion turbines and gears, main thrust bearing, F-O service pumps, D-O transfer & boiler cold start pumps, L-O service and transfer pumps

(continued on page 26)

When your "MSD" is from Red Fox- Your Marine Sanitation System Problems are over.

Because with every Red Fox Marine Sanitation Device, you get the whole company.



Red Fox Marine Sanitation systems are the result of years of research. We pioneered the field and have continued to develop systems to meet the ever increasing needs of the marine and oil industries.

The simplicity of design and operation of a Red Fox MSD is the Key to our success. Red Fox MSD's save you time, money and peace of mind over government regulations.

Each system is designed for a specific application.

Standard unit. For large capacity from 100 gal/day to 9,000 gal/day.

Offshore unit. Meets oil industries' needs to conform to international disposal regulations.

Little Fox. A self sustained retro-fit unit designed for crews up to eight.

Fox Pac. Smaller than our standard unit and ideal for crews of 1-5, 6-10, and 11-20. All proven under actual conditions.

Each system offers: NO internal moving parts. EPA and USCG certifications. Meets IMCO standards. NO effect in transition from fresh to salt water. Needs no expensive chemicals.

Red Fox Sanitation Systems have been on duty for over ten years-trouble free.

Custom Designed Fabrication: As a fabricator of complete rig packages both offshore and land based, drill ship retrofit, inland barges and complete "livable" living quarters . . . we meet the demands of the oil and marine industry to their satisfaction-and ours. Our attention to design, engineering, fabrication techniques, material selection, tools and craftsmanship must meet the highest standards we can place.

Machine & Supply: After 35 years of keeping the oil industry on the move, our Machine & Supply Division is called upon everyday-building, rebuilding, remodeling, designing and repairing.

Pipe Repair Yard: We're old hands when it comes to the basic item of oil field pipe. Our facility and experienced personnel have been providing Re-threading and Pressure Testing to meet API standards for over 35 years.

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(continued from page 24)

Drew Chemical, boiler water test outfit, boiler water treatment, auto hydrazene injection metering pump
Engelhard Industries, cathodic protection system
FMC Coffin, main feed pumps
Federal Pacific Electric, transformers
Ferguson, propeller
General Electric, ship's service turbogenerator, electric motors
I.T.E. Gould, switchboards
Hankinson, control air dehydrator
Hemple's Marine Paints, coatings
Honeywell, temp. sensors for F-O tanks
Hopeman Brothers, joiner package
Hose McCann, sound-powered telephones
A.C. Hoyle, hose-handling cranes, stores cranes
ITT Barton, F-O meter
ITT Mackay Marine, radio & associated equipment
Ingersoll-Rand, ship's service air compressors
Kiesling Elevator, dumbwaiter
Kocks Crane & Marine, anchor windlasses, mooring winches
Leslie Co., hot water heater, whistle, drain regulator, control valves
Lidgerwood Mfg., steering gear
Marine Electric, public address system
Marine Safety Equipment, boat davits & winch
McNab, salinity indicating system
Manning & Lewis, 4th & 5th stage feedwater heaters
Mapeco, propeller nut
Red Fox, sewage treatment units
Sperry, radars, gyrocompass, steering control transfer & rudder angle indicator systems
Warren Pumps, main circ. pump, main condensate pump, fire & bilge pump
Waukesha Bearing, sterntube bearing, seals & L-O pump; line shaft bearings
Worthington, fire, ballast, general service, main bilge, salt water service, sw circ. pumps
York Division, Borg-Warner, ship's stores refrigeration plant, air conditioning plant

LOUISIANA

The LNG carrier Louisiana, 10th liquefied natural gas carrier built by General Dynamics during the past three years at its Quincy, Mass., shipyard, was delivered recently to Lachmar. Earlier this year a sister ship, the Lake Charles, was completed for the same owner, which is a partnership of subsidiaries of Panhandle Eastern Pipe Line Company, General Dynamics, and Moore McCormack Bulk Transport, Inc.

Lachmar is 40 percent owned by Pelmar Company, a subsidiary of Panhandle Eastern; 40 percent by Pantheon, Inc., a General Dynamics' subsidiary; and 20 percent by Morgas, Inc., a subsidiary of Moore McCormack Bulk Transport.

With a capacity of 125,000 cubic meters of LNG in her five spherical tanks, the Louisiana has an overall length of 936 feet, beam of 143.5 feet, depth of 82 feet, and design draft of 36 feet. Her displacement is 95,088 long tons, and deadweight 63,600 long tons.

The main propullsion plant is a 43,000-shp General Electric geared steam turbine, driving a single Ferguson propeller at 103 rpm for a design speed of 20.4 knots. The ship's two Foster Wheeler main boilers are arranged to burn heavy fuel oil alone or in combination with LNG cargo boil-off.

The five spherical, aluminum cargo tanks, which carry the LNG at −265 F, each have an inside diameter of 120 feet. They were fabricated at General Dynamics' Charleston, S.C., facility and transported to the Quincy yard aboard a specially constructed barge, one at a time.

Loading/unloading time for the 125,000-cubic meter cargo is 12

(continued on page 28)

1980 Outstanding Vessels Review—Louisiana

(continued from page 26)

hours using 10 J.C. Carter pumps, each with a minimum capacity of 1,100 cubic meters per hour. A Bird-Johnson 2,200-hp bow thruster is installed to assist in docking and undocking.

The Louisiana has a complement of 30. Accommodations are provided for 35, which includes two owner's staterooms, two for cadets, and one for a pilot. All are one-man cabins with private bathrooms.

Operating on fuel oil only, the ship has a range of about 10,500 nautical miles. She carries 6,600 long tons of fuel oil, 185 tons of diesel oil, and 470 tons of fresh water.

'LOUISIANA' MAJOR SUPPLIERS

Alco Power, diesel for generator
Ansul, fire extinguishers
Aqua-Chem, desalinization unit, pumps & accessories
Baldt, anchors & chain
Bird-Johnson, bow thruster
Carrier, reefer plant for ac system
Carter, cargo pumps, cargo cooldown spray pumps
Cutler-Hammer, group control centers, controllers
Ferguson, propeller
Foster Wheeler, main boilers, inert gas/dry air plant
General Electric, main turbines & gears, thrust bearings, turbogenerators, motors
Gould, switchboards
Graham, main condenser
IDT, joiner work, insulation
Iotron, collision-avoidance system
ITT Mackay Marine, radio system
Jered, steering gear
Walter Kidde, CO_2 system
Lake Shore, anchor windlass, mooring winches
National Forge, forgings, main shafting
Posi-Seal, butterfly valves
Raytheon, radar systems, Loran C, doppler log, recording echo depth sounder
Reactor Controls, bridge & engine room consoles
Rotoflow, LNG compressors
Simmons Precision, custody transfer system
Sperry, gyrocompass & gyropilot systems
Warren, pumps
Worthington, deaerating feed heater

NEW YORK SUN

The New York Sun, first of two fuel-efficient, diesel-powered coastal tankers under construction for Sun Transport, was delivered recently by Sun Ship Inc. of Chester, Pa. Sun Transport's design for the New York Sun and sister ship Philadelphia Sun (see MR/EN 8/15/80 issue, page 10) anticipated the regulatory changes that have evolved since construction of these vessels began. The two ships incorporate many of the environmental and safety features that succeeding legislation has made mandatory for tanker designs of the future.

The 34,400-dwt ships have an overall length of 612 feet, beam of 90 feet, depth of 49.5 feet, and draft of 36.75 feet. Propulsion is provided by a single Mitsubishi/Sulzer slow-speed, type 6RND-76M diesel engine with an output of 14,200 bhp, providing a service speed of 15.5 knots.

Outstanding features of the the New York Sun include a high level of automation, permitting control of engine speed and direction from the bridge; fully air-conditioned crew accommodations; and an elevator connecting the four superstructure decks with the engine room.

The new tanker is capable of carrying six different types of refined petroluem products simultaneously, including gasoline, kerosene, jet fuel, heating oil, and naphtha. Six pumps can discharge the ship's 247,000-barrel cargo in 15 hours.

New York Sun is equipped with a wide array of modern navigational aids, including a collision-avoidance radar system, a satellite navigation system to enable

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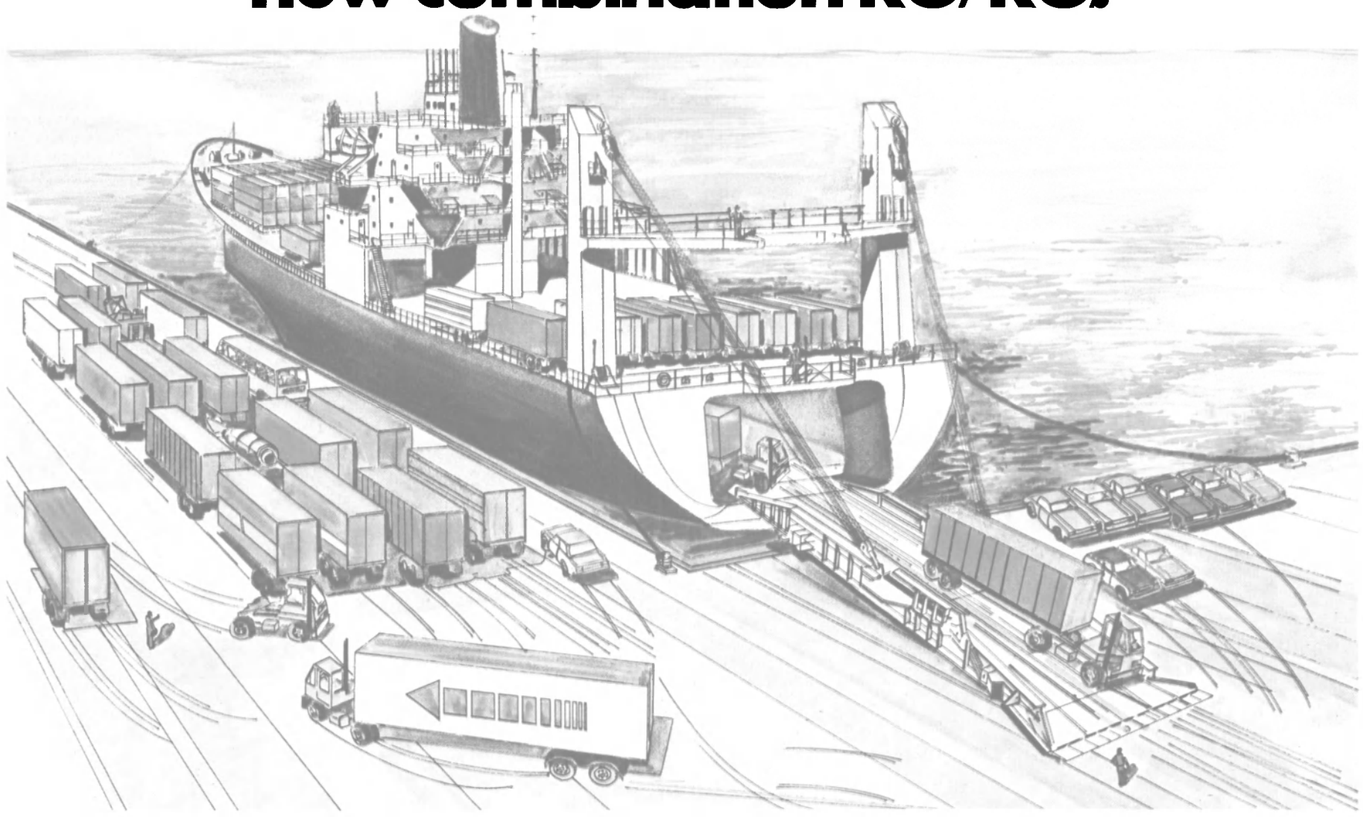
It's a trailer ship. It's a container ship. It's a vehicle ship. It's a unitized and palletized cargo ship.

It's Sun Ship's new combination RO/RO.



No matter how you view it, our new combination RO/RO is one flexible ship that can easily be tailored to the precise needs of the operator. Three of these versatile cargo vessels are now being constructed by Sun for Waterman Steamship Corp.

The flexibility is inherent in the design. Once the operator settles on the specs he gets a ship that's designed from the keel up to perform the functions he wants.

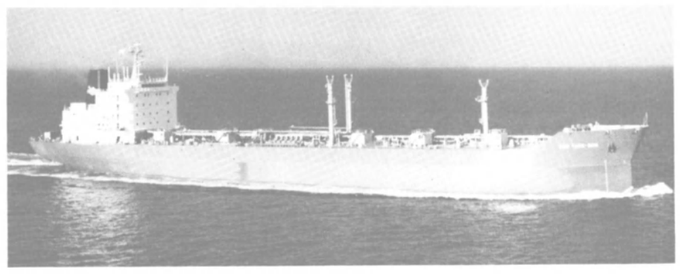
The ship has a cargo capacity of 762 forty-foot containers and trailers. The forward section is for containerized freight, but the main deck and hatch covers are capable of RO/RO operations. Aft is 100% roll-on, roll-off.

Each ship is equipped with a full-slewing ramp on the stern. A self-sustaining crane is available for loading and unloading. The modern engine room features a steam turbine power plant that can generate a speed of 22 knots at 32,000 maximum shaft horse-power. Accommodations for 41 are provided, including an owner's stateroom and spares.

Sun Ship is the world's most experienced builder of RO/RO ships. For information, contact Sun Ship Inc., Chester, PA 19013.

Sun Ship Inc.

Write 402 on Reader Service Card



idue from the ballast water before it is pumped overboard.

A sewage treatment and storage plant has been installed to insure that raw sewage cannot be discharged at sea.

The New York Sun, and the Philadelphia Sun when she is delivered in 1981, will be assigned to various U.S. intracoastal trade routes.

PRIDE OF TEXAS

Levingston Shipbuilding Company of Orange, Texas recently delivered the motor vessel Pride of Texas to the Levingston Falcon Shipping Company, a partnership of Levingston Shipbuilding and the Falcon Group of Houston. Designed to carry grain and other

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the ship's crew to pinpoint its exact position at any given time, and a weather facsimile system that provides up-to-the-minute weather reports.

A segregated ballast system has a total saltwater capacity of 12,000 long tons. With this system, several of the ship's tanks are used for ballast only. This means that when the tanker's ballast water is pumped out while cargo is being loaded, only clean salt water will be released.

In contrast to general practice in older tankers, ballast is not introduced into tanks that also carry the various petroleum cargoes. Should conditions at sea necessitate additional ballast water being pumped into any of the ship's cargo tanks, an oil-water separator removes petroleum res-

'NEW YORK SUN' MAJOR SUPPLIERS

Alfa-Laval, heat exchangers
Babcock & Wilcox, boilers, exhaust gas economizer
Carrier, air conditioning system, reefer compressors
Delaval, fresh water generator, purifiers & separators
General Electric, generators
General Motors EMD, diesels for generators
Goulds, main feed, cargo, and other pumps
Hankinson, control air dehydrator
Ingersoll-Rand, air compressors, seawater cooling pump
International, epoxy coatings
Iotron, collision-avoidance system
ITT Mackay, radio direction finder
Kawasaki, steering gear
Kocks, anchor windlass, mooring winches
Kockums, cargo loading computer
Mitsubishi/Sulzer, main diesel engine 6RND76M
Nav-Com, satellite navigation system
Robins & Meyers, pumps
Selenia, weatherfax, Loran, radars
Simrad, echo sounder & recorder
Smit Nymengen, inert gas generator
Sperry, gyrocompass system, autopilot, course recorder, magnetic compass
Tano, bell logger
Triton, VHF backup radiophone
Warren, pumps
Worthington, pumps
Wilton Walton International, cathodic protection system

◄ Write **378** on Reader Service Card

1980 Outstanding Vessels Review—Pride Of Texas

(continued from page 31)

dry bulk cargoes, she is the first dry bulk carrier built in the United States that is specifically designed for service in U.S. foreign trade, in competition with foreign-flag ships.

The 36,000-dwt bulker has an overall length of 611 feet 10 inches, beam of 93 feet 2 inches, and depth of 50 feet 2½ inches. She has a gross tonnage of 23,500 and hold capacity of 1,589,570 cubic feet (45,005 cubic meters). Her design draft is 32 feet.

'PRIDE OF TEXAS' MAJOR SUPPLIERS

Armco, steel
Baldt, anchors
Carrier, air conditioning system
GM Detroit Diesel, engines for generators
International, coatings
Kato Engineering, generators
Lake Shore, deck machinery
Marine Safety, lifeboats
Marland Environmental Systems, sewage treatment system
Sperry, steering gear
Transamerica Delaval, main diesel engines and reduction gears
United States Steel, steel

Propulsion is provided by two Transamerica Delaval Enterprise medium-speed diesel engines, type DMRV-12-4, having a total maximum continuous rating of 14,824 bhp at 450 rpm. This power plant gives the ship a maximum speed of 17 knots, but full-load service speed is 15.7 knots.

The new ship has been built to meet all the requirements of the American Bureau of Shipping and the U.S. Coast Guard for unlimited ocean service. She is manned by a crew of 34.

First in a series of three sister ships (two others in the original contract have been cancelled) for the same owner, the Pride of Texas is also the first vessel built in the U.S. to a Japanese design and with the assistance of Japanese shipbuilding experts.

The design is the highly successful "Future 32" standard bulk carrier developed by Ishikawajima-Harima Heavy Industries Company, Ltd. (IHI) of Tokyo. Since the beginning of construction of the Levingston Falcon ships, engineers from IHI have been assisting Levingston Shipbuilding personnel in an unprecedented "Technology Transfer" program that is designed to improve U.S. shipbuilding productivity.

for American Export Lines, which has now been absorbed by Farrell.

The new ship has an overall length of 610 feet, beam of 78 feet, depth to main deck of 54½ feet, and summer draft of 31 feet 7 inches. Container capacity is 928 TEUs, of which 56 will be carried on deck. Design speed is 20.5 knots.

Built at a cost of $43 million, the Resolute was constructed to the highest classification of the American Bureau of Shipping, and to the current standards and requirements of the U.S. Coast Guard, U.S. Department of Health, Education and Welfare, Safety of Life at Sea 1960 (SOLAS) Convention, and the Loadline Convention 1966.

Designed by John J. McMullen Associates, she is powered by a General Electric geared steam turbine plant, with steam generated by two Babcock boilers with steam conditions of 870 psig and 950 F. Central control of the power plant is by a Bailey Controls system. A McMullen Flume stabilization system is installed, as well as a Bird-Johnson bow thruster.

The Resolute has no shipboard cargo-handling gear, but provision was made for possible installation of gantry cranes if required in the future.

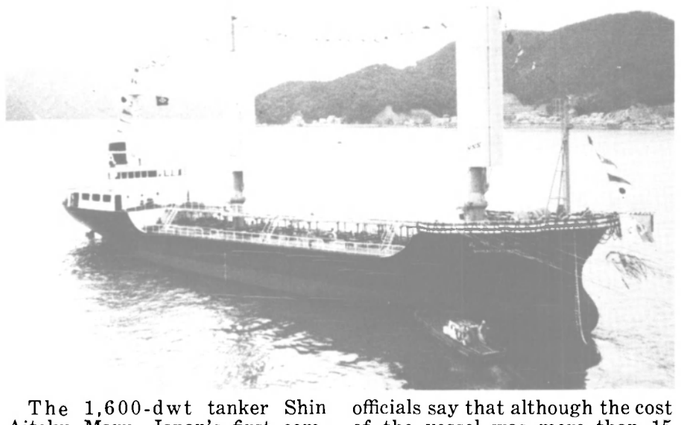
'RESOLUTE' MAJOR SUPPLIERS

Arcadian Equipment, bilge pumps
Arnold Machinery, emergency diesel generator
Aqua-Chem, deaerating feed tank
Aurora, fresh water, hot water circ. & salt water circ. pumps
Babcock & Wilcox, main boilers
Bird-Johnson, bow thruster
Buffalo Forge, forced-draft blowers, gland exhaust fan
Delaval, main & aux. condensers and air ejectors, F-O service & transfer pumps
Engelhard, cathodic protection system
FMC Coffin, main feed pump
Gaso, boiler test pumps
General Electric, main turbines & gears, turbogenerator
Honeywell, heating controls
Hopeman Bros., joiner work
A.C. Hoyle, capstan, accom. ladder winch
Ingersoll-Rand, control air compressor
Inn Keepers, commissary equipment
ITT Mackay, radio, radio direction finder
Joy Manufacturing, vent fans
Walter Kidde, CO_2 system
King Engineering, tank level indicators
Manning & Lewis, F-O meter, L-O cooler, gland exhaust condenser
Marine Safety Equipment, lifeboats, davits & winches
Mass Engineering, tank for fresh water system
McMullen Associates, Flume stabilization system
Nelson Electric, switchboards
Raytheon, radar
Reliance Electric, motors
Richardi Electric, power & lighting distribution panels
Riley-Beaird, distilling plant, distillate pump
Separation & Recovery Systems, L-O purifier & heater
Sperry, steering controls
St. Louis Ship, sewage treatment plant (FAST)
Tomlinson Refrigeration, ss refrigeration plant
Warren, pumps
Waukesha Bearing, sterntube bearings & seals, steady bearings
Western Gear, steering gear, mooring & anchor winches
Worthington, ss air compressor, bilge & general service pump

RESOLUTE

The Resolute, second of two highly automated containerships built by Bath Iron Works for Farrell Lines Incorporated, was delivered 13 weeks ahead of contractual schedule by the Maine shipyard. She and sister ship Argonaut are of the same basic design as six containerships built by BIW between 1968 and 1973

SHIN AITOKU MARU



The 1,600-dwt tanker Shin Aitoku Maru, Japan's first commercial sail-equipped motorship, went into service recently. Developed jointly by Nippon Kokan (NKK) and the Japan Marine Machinery Development Association, the vessel is also powered by a

officials say that although the cost of the vessel was more than 15 percent higher than that of a regular tanker of the same class, the ship is expected to use about 50 percent less energy than regular motor tankers because of the auxiliary use of sails and various im-

1980 Outstanding Vessels Review—Shin Aitoku Maru

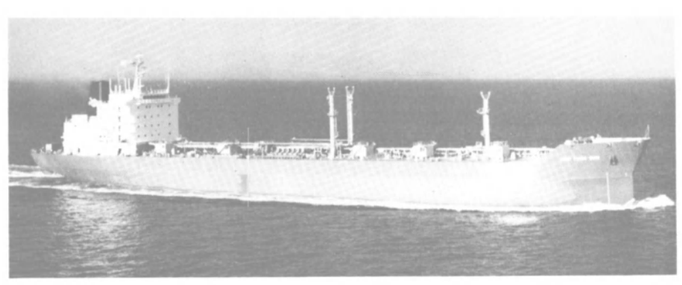
(continued from page 32)

beam of 10.6 meters, molded depth of 5.2 meters, and design draft of 4.4 meters (about 216.5 by 34.8

Maximum speed is 12 knots. The ship has a crew of 10; according to NKK officials, there was no need for extra manpower to operate the sails.

NKK and the Japan Marine Machinery Development Association

SURRY



idue from the ballast water before it is pumped overboard.

A sewage treatment and storage plant has been installed to insure that raw sewage cannot be discharged at sea.

The New York Sun, and the Philadelphia Sun when she is delivered in 1981, will be assigned to various U.S. intracoastal trade routes.

PRIDE OF TEXAS

Levingston Shipbuilding Company of Orange, Texas recently delivered the motor vessel Pride of Texas to the Levingston Falcon Shipping Company, a partnership of Levingston Shipbuilding and the Falcon Group of Houston. Designed to carry grain and other

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1980 Outstanding Vessels Review— New York Sun

(continued from page 28)

the ship's crew to pinpoint its exact position at any given time, and a weather facsimile system that provides up-to-the-minute weather reports.

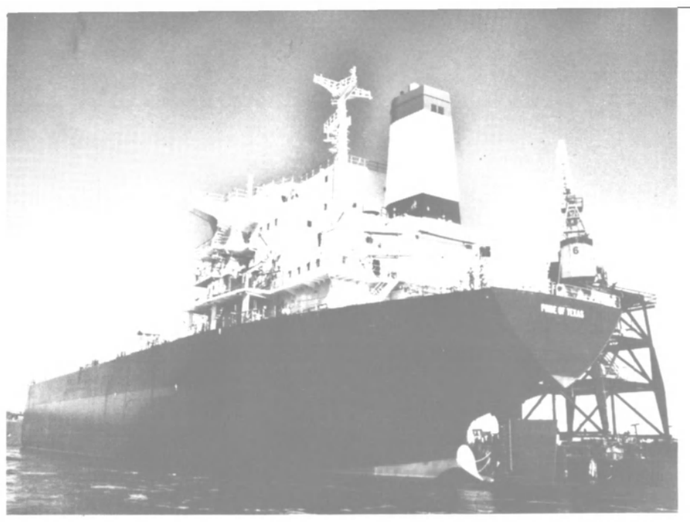
A segregated ballast system has a total saltwater capacity of 12,000 long tons. With this system, several of the ship's tanks are used for ballast only. This means that when the tanker's ballast water is pumped out while cargo is being loaded, only clean salt water will be released.

In contrast to general practice in older tankers, ballast is not introduced into tanks that also carry the various petroleum cargoes. Should conditions at sea necessitate additional ballast water being pumped into any of the ship's cargo tanks, an oil-water separator removes petroleum res-

'NEW YORK SUN' MAJOR SUPPLIERS

Alfa-Laval, heat exchangers
Babcock & Wilcox, boilers, exhaust gas economizer
Carrier, air conditioning system, reefer compressors
Delaval, fresh water generator, purifiers & separators
General Electric, generators
General Motors EMD, diesels for generators
Goulds, main feed, cargo, and other pumps
Hankinson, control air dehydrator
Ingersoll-Rand, air compressors, seawater cooling pump
International, epoxy coatings
Iotron, collision-avoidance system
ITT Mackay, radio direction finder
Kawasaki, steering gear
Kocks, anchor windlass, mooring winches
Kockums, cargo loading computer
Mitsubishi/Sulzer, main diesel engine 6RND76M
Nav-Com, satellite navigation system
Robins & Meyers, pumps
Selenia, weatherfax, Loran, radars
Simrad, echo sounder & recorder
Smit Nymengen, inert gas generator
Sperry, gyrocompass system, autopilot, course recorder, magnetic compass
Tano, bell logger
Triton, VHF backup radiophone
Warren, pumps
Worthington, pumps
Wilton Walton International, cathodic protection system

◄ Write **378** on Reader Service Card



1980 Outstanding Vessels Review—Pride Of Texas

(continued from page 31)

dry bulk cargoes, she is the first dry bulk carrier built in the United States that is specifically designed for service in U.S. foreign trade, in competition with foreign-flag ships.

The 36,000-dwt bulker has an overall length of 611 feet 10 inches, beam of 93 feet 2 inches, and depth of 50 feet 2½ inches. She has a gross tonnage of 23,500 and hold capacity of 1,589,570 cubic feet (45,005 cubic meters). Her design draft is 32 feet.

'PRIDE OF TEXAS' MAJOR SUPPLIERS

Armco, steel
Baldt, anchors
Carrier, air conditioning system
GM Detroit Diesel, engines for generators
International, coatings
Kato Engineering, generators
Lake Shore, deck machinery
Marine Safety, lifeboats
Marland Environmental Systems, sewage treatment system
Sperry, steering gear
Transamerica Delaval, main diesel engines and reduction gears
United States Steel, steel

Propulsion is provided by two Transamerica Delaval Enterprise medium-speed diesel engines, type DMRV-12-4, having a total maximum continuous rating of 14,824 bhp at 450 rpm. This power plant gives the ship a maximum speed of 17 knots, but full-load service speed is 15.7 knots.

The new ship has been built to meet all the requirements of the American Bureau of Shipping and the U.S. Coast Guard for unlimited ocean service. She is manned by a crew of 34.

First in a series of three sister ships (two others in the original contract have been cancelled) for the same owner, the Pride of Texas is also the first vessel built in the U.S. to a Japanese design and with the assistance of Japanese shipbuilding experts.

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Babcock & Wilcox, main boilers
Bird-Johnson, bow thruster
Buffalo Forge, forced-draft blowers, gland exhaust fan
Delaval, main & aux. condensers and air ejectors, F-O service & transfer pumps
Engelhard, cathodic protection system
FMC Coffin, main feed pump
Gaso, boiler test pumps
General Electric, main turbines & gears, turbogenerator
Honeywell, heating controls
Hopeman Bros., joiner work
A.C. Hoyle, capstan, accom. ladder winch
Ingersoll-Rand, control air compressor
Inn Keepers, commissary equipment
ITT Mackay, radio, radio direction finder
Joy Manufacturing, vent fans
Walter Kidde, CO_2 system
King Engineering, tank level indicators
Manning & Lewis, F-O meter, L-O cooler, gland exhaust condenser
Marine Safety Equipment, lifeboats, davits & winches
Mass Engineering, tank for fresh water system
McMullen Associates, Flume stabilization system
Nelson Electric, switchboards
Raytheon, radar
Reliance Electric, motors
Richardi Electric, power & lighting distribution panels
Riley-Beaird, distilling plant, distillate pump
Separation & Recovery Systems, L-O purifier & heater
Sperry, steering controls
St. Louis Ship, sewage treatment plant (FAST)
Tomlinson Refrigeration, ss refrigeration plant
Warren, pumps
Waukesha Bearing, sterntube bearings & seals, steady bearings
Western Gear, steering gear, mooring & anchor winches
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RESOLUTE

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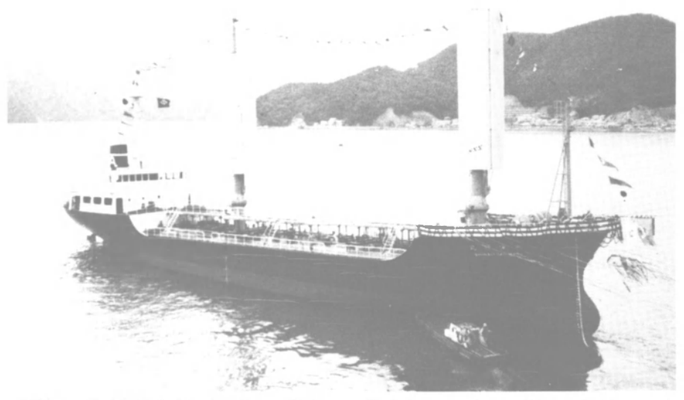

The 1,600-dwt tanker Shin Aitoku Maru, Japan's first commercial sail-equipped motorship, went into service recently. Developed jointly by Nippon Kokan (NKK) and the Japan Marine Machinery Development Association, the vessel is also powered by a diesel engine with an output of 1,600 bhp at 25 rpm, driving a variable-pitch propeller.

Construction cost amounted to some $2,325,000, which included about $263,000 for the sails. NKK officials say that although the cost of the vessel was more than 15 percent higher than that of a regular tanker of the same class, the ship is expected to use about 50 percent less energy than regular motor tankers because of the auxiliary use of sails and various improvements on the hull design, propeller, main engine, generator, and waste gas recycling.

The Shin Aitoku Maru has a BP length of 66 meters, molded

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1980 Outstanding Vessels Review— Shin Aitoku Maru

(continued from page 32)

beam of 10.6 meters, molded depth of 5.2 meters, and design draft of 4.4 meters (about 216.5 by 34.8 by 17 by 14.4 feet). Two sets of rigid sails are made of thin steel frames and canvas, each measuring 8 meters wide and 12.15 meters in height (about 26.2 by 39.9 feet). Total area for the two sails is about 200 square meters (2,150 square feet).

The sails are controlled automatically by a built-in microcomputer that maneuvers them and keeps them set constantly at the optimum angle for maximum utilization of wind power.

Maximum speed is 12 knots. The ship has a crew of 10; according to NKK officials, there was no need for extra manpower to operate the sails.

NKK and the Japan Marine Machinery Development Association has conducted joint research to develop a sail-equipped motorship for the past two years.

SURRY

Wiley Manufacturing of Port Deposit, Md., has completed and delivered a passenger and automobile ferryboat, the Surry, that is now operating on the James River between Glasshouse Point and Scotland, Va. Designed by Coast Engineering Company of Norfolk for the Virginia Department of Highways and Transportation, the vessel has a capacity of 50 automobiles and 350 passengers.

Surry has an overall length of 200 feet, beam of 64 feet, depth amidships of 16 feet, and design draft of 9 feet 6 inches. Powered by a General Motors Electro-Motive Division, 1,450-bhp diesel engine, model 12 E6, the ferry has two Columbian Bronze propellers (one fore, one aft), Morgan Engineering propeller shafts, Fernstrum keel coolers, two Raytheon radars, and three Detroit Diesel generators — two ship's service and one emergency.

The introduction of this 350-passenger ferryboat has helped to alleviate peak travel delays in the important James River historic and tourist areas.

Wiley Manufacturing is a unit of AMCA International Corporation. Its steel fabricating and shipbuilding facility at Port Deposit is capable of building vessels of up to 425 feet in length, and constructing any type of floating steel equipment up to 2,400 dwt.

'SURRY' MAJOR SUPPLIERS

Chromalox, electric heaters
Columbian Bronze, propellers
Consolidated Switchgear, switchboard, engine alarm panel
Delco, generators
Fernstrum, keel coolers
GM Electro-Motive Division, main diesel engine 12 E6
GM Detroit Diesel, engines for generators
Goulds Pumps, fresh water service, fire & bilge pumps
Henschel, engine order telegraph system, sound-powered telephones
Walter Kidde, CO_2 fire extinguishing system
Lufkin, reduction gear
Marine Safety Equipment, lifeboats
Mathers Control, engine controls
Morgan Engineering, propeller shafts
Quincy, air compressors
Raytheon, radars, radiotelephones
Red Fox Industries, sewage treatment plant
Seacarl Marine Industries, insulating, sheathing
Sperry, electro-hydraulic steering system
S.E. Steigerward, deck covering

WHITE NILE

This year the B&W Shipyard in Copenhagen completed two Hamlet Multi-flex ships of about 12,600 dwt for Sudan Shipping Line. The ships were named the White Nile and the Blue Nile. Like other vessels of the Hamlet Multi-flex type, they have been built to Lloyd's Register of Shipping Class +100 A1 +LMC "Strengthened for Containers" and to the usual international conventions and regulations for cargo ships trading worldwide.

The White Nile is powered by a single B&W turbocharged, two-stroke diesel engine, type 5L55-GFC, with maximum continuous rating of 6,700 bhp at 150 rpm. The main engine is direct-coupled to a four-bladed propeller, and is capable of burning fuel oil with a maximum of 3,500 Sec. Redwood I. A soundproofed control room is installed in the engine space. Electrical power is supplied by three generator sets, all driven by B&W turbocharged diesel engines. Trial speed at 80 percent of mcr was about 16.5 knots.

The ship has four separate holds, with four hatches in the upper deck and three hatches in the 'tween deck. As a special feature, cargo hold No. 1 has been arranged for carrying vegetable oils, with necessary heating and pumping systems installed. The hatches are fitted with MacGregor folding type steel covers on the upper deck, and hatch covers with longitudinal hinges on the 'tween deck. All hatch covers are reinforced for stowage of containers. Roll-on/roll-off cargo is handled via a slewing stern ramp.

Cargo-handling gear comprises five electrohydraulic cranes—two of 36-ton capacity, two of 25 tons, and one of 18-ton capacity aft. The twin cranes can be operated in tandem to double their lifting capacity. By means of cargo yokes, a combined lifting capacity of 95 tons can be achieved with four cranes working in unison.

Accommodations are provided for a 39-person complement. The officers' deck contains living quarters for the captain, chief engineer, and other officers. The captain and chief engineer each has a suite comprising living room, bedroom, and bath.

Crew accommodations are located on one deck and consist of one- and two-berth cabins, each with a bathroom. Messes and dayrooms are located on the saloon deck, close to the galley and stores areas. Also located on the saloon deck is a hospital.

The bridge deck contains a roomy combined wheelhouse and chartroom equipped with the most modern navigational instruments, radio station, and cabins for the radio officer and pilot. A swimming pool is located aft of the wheelhouse.

The poop deck contains offices, hobby room, emergency generator, ventilation room, CO_2 room, paint locker, workshop, and storerooms.

The White Nile has an overall length of 133.5 meters, beam of 20.50 meters, depth to upper deck of 12.20 meters, and draft of 9.4 meters (437 by 67 by 40 by 31 feet).

Bay Shipbuilding Corp.'s modern 60-acr fully-equipped and staffed shipyard, wit berthing space for up to 15 vessels.

Write 148 on Reader Service Card

New Logistics Firm Formed In Houston

Hart King recently announced the formation of a Houston-based company, Hart A. King & Associates. The new company will engage in consulting for marine and aviation activities, including logistics support.

Mr. **King** recently resigned from Offshore Logistics, Inc. as vice president of marketing, Oil & Gas Services. He is an associate member of SNAME.

Hart A. King & Associates is located at 5334 Bordley, Houston, Texas 77056. Telephone (713) 960-1788.

$4.7-Million Navy Contract For PGG/PCG Test Site Awarded To Sperry

Sperry Corporation, Sperry Gyroscope, Great Neck, N.Y., is being awarded a $4,697,000 modification to a previously awarded contract for continuation of support for System Land Based Test Site for PGG and PCG Class ships. Work will be performed in Clearwater, Fla. The Naval Sea Systems Command is the contracting activity. (N00024-76-C-7183)

Dockside Will Perform Maintenance Program On Stork-Werkspoor Diesels

Edward Rittenhouse, president of Dockside Machine and Ship Repair, Wilmington, Calif., has announced the signing of a contract with Stork-Werkspoor Diesel B.V. of Amsterdam, the Netherlands. The owners and operators, Seatrain Lines, has contracted with Stork-Werkspoor for a five-year maintenance program, including the guarantee period covering vessels Asialiner, Asiafreighter, Euroliner, and Eurofreighter.

The contract was signed at Dockside Machine's offices by **Robert Strachan**, vice president, and **Cor Paans**, Stork-Werkspoor's Inspection Department manager. The Seatrain vessels are equipped with dual 9-cylinder, medium-speed engines, Type TM620, each producing 15,300 bhp.

New Trident Submarine Base In Georgia Will Cost About $1.4 Billion

The Navy announced recently that Kings Bay, Ga., has been selected as the location for the construction of the Trident Atlantic Coast Strategic Submarine Base. The announcement culminates detailed studies and analyses of many different base locations and configurations. The analyses considered operational capabilities and costs, as well as environmental and social impacts. The Final Supplement Environmental Impact Statement, which discusses these impacts, was filed in September this year. The selection was made after full consideration of the impacts, as required by environmental regulations and procedures.

This East Coast Strategic Submarine Base is considered a necessary complement to the Trident Submarine Base at Bangor, Wash., which is scheduled to become operational next year. It will fulfill an important national strategic need by establishing facilities on the East Coast to support a squadron of new submarines armed with Trident I or follow-on missiles. The East Coast Trident Base will provide maintenance and logistic support to the submarines, and serve as the homeport and training site for the crews.

The new Trident Submarine Base will result in economic growth in the Kings Bay region. The Fiscal Year 1981 budget contains $12.1 million for architectural and engineering services for base planning and design. The base construction, which could begin in 1982 and be completed by 1990, is expected to cost about $1.4 billion, and peak construction employment will be about 1,000 workers. The base payroll will eventually increase by almost 8,000 military and civilian workers, with total annual salaries of about $110 million.

$9-Million Navy Contract Awarded To Bath Yard For Frigate Overhaul

A contract for approximately $9 million to overhaul the frigate USS Edward McDonnell (FF-1043) was awarded by the U.S. Navy recently to Bath Iron Works, a Congoleum company. The ship, commissioned in 1965 are now homeported in Mayport, Fla., is scheduled to arrive at the Bath, Maine, shipyard in February 1981 for the 10-month overhaul.

President **John F. Sullivan Jr.**, noting that the new project will require about 400 workers at its peak, reported the shipyard recently has been awarded three major projects valued at approximately $55 million. In September, the company finalized a contract for approximately $30 million to construct a 350-foot seagoing dredge, and in October the U.S. Navy awarded BIW a contract for approximately $15.4 million for additional work on the first four FFG-7 class guided-missile frigates built by the shipyard.

The USS Edward McDonnell, 415 feet in length and displacing 3,400 tons fully loaded, has a complement of about 250 officers and enlisted personnel.

Louis J. Conti Named VP-Shipping Group For GATX Corporation

Louis J. Conti

Louis J. Conti has been elected vice president-shipping group for GATX Corporation, it was announced recently by **F.W. Theis** president of GATX. In this newly formed position, Mr. **Conti** will have responsibility for GATX's two shipping subsidiaries, American Steamship Company and Marine Transport Lines. American Steamship Company operates the largest fleet of self-unloading vessels on the Great Lakes, and Marine Transport Lines owns, charters, and operates oceangoing ships engaged in worldwide trade.

Mr. **Conti** has been president of GATX Terminals Corporation, a subsidiary of GATX. Since joining GATX in 1956, he has held various positions in GATX Corporation and GATX Terminals, and was elected president of that subsidiary in 1975.

Dome Petroleum Will Sell Canadian LNG To Utilities In Japan

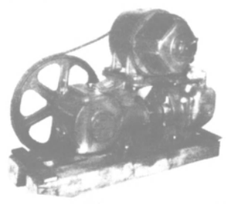
Dome Petroleum Limited, Nissho-Iwai Corporation, Chubu Electric, Kyushu Electric, Osaka Gas, and Toho Gas recently announced, after a series of discussions in Japan and Canada, that they have concluded a letter of intent for the sale of liquefied natural gas (LNG) from Canada to Japan. Under the terms of the arrangement, at least one-half of the four vessels required to transport this LNG will be built in Canada. This represents an important industrial benefit to Canada and a valuable addition to Canadian technology.

The amount of this sale is 2.6 metric tons per year of Canadian gas in the form of LNG. Subject to Federal and Provincial Governmental approvals, deliveries are expected to start in 1985. The sale was arranged through Nissho-Iwai to the four utilities who serve more than 45 million customers in Japan. This is an important new and diverse market for Canadian natural gas, which is presently in surplus supply.

Dome Petroleum advised that the purchase of the required gas will be made through the British Columbia Petroleum Corporation, thereby ensuring that all producers of natural gas in British Columbia will share equally in this sale.

PUMPS

WORTHINGTON 2½x2 SANITARY & FLUSHING PUMP — 20 GPM — 80 LBS



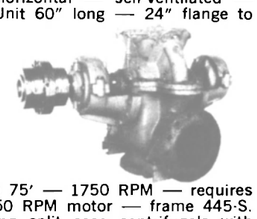
Motor driven type **KAA** — 1½" suction — 1" discharge. MOTOR: 2 HP — 230 VDC. Can also be furnished with A.C. motor if desired.

UNUSED 5"x4" — 500 GPM @ 20 PSI — 1800 RPM WEIL GENERAL CIRCULATOR SERVICE PUMP

With totally enclosed explosion-proof motor. Bronze pump — horizontally split case — flooded submergence test pressure 300 PSI. MOTOR: Continental 10 HP — 440/3/60 — 1800 RPM — fan cooled — totally enclosed — horizontal — self-ventilated — EXPLOSION-PROOF. Unit 60" long — 24" flange to flange.

2000 GPM @ 75'

BRONZE PUMPS



8X8 — 2000 GPM @ 75' — 1750 RPM — requires 50 HP 440/3/60 1750 RPM motor — frame 445-S. Pumps are ball-bearing split case centrifugals with cast iron driplip base. Very good condition.

UNUSED NIJUIS FIRE PUMP — PUMP ONLY

HID-5125250 — 531 GPM @ 323' head @ 1800 RPM

6X5 BRONZE GARDNER-DENVER PUMP

Split case type D — 1000 GPM — 125 lbs — 281' @ 1800 RPM. Requires 100 HP diesel drive. Suction lift 15 to 25' — 10½" diameter flange. 6" Suction 5" Discharge.

"EUREKA" DUPLEX DOUBLE-ACTING RECIPROCATING BILGE PUMP 500 GPM — 100' HEAD

Motor driven — pump operates at 320 RPM. MOTOR: 15 HP — 440/3/60 1750 RPM. DIMENSIONS: 5'9" high — 3' wide — 4' deep. Ex-M.V. Globtic Sun.

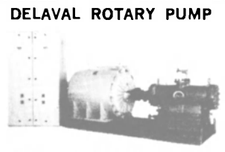
NIJUIS 3510 GPM DIESEL DRIVEN FIRE PUMP

3510 GPM @ 350' head — 161.7 PSI. Pump is 10X8 — factory new — horizontally split case. ENGINE: GM 6V-71 or 8-V-71. Can furnish with heat exchanger & radiator.

GARDNER-DENVER 6"X5" BRONZE CENTRIFUGAL FIRE OR JETTING PUMP

Driven by GM 3-71 diesel engine. PUMP: 1000 GPM @ 150 PSI/1500 GPM @ 100 PSI — 1750/2000 RPM. Maximum head 175 PSI. Self-contained fuel tank in base. Automatic self-priming optional.

NEW UNUSED — 700 GPM — 150 PSI DELAVAL ROTARY PUMP



6X8 — 700 GPM @ 150 PSI — 1150 RPM — with 4-speed motor & control 100/75/50/37.5 HP — 440/3/60 — 1200/900/600/450 RPM. With Cutler-Hammer controller.

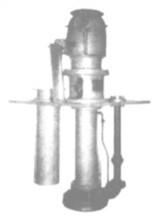
UNUSED BRONZE 2000 GPM @ 337' HEAD FIRE OR HIGH PRESSURE SERVICE PUMP

Mfg by Frederick Iron & Steel — 8" side discharge; — 8" bottom suction — model 8DSU-SPL. MOTOR: Crocker Wheeler — 250 HP — 240 volts DC — 1900 RPM — 102 7/8" O.A.L. — 34½" wide — 37" high.

NEW UNUSED KINNEY 20 GPM FUEL OIL SERVICE PUMP

Vertical — 50 PSI — with 2" inlet & outlet. MOTOR: 2 HP — 440/3/60 860 RPM — with starter. For fuel oil service, etc.

NEW UNUSED SUMP OR LOW PRESSURE DRAIN PUMPS



Bronze — 40 GPM @ 40 PSI. 2" Discharge — single impeller — CW rotation — 32" from deck plate to base. Complete with flotation equipment. Totally enclosed 5 HP 440/3/60 1725 RPM motor. Repair parts for motor & pump included.

CARVER CHILLED WATER SERVICE PUMP 160 GPM — 57 PSI

For air conditioning or water circulation. 160 GPM @ 57 PSI — 110 ft. head. Closed coupled — 10 HP 440/3/60/3500 RPM.

500 GPM FIRE SERVICE PUMP

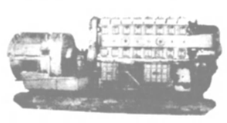
Mfg. by Buffalo. Bronze — 500 GPM @ 100 Lbs. — 5X4 — 30 HP/240 DC — 105 amps — 1750 RPM.

PASSENGER/CRUISE SHIP SELF PRIMING NEW WORTHINGTON VERTICAL SUBMERSIBLE BILGE PUMP

FOR EMERGENCY USE ON PASSENGER SHIPS, ETC. PUMP: JAS — 264 GPM — 171' head — two 6" inlets — one 5" outlet. MOTOR: 40 HP — 230 volts DC — 149 amps. COMPLETE WITH NASH — SELF PRIMING PUMP ATTACHED.

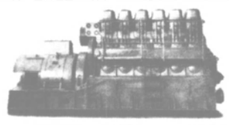
DIESEL GENERATOR SETS

290KW GM 8-268A DIESEL GENERATOR SET



120/240 VDC—1250 amps—shunt wound. ENGINE: GM 8-268A — 8 cyl — 6½X7 — 1200 RPM — good condition.

300KW BALDWIN DIESEL GENERATOR SET

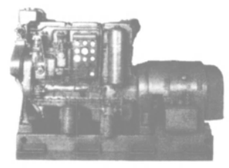


300KW — 120/240 VDC — 1250 amps — stab. shunt — 450 RPM. Baldwin diesel model VO. Ex C-1MAVO1.

100KW GBD8 DIESEL GENERATORS

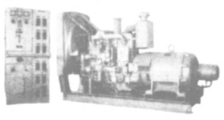
From LST vessels. 120/240 VDC — 417 amps — stab shunt — 1200 RPM — Delco generator — self-excited. ENGINE: Superior GBD-8 — 8 cyl — 5½X7 — 150 HP — 30 volt electric starting. Reconditioned to ABS. Dry weight 10,000 lbs. — OAL 124" — 65 11/16" high — 42" wide. Height necessary to pull piston 68". Fuel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

60 KW CUMMINS DIESEL GEN. SETS



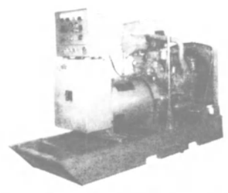
60KW — 120 volts — 500 amps DC generators. 6-Cyl. model H Cummins diesel engine.

75 KW CUMMINS DIESEL GENERATOR SET



75KW — 93.8 KVA — 440/3/60 — 1200 RPM — electric starting. Cummins 6-cyl engine with free-standing switchgear.

GM-4-71-T TURBO-CHARGED 100 KW DIESEL GENERATOR SET RADIATOR COOLED 1800 RPM

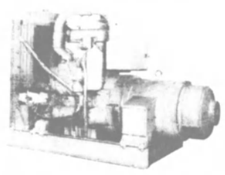


12 wire — all voltages possible — 100 KW 440/220/3/60. With switchgear. Has protective cabinet.

GM 8-268A 200 KW A.C. DIESEL GENERATOR SETS

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

20KW 2-71 DIESEL GENERATOR SETS TEST RUN 1 HOUR



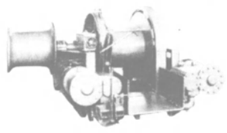
220/3/60 — 1200 RPM — Electric Machinery Co. or Delco. Brushless — will demonstrate running. (Also have 20KW sets with 220/440/3/60 — with brushes — 1200 RPM — Delco. Weight 2200 lbs.)

GM 3-268A 100 KW DIESEL GENERATOR SETS

ENGINE: GM 3-268A — 6½X7 — 1200 RPM — 80% PF — electric starting. GENERATOR: 100 KW — 440/3/60/1200 RPM — 161 amps. Dripproof — open — self-ventilated. (Class A insulation stator — class B insulation on field). EXCITATION: 2 KW DC unit — 9′ 1¾″ long — 37″ wide.

WINCHES

STEAM MOORING WINCHES

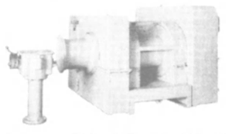


12″ X 14″ — AUTOMATIC TENSIONING with foot brake & declutchable gypsy head 20,000 LBS @ 100 FPM — FIRST LATER ALSO HANDLES 16,000 @ 150 FPM OR 50,000 @ 8 FPM.

Drum will show 1500 ft or 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.

ALL UNITS CAN BE DEMONSTRATED RUNNING

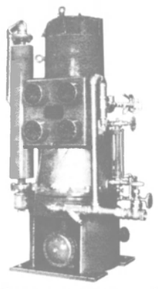
MODEL U1 UNIT WINCHES



7450 Lbs. @ 223 FPM. G.E. 50 HP Motor — 230 VDC. With controls and master switch.

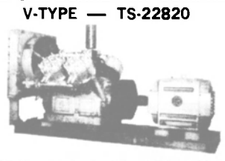
AIR COMPRESSORS

NASH MULTI-PHASE CONTROL AIR COMPRESSOR 50 CFM — 100 PSI



Model MV-673. Continuous pressure maintained by pressure control valve. Complete with motor, heat exchanger, separator, silencer, pressure control valve, water seal pressure control valve. CAPACITY: 50 CFM @ 100 PSI — 3500 RPM. Motor 27 HP — 440/3/60. Cooling water flow 35 GPM — relief valve set for 110 PSI. Vertical configuration. Pressure switch: on 80 PSIG — off 100 PSIG. Just removed from AT&T Vessel "Long Lines". Excellent condition.

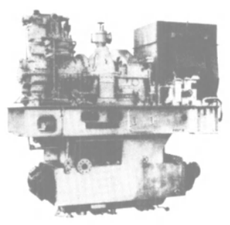
MARINE SHIPBOARD AIR COMPRESSOR V-TYPE — TS-22820



160 CFM @ 125 lbs — two stage 870 RPM — 8X8¼X8¾ — air cooled — with intercooler. Direct — connected air compressor #2261021. MOTOR: 50 HP 440/3/60 — mfg by U.S. Motor. AIR COMPRESSOR: Mfg by Air Pumps Ltd. Excellent condition — formerly used on AT&T Vessel "Long Lines" and removed only because they needed a larger unit. Complete with inter- and after-cooler. Very good condition.

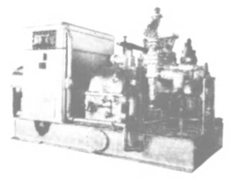
TURBO GENERATORS STEAM TURBINE — GEARS

1000 KW DELAVAL ALLIS-CHALMERS GEARED TURBO GENERATORS



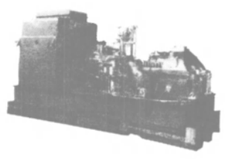
DeLaval turbine 1442 HP — 10019 RPM — class GJN — 9-stage — 1050 PSI — 950° TT. GEAR: 10019/12000. GENERATOR: Allis-Chalmers 1000 KW — 450/3/60/1200 — static excitation. Complete with condenser & switchgear optional. Send for brochure.

750 KW G.E. 7-STAGE TURBINE



450/3/60/1200 RPM — type FN3-FN24 — 10033 RPM. GEAR: 10033/1200 RPM. GENERATOR: type ATL — 6-pole — 450/3/60/1200 RPM — 0.80PF. EXCITER: 10KW 120 volts DC. Steam inlet 2½″ — 125% load — 2 hour normal steam condition. Normal steam condition 525 lbs/825°TT — 1 lb absolute back pressure at turbine exhaust flange. Steam flow 100% load 7870 lbs. OAL 11′ 4½″ — OAW 6′ ½″ — OAH 6′ 4″. Total weight 24,500 lbs.

MARINER CLASS TURBINE & GEAR ONLY



G.E. 700KW DRV618-MR73 — 10938/1200 RPM 850 PSI — 850°TT — GEI-90755 CONDENSING. Complete with rotor bearings, diaphragms, packing, etc. Gear complete — type S — 432 — Form B — 10938/1200 RPM.

TURBINE & GEAR ONLY — NON-CONDENSING

G.E. 700KW DRV318-MR1 — 10938/1200 RPM — 850 PSI — 850°TT — 24 PSIG exhaust pressure. Rotor, diaphragms, packings, bearings available.

AUXILIARY TURBO GENERATORS ROTORS ETC.

- **400KW DELAVAL ROTOR — 7-STAGE — CLASS CD — 5910 RPM**

835 lb W.P. — 840°TT — ex-Esso: Gloucester — Dallas Class — some Beth Sparrows Point & Quincy vessels, & Newport News Hulls 499-504 — in Book 820.

- **750KW DELAVAL ROTOR — 7-STAGE — CLASS G.J.**

9823 — 585/865# steam pressure

- **GEARS**

Class KD — 9283/1200 — ex-City Service "Alton Jones" type vessels

GE ROTOR

NEW

750 KW

Type FN-3-FN24 — 7-stage — 10033 RPM

WESTINGHOUSE

NEW

1250 KW

540# — 825°TT — 8050 RPM

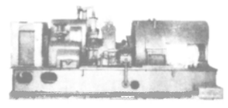
- **FOR G.E. T2 VESSELS**

G.E. DORV-325M — 5654 RPM — T2 tanker

- **WESTINGHOUSE 538KW**

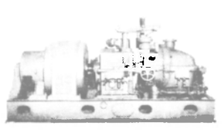
5010 RPM — T2 vessel

TURBINE & GEAR ONLY



New DeLaval type H.D. Turbine — #245204 — gear type KDC — 730 HP — 440# — 740°TT — 9977 RPM — with reduction gear output 1200 RPM. Turbine serial #245204.

G.E. 300KW TURBO GENERATOR & GEAR



G.E. 300KW generator & 40KW D.C. exciter — 450/3/60/1200 RPM — ex USN D.E. vessel. TURBINE: DORV-325N — 4873 RPM — 400# — 50°F superheat.

300KW WESTINGHOUSE — LOW PRESSURE TURBINE & GEAR ONLY

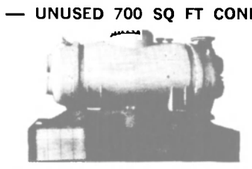
Condensing or non-condensing designed for 300KW—5286 RPM/1200 RPM on gear. CAPACITY: 300KW Normal 250 psi — 0°superheat — 25″ vacuum 180KW — 250 psi — 0°superheat — 3 psi back pressure 300KW — 200 psi — 0°superheat — 25″ vacuum. Steam/hour 6463 lbs — 100% load — steam/KW hr. — 20.88.

TURBO GENERATOR SET NEW — 200KW A.C. — 40KW D.C.

Ex USN — turbine type DN — 5-stage — 10012 RPM. GEAR: s-155 — single hellcal. GENERATOR: 200KW — 450/3/60/1200 RPM. Steam conditions: 540# — superheat 197°/208°.

MISCELLANEOUS

2 NEW — UNUSED 700 SQ FT CONDENSERS



Mfg by American Locomotive Works. 700 sq ft — 2-pass — gunmetal waterbox & return head. ⅝″ tubes — 0.049″ (18 BWG) — cupronicel 70-30 — 100″ effective length — 476 tubes. Located San Pedro, Calif. With hot well — 20″ Center steam inlet — 9″ inlet & outlet. Shell 30 lbs/head 30 lbs.

$18.1-Million Dredging Contract Awarded To T.L. James & Company

A contract to enlarge Bayou Chene and the Avoca Island Cutoff channel has been awarded to T.L. James & Company, Inc. of Ruston, La., by the U.S. Army Corps of Engineers. Col. **Thomas A. Sands,** New Orleans District Engineer, noted in making the award that the work will enable shipyards at Morgan City to more easily move huge mobile offshore oil rigs into the Gulf.

The $18.1-million contract calls for a 22-foot-deep, 400-foot-wide channel from near the junction of Bayous Chene and Black and the Gulf Intracoastal Waterway southwest through Bayou Chene and the Avoca Island Cutoff to the Lower Atchafalaya River near its mouth.

More than 21,000,000 cubic yards of material will be removed by two hydraulic cutterhead dredges working simultaneously. In the disposal area on Avoca Island opposite Bayou Penchant, the material will be used to create new marshland, with gaps left between the disposal mounds to create a waterfowl habitat.

The upper reaches of the project in Bayous Boeuf and Black, and the section of the Intracoastal Waterway between the two, have already been completed, as has the lower reach in Atchafalaya.

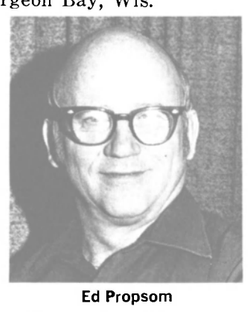
T.L. James Company was the apparent low bidder in a field of three. Under contract terms, it has 22 months to complete the work. The construction is being done under the Congressionally authorized Atchafalaya River and Bayous Chene, Boeuf, and Black Project.

Hydrotronics Awarded $3-Million Navy Contract For Engineering Services

Hydrotronics, Incorporated, McLean, Va., is being awarded a $3,054,002 cost plus fixed fee, indefinite quantity contract for acquisition of engineering and technical services in support of the TUBA Submarine Acoustic Equipment Project. Work will be performed in Bethesda, Md. The Naval Regional Contracting Office, Washington Navy Yard, Washington, D.C., is the contracting activity. (N00600-81-D-E093)

Propsom Promoted To Vice President-Operations At Peterson Builders

Several organizational changes were recently announced by **Ellsworth Peterson,** president of Peterson Builders, Inc., located in Sturgeon Bay, Wis.



Ed Propsom

Ed Propsom has been promoted to vice president of operations. He joined PBI in 1942, and with the execption of a few years in the Marine Corps during World War II, has been active in all phases of the shipbuilding industry. Mr. **Propsom** worked his way up to a supervisory position in the early 50s, and was promoted to manager of plant operations in January of 1980.

Additional organizational changes include the promotions of **Ken Schneider** to hull superintendent, **Pat Daul** to night superintendent, and **Bob Nelson** to assistant purchasing agent. In a related move, **Doug Washburn** has been hired as director of overseas marketing and sales.

Mr. **Peterson** stated that "These new organizational changes have been made with the desire on management's part to improve overall company operations in all areas of the organization. With the extensive growth of the company over the past several years, changes have been necessitated in order to keep pace with increased production needs."

Syrdahl Promoted To New Sales Position For Texaco Limited

Per J. Syrdahl has been appointed assistant general manager-administration, International Marine Sales-Europe, for Texaco Limited, it was announced by **Kenneth F. Murchison,** general manager in charge of Texaco Inc.'s International Marine Sales Department. In his new assignment, Mr. **Syrdahl** will be located in London.

Mr. **Syrdahl** joined a Texaco company at Brussels, Belgium in 1970 as a staff assistant. Subsequently, he held various marketing positions with Texaco companies in Puerto Rico, Angola, and Portugal. He was named manager of Texaco Portuguesa de Petroleos Lda. in 1977. In 1978, he was appointed coordinator-market development for the Petroleum Products Department-Europe of Texaco Inc. at Harrison, N.Y. He was appointed marketing manager-Eastern Hemisphere in the International Marine Sales Department at Harrison in 1979.

Rauma-Repola To Build Two RO/RO Vessels For Finncarriers

Rauma-Repola's Rauma Shipyard in Finland has entered into a contract with Finland Steamship Company and Merivienti OY of Helsinki for construction of two 12,000-dwt, RO/RO cargo vessels. The ships will enter regular service between Finland and the United Kingdom in 1982. This service is a joint operation between Finland Steamship and Finnlines Ltd., and is marketed by their jointly owned Finncarriers.

Until now, sailings to and from the U.K. from Finland have been provided by much smaller ships. Besides being the largest of their type on this trade route, the 12,000-dwt carriers will be the biggest RO/RO vessels ever built by Rauma-Repola.

Classification will be to Lloyd's Register of Shipping +100 A1, +LMC, with the machinery automated to comply with UMS requirements. The vessels also will meet the Finnish Ice Class 1A Super standards. The 12,000 deadweight is on the maximum draft of 8.3 meters (27.23 feet), although the normal trading deadweight will be 8,000 tons at a draft of 7.2 meters (23.62 feet).

The ships will have an overall length of 155 meters, beam of 25 meters, and depth to shelter deck of 22.2 meters (508.5 by 82 by 72.8 feet).

Two main engines coupled through reduction gearing to one controllable-pitch propeller will permit running on either one or two engines to optimize speed for either urgent or less urgent transport requirements. Propulsion machinery comprises a pair of Wartsila/S.E.M.T. Pielstick diesels, each developing 8,850 bhp (6,600 kw) maximum continuous rating at 520 rpm. They will provide a speed of 18.5 knots at a deadweight of 8,000 tons and engine output of 74 percent of the mcr. With the ship running on one engine at 80 percent of mcr the speed will be 15 knots.

The cargo holds on the main deck and lower hold have a total area of about 3,700 square meters, a height of 6.3 meters, and a lane length of 1,200 meters. They are strengthened for an even load of 5 tons per square meter, a fork lift truck of 60/50 tons, and trailer weight of 50 tons per 40-foot unit.

Covered cargo space above upper deck is designed for RO/RO cargoes, and has a total area of 2,700 square meters, height of 4.5 meters, and lane length of 900 meters. This deck is strengthened for an even load of 2 tons per square meter.

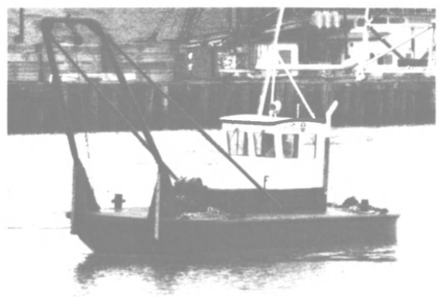
Fully air-conditioned accommodations are arranged in spacious single cabins away from noise and vibrations. Each cabin is provided with toilet / shower unit. There are also larger cabins for families, and double cabins for 12 drivers.

Two sauna baths are provided, as well as a swimming pool, gymnasium, and hobby room.

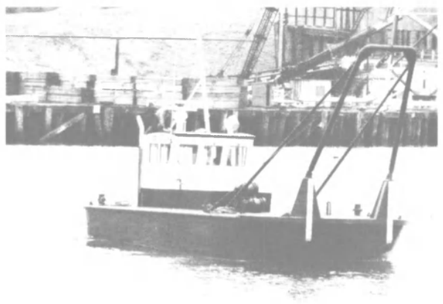
Mid-Coast Marine Shipyard Builds Two Dredge Tenders For Mexican Company

Mid-Coast Marine, Inc. of Coos Bay, Ore., recently completed two dredge tenders for Roca Fosforica Mexicana, S.A. de C.V., for use in Baja California, Mexico. A 30-foot tender with a 12-foot beam, and a 40-foot tender with a beam of 15 feet 6 inches were delivered to the owner by Carter & Desmares, Inc. of Sausilito, Calif.

Both boats are of welded steel construction, with scantlings exceeding normal specifications for vessels of this size. The 30-foot boat is a single-screw vessel powered by one GM Detroit Diesel model 4-71N engine with a 28-inch Coolidge propeller. The 40-foot tender is a twin-screw boat powered by two Detroit Diesel 6-71N engines with 36-inch, heavy-duty Coolidge propellers.



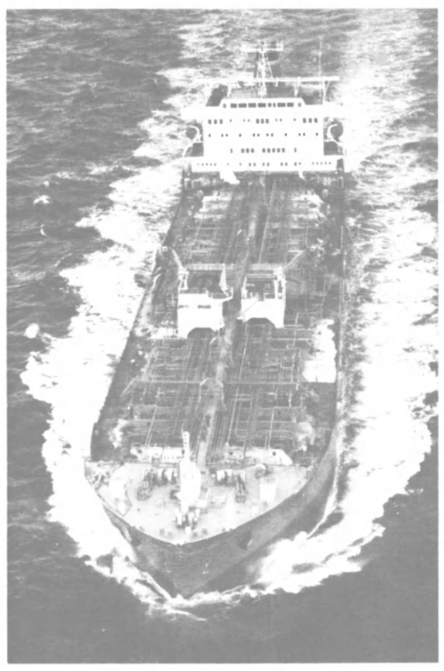
The 30-foot boat is powered by one Detroit Diesel engine. Both vessels will be used in Baja California.



Twin-screw tender built by Mid-Coast Marine of Coos Bay, Ore., is powered by two Detroit Diesel engines.

A hydraulic system directly driven from the main propulsion engines provides power for two Pullmaster M7 winches rigged to an adjustable A-frame on each boat for hoist and haul-back operations. Push knees, quarter bitts, and tow bitts complete the deck outfitting.

Hydraulic steering system, Morse controls, Wagner rudder angle indicator, and 12-volt dc system round out the operations package.



CHEMICAL TANKER DELIVERED—Kockums Shipyard of Malmo, Sweden, has delivered the world's largest and most technically advanced chemical tanker, the 38,000-dwt Johnson Chemstar, to Rederi AB Nordstjernan, Stockholm. Its sister ship, the Johnson Chemsun, will be delivered to Rederi later this year. The diesel-powered vessels were built with 28 large stainless-steel center tanks and double bottoms for ballast. Each ship contains a total of 38 separate tanks with self-piping and pumping systems. The two chemical tankers were the first built by Kockums, and will be affreighted and operated with two new ships being constructed at Bergens Mek. Verksteder A/S in Norway for J.O. Odfjell A/S, Norway. (See Cover Story, October 15, 1980, issue of MARITIME REPORTER and Engineering News.)

We Build More Than A Great Tug

At McDermott Shipyards we also work for all facets of the inland and offshore industry. Bay-type and posted inland drilling barges, jack-ups, and packaged self-contained drilling rigs are all part of our expertise.

Our complete construction, repair and drydocking facilities have put us in the vanguard of shipyards. Prime locations like Morgan City and New Iberia, Louisiana, and Guifport, Mississippi, provide economical, sophisticated underroof construction with direct access to the waters of the world. At McDermott Shipyards, we do more than build a great tug.

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- Posted Drill Rigs
- Jack-Up Rigs
- Packaged Drill Rigs for Offshore Platforms

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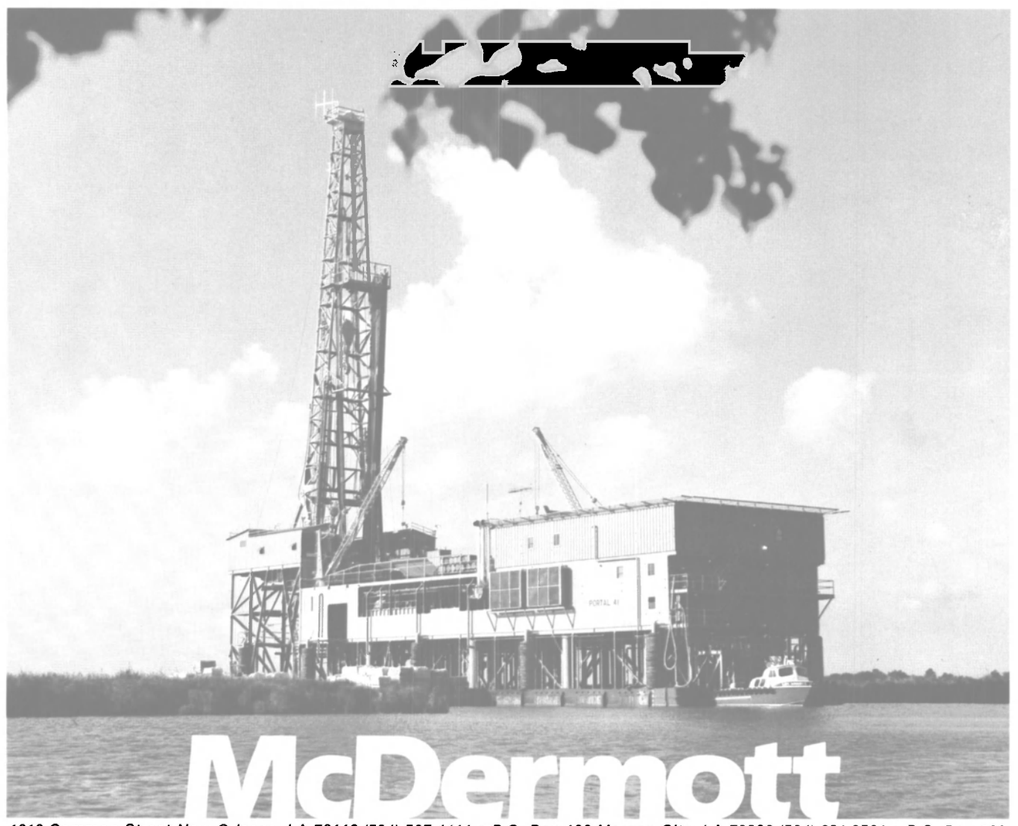
a division of
McDermott Incorporated



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Long Beach/L.A. ASNE Meeting Hears Discussion On Co-generation Of Energy

The latest monthly meeting of the Long Beach-Greater Los Angeles Section of the American Society of Naval Engineers was held at the Officers Club of the Armed Forces Reserve Center at Los Alamitos.

In the absence of Section chairman **J.R. (Bob) Malone**, Capt. **J.A. Gildea**, USN, vice chairman, presided. He turned the meeting over to **Carl E. Erickson**, program chairman, for the technical program.

The speaker was Dr. **Eugene Cooper** from the U.S. Naval Civil Engineering Laboratory at Port Hueneme, who discussed the Navy's activities in the area of Co-generation.

Dr. **Cooper** began his talk by pointing out that the U.S. Energy Engineering program is rapidly expanding from a current R.D.T. &E. effort that is funded at the $7-million level to one that will more than double that amount in the next several years. It is exploring all aspects of renewable energy sources as well as development of flexible fuels with the overall aim of improving utilization and conserving both electrical and thermal energy. Since heat and work are convertible and since the cost of energy is rising faster than the conservation efforts can reduce consumption, various means are being explored to resolve the energy unbalance.

One such area is that of Co-generation, which may also be identified as "total energy" or "selective energy" systems. He pointed out that many facilities require both electrical and thermal energy and that by careful analysis and generally by a relatively small amount of modification to such existing power plants, the prime energy is utilized to produce the electrical energy requirement and the "waste" heat recovered to supply the thermal energy requirements. In some cases this waste heat is sufficient to generate additional electric power as well as to supply the thermal energy needs. The process and principles are applicable to all of the generating methods: steam plants, diesel engine generating plants, gas turbine generating plants, or combinations of these plant systems where the prime conversion is to electrical energy, but where the exhaust heat is recovered in so-called "waste heat boilers" and utilized for various processes requiring thermal energy.

Dr. **Cooper** illustrated his presentation with numerous slides of physical installations as well as diagrams and graphs of the application of this interesting and valuable contribution to the overall effort to reduce our dependency on outside sources of fuels.

At recent Long Beach/L.A. ASNE meeting, Section vice chairman **J.A. Gildea** (right) presented certificate of appreciation to Dr. **Eugene Cooper**, speaker, of U.S. Naval Civil Engineering Laboratory at Port Hueneme.

Metritape Introduces New Dry Tank Detector —Literature Available

A wet/dry state detector system that gives positive indication of tank empty or tank full condition has just been introduced by Metritape, Inc., Concord, Mass. The new Metripoint liquid level detector was designed as an adjunct to the resistive Metritape Level/Temp sensor which, when suspended from tank top to tank bottom, provides continuous level and temperature measurement.

Optical in principle, the Metripoint detector has no moving parts, is rugged for use with COW jets, and intrinsically safe (using zener barrier isolators) for use in hazardous/explosive environments. The detector utilizes an infrared LED source and phototransistor light detector mounted in a compartmented CPVC tube with a prism tip. When the prism tip is dry, reflection within the prism directs optical energy from the LED source to the phototransistor. Immersion of the prism tip in liquid causes light to escape and not to actuate the light detector.

The Metripoint detector is positioned on the channel of the Metritape sensor at any preselected tank level, and can be cleaned or repositioned without entry into the tank. Centralized, line-powered instrumentation indicates wet or dry tank bottom condition in bright LED lights (red for wet, green for dry). For critical tank top wet or dry condition, flashing light and audible alarm are employed.

For more information and free literature about Metritape, Inc.'s new Metripoint liquid level detector,

Write **16** on Reader Service Card

C-E Boilers Will Power Coal-Fired Ships Under Construction In Italy

Coal-fired steamships will be returning to the high seas, powered by Combustion Engineering marine boilers. C-E's licensee in Italy, Franco Tosi S.p.A., has been awarded the world's first contract in 20 years for two coal-fired boilers by Italcantieri S.p.A., a shipyard in Monfalcone, Italy.

The boilers will power two 75,750-dwt bulk carriers being built for Bulkships, Ltd. of Australia, scheduled to be delivered in late 1982 and early 1983. C-E will perform all design engineering, and Franco Tosi will manufacture the boilers.

C-E has modified an existing proven unit for the coal-fired marine market. Its spreader-stoker-fired V2M9S boiler will develop 19,000 shaft horsepower. Total steam flow will be 137,812 pounds/hour at the 100 percent normal rating. Steam temperature will be 915 F, and pressure at the superheater outlet will be 870 psig. These units are designed to burn Callide coal.

The two bulkers ordered by Bulkships will be used to carry bauxite from Weipa in north Queensland to Gladstone, some 1,200 miles away in central Queensland, Australia. They will be long-term chartered to Queensland Alumina Ltd.

Coal firing aboard ships was essentially phased out by the end of World War II. One area of exception was the Great Lakes, where vessels have greater longevity because of the noncorrossive environment, and have easy access to coal. Vessels powered by C-E coal-fired boilers are still in active service on the Great Lakes.

Electric Boat Awarded $38-Million Navy Contract For Trident Material

General Dynamics Corporation, Electric Boat Division, Groton, Conn., has been awarded a $37,980,000 modification to a previously awarded contract for long lead time material for Trident Hull No. 10. The Naval Sea Systems Command is the contracting activity. (N00024-78-C-2453)

Church Joins Designers & Planners As Project Engineering Director

James W. Church has joined Designers & Planners, Inc. as director of project engineering. The announcement was made recently by **Ferd Serim**, president of the company. Designers & Planners is a firm of naval architects and marine engineering with offices in New York, Washington, and Galveston.

James W. Church

In his new capacity, Mr. **Church** will be responsible for management of shipboard system programs, direction of major ship designs, coordination of engineers support to design teams, and direction of independent design review teams. He reports to **Wolfgang Reuter**, executive vice president.

Mr. **Church** joins Designers & Planners after his retirement from the Naval Sea Systems Command where he completed the last five years of a distinguished naval engineering career as ship design manager responsible for the direction of the designs of naval combatants and auxiliaries. Previously, he served as the deputy director of U.S. Naval Engineering staff in South Vietnam, as a supervisory naval architect in the Naval Sea Systems Command, and at the David Taylor Model Basin where he conducted full-scale trials, model tests, and computer simulations to assess the structural seaworthiness and controllability of naval suface ships and submarines.

Petromar Asks Title XI On Six Tug/Supply Boats To Cost $25.7 Million

The Maritime Administration has approved in principle an application by Petromar Marine, Ltd., Rockport, Texas, for a Title XI guarantee to aid in financing the construction of six ocean-going tug/supply vessels. Petromar Marine is a limited partnership, with Petromar Corporation of the same address acting as the general partner.

Halter Marine, Inc., New Orleans, is the proposed builder, and anticipates delivery of the first of the 185-foot-long, diesel-powered vessels by April 1981. The vessels can be operated worldwide. However, Petromar plans to use them to transport passengers and light cargo to drilling sites within 35 miles of Rockport.

The Title XI guarantee will cover up to a combined total of $22,469,000, or 87½ percent of the $25,679,958 estimated cost for all six vessels.

Hoffert Fuel Oil/Water Emulsion System Effects Boiler Fuel Savings

Hoffert Manufacturing Company of Jacksonville, Fla., recently reported it has successfully produced, without the aid of Federal energy grants, a perfected fuel oil/water emulsion system called Fire-Brite. A Fire-Brite installation aboard a ship, according to the Hoffert announcement, has effected a dramatic saving of one barrel of fuel oil an hour or 24 barrels saved per day, resulting in an economic gain of over $500 daily.

In a local shoreside installation, Hoffert reports a direct saving of 3.6 percent has been made in fuel. In addition, there has been reduced emissions to the atmosphere. Pollution control and energy savings has been the result of intensive research in the fuel oil/water emulsion field, according to **Bill Patterson,** vice president of the newly established Hoffert Manufacturing Company, a subsidiary of Hoffert Marine Inc.

Mr. Patterson brought out that excess air is detrimental, not only to efficiency by carrying the heat away from the boiler, but the unnecessary oxygen in this air is a source of oxidation for the formation of sulfuric and nitrous oxides.

"Not only is the Fire-Brite fuel oil/water emulsion system dramatic in its savings, but it is dramatic in the quantitative reduction of sulfur oxides released to the atmosphere because the secondary atomization allows the boiler to be operated with minimum excess air. As the emulsified fuel burns more completely, carbon particulates released to the atmosphere are also diminished," **Mr. Patterson** said. He added that the boiler fireside remains clean, thereby adding to savings in boiler maintenance and keeping top efficiency.

The Fire-Brite system utilizes a small percentage of water varying from 3 to 10 percent being homogenized in the fuel. This quantity of water takes the form of microscopic bubbles uniformly sized to 2 to 3 microns with each of the bubbles enveloped by a film of oil. When the emulsified fuel reaches the boiler furnace, each of the water bubbles bursts into steam, shattering its attendant oil envelope into a finely atomized mist that presents much more oil surface to the flame. It is this secondary atomization that allows the decrease of the percentage of fuel consumption upon the boiler design.

Dr. **Vito Agosta,** noted international scholar and research scientist, is the designer of the emulsor used in the Fire-Brite. Dr. **Agosta** is professor of mechanical and aerospace engineering at the Polytechnic Institute of New York. Hoffert Manufacturing acquired the patent in March of this year.

For further information and free literature on the Fire-Brite system from Hoffert Manufacturing,
Write 18 on Reader Service Card

Transamerica Delaval Will Study Oil-Water Fuel Mixtures In Diesels

The Maritime Administration has entered into an $860,000 cost-shared research contract with the Engine and Compressor Division of Transamerica Delaval Inc., Oakland, Calif., to measure the performance levels of emulsified fuel oil-water mixtures used to power diesel engines. MarAd's share will be $360,000. Transamerica Delaval will bear the remaining costs of the project.

Experiments conducted aboard the U.S.-flag tug Seabulk Challenger in 1978 revealed that an emulsion of fuel oil and water reduced fuel consumption, emissions, and deposits on components in diesel engines, compared to the burning of diesel oil by itself.

Transamerica Delaval's experiments will use emulsions composed of water and heavy blends of marine fuels to determine if emulsification would permit those fuels to burn more efficiently in medium-speed diesel engines. The study also will examine the effect of varying percentages of water and engine settings on engine performance. The proposed test program will cover one month of emulsification system engineering study followed by approximately 900 hours of engine testing using a six-cylinder, DRS-46, medium-speed diesel engine.

Weber Marine Requests Title XI On Five Vessels At Total Cost Of $1.9 Million

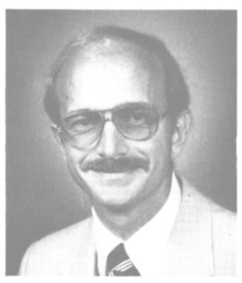
Weber Marine, Inc., P.O. Box 40, Louisiana Highway 44, Burnside, La., has applied to the Maritime Administration for a Title XI guarantee to aid in financing one towboat, two deck barges, and two crane boats.

Dravo Steelship Corp., Pine Bluff, Ark., delivered the 1,000-horsepower towboat in August, and expects to deliver both 60-foot-long crane boats by January 1981. Both deck barges were built by Conrad Industries, Inc., Morgan City, La., earlier this year.

Weber Marine plans to operate the vessels on the Mississippi River between New Orleans and Baton Rouge, La.

If approved, the Title XI guarantee would cover $1,397,051 of the vessels' $1,859,422 combined actual cost — 75 percent of the cost of the towboat and the crane boats, plus 87½ percent of the cost of the barges.

Donald Jett Named VP-Contracts And Administration At CDI

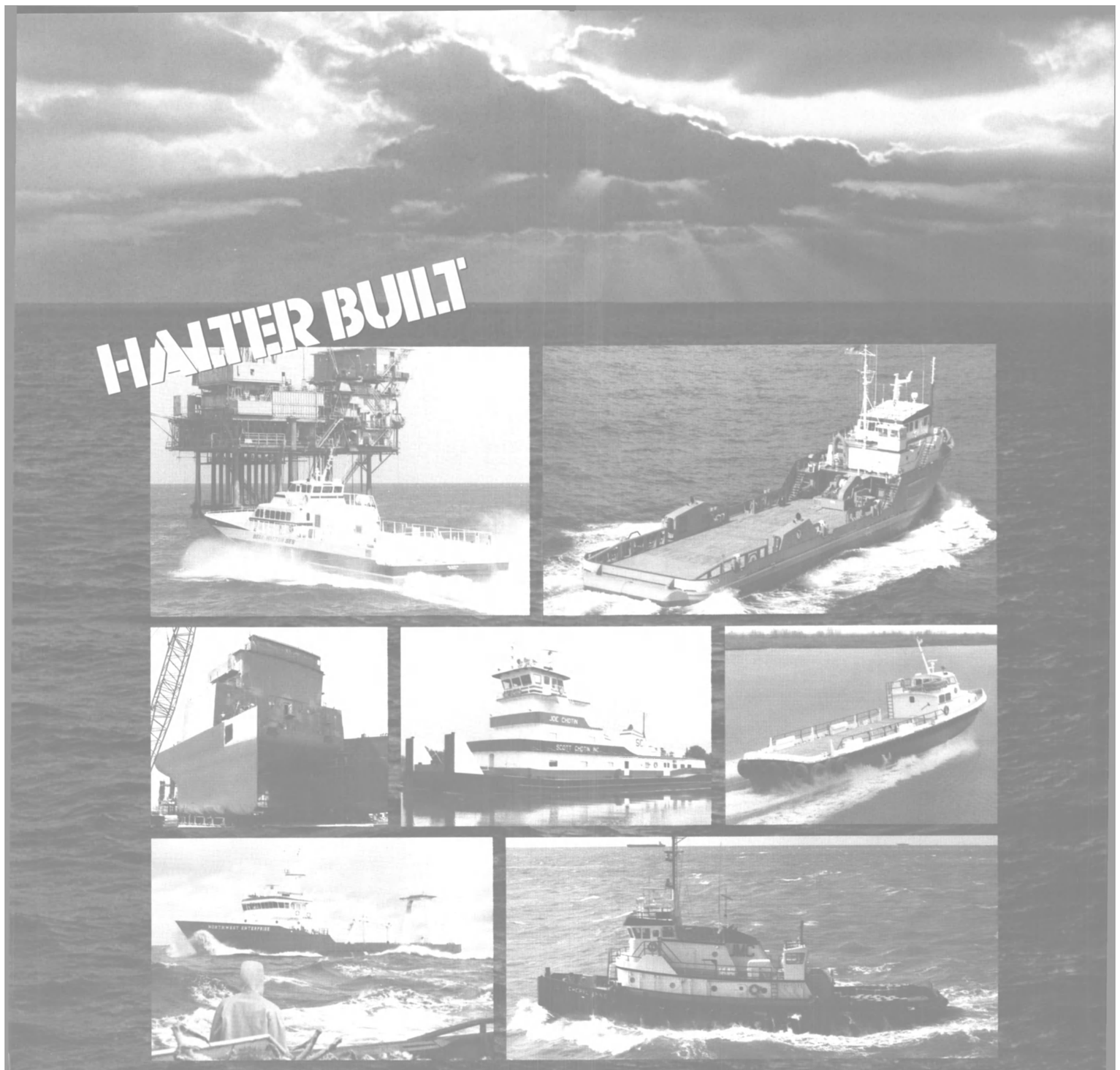


Donald W. Jett

Paul I. Beining, president of CDI Marine Company of Jacksonville, Fla., has announced the appointment of **Donald W. Jett** as vice president-contracts and administration. He joined the company in 1977 as chief engineer, and has been involved significantly in the overall operation of the firm. His previous experience in the U.S. Navy ship design field and his more than three years in CDI Marine management will bring important contributions to the company's operations and growth, **Mr. Beining** said.

CDI Marine Company, a major division of CDI Corporation of Philadelphia, is one of the nation's biggest suppliers of naval architectural and marine engineering services to commercial and naval shipyards and to their supporting industries. Its headquarters in Jacksonville is the hub of a network of permanently staffed design offices located in the Philadelphia area (Voorhees, N.J.); Norfolk area (Hampton and Chesapeake, Va.); San Diego, Boston, and Washington; Groton, Conn.; Charleston, S.C.; and Pascagoula, Miss.

Write **202** on Reader Service Card ►



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MarAd And EPA Propose Incinerator Ships For Hazardous Wastes

The Maritime Administration and the U.S. Environmental Protection Agency have announced an interagency program to develop the nation's capacity to destroy hazardous wastes at sea aboard specially equipped, high-temperature incinerator ships. In a report released recently, the agencies jointly called for the accelerated development of incinerator ships, and outlined the process by which the Federal Government can encourage the development of a U.S.-flag, commercial incinerator ship fleet.

The *Report of the Interagency Ad Hoc Work Group For the Chemical Waste Incinerator Ship Program* was prepared by a group established in February this year. In addition to MarAd and EPA, the U.S. Coast Guard and the National Bureau of Standards participated. A 1978 study indicated that at-sea incineration would be less than half as costly as land-based incineration.

EPA and MarAd have established an Interagency Review Board to coordinate and expedite all Federal Government activities related to legislation, funding, further environmental evaluation, design, construction, permits, and operation of U.S.-flag chemical waste incinerator ships.

The report is available in limited quantities from MarAd's Office of Public Affairs and from EPA's Press Office.

New Fan Coil Units Offered By Adrick—Literature Available

New marine air-conditioning fan coil units, in either chilled water or direct expansion cooling modes, are now available from Adrick Cooling Corporation. Models can be supplied in 200-, 300-, 400-, and 600-cfm capacities.

The new units feature three-speed motors and boxed controls, with a three-speed button switch control. Baked-on grey enamel cabinets (of 18 USSG steel) are equipped with a double-deflection grill, and are insulated with a ½-inch fiberglass. Fans are statically and dynamically balanced. Electrical supply required is 115-volt, single-phase, 60-cycle ac.

Coils are available with copper tubes and aluminum fins. All copper tubes and fins are "marinized" coils—three or four rows deep, as required. The units are equipped with a permanent metal cleanable filter and hot-dipped galvanized drain pans with double drain connections. Fittings for union connections and an automatic-vent bleed valve are also supplied. Units are furnished with factory-assembled accessories, shipped as a separate unit: unions to match cooling coil unions and sweated fittings to connect to piping for easy field assembly. A balancing valve, two shut-off valves, a drain plug, three-way solenoid valve, and return air thermostat are prepiped and/or wired.

In addition to commercial marine coil units, Adrick has available U.S. Navy Standard type fan coil with sizes 21 through 25 in accordance with MIL-A-23798B (Ships).

For full free information on Adrick Cooling Corporation's new marine air-conditioning fan coil units,

Write **19** on Reader Service Card

Ingalls Gets $185-Million Navy Contract For Aegis Advance Procurement

Ingalls Shipbuilding division of Litton Industries, Pascagoula, Miss., recently was awarded a $185-million contract by the Naval Sea Systems Command for advance procurement of materials and equipment to be used in construction of Aegis (CG-47) guided-missile cruisers.

The Aegis cruiser, a medium-sized ship built on a destroyer hull, will be powered by a gas turbine power plant. The vessel's mission will be to defend aircraft carrier task forces against sea, air, and submarine attacks.

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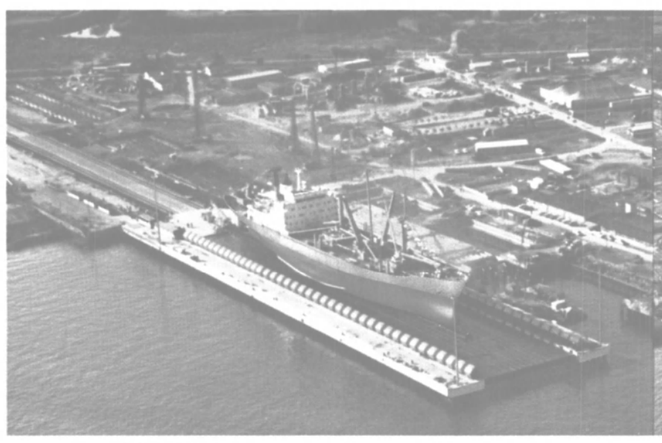
◄ Write **129** on Reader Service Card

We are proud to announce
the inauguration of the

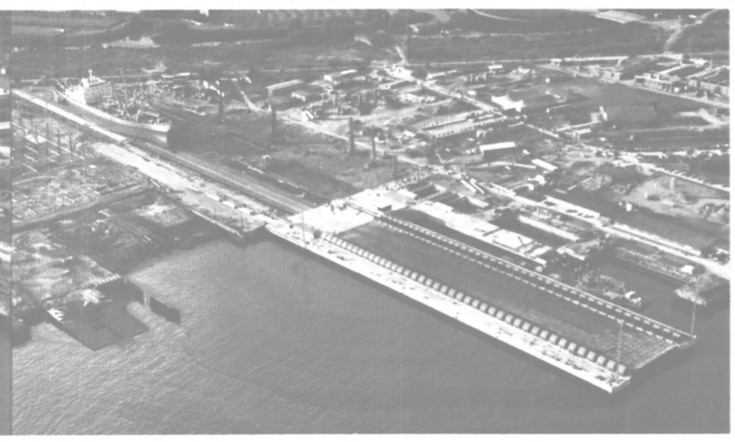
WORLD'S LARGEST SHIPLIFT

Above: Artist rendering showing completed shipyard.
Left: Contraalmirante (RE) D. Juan Luis Poggi, President of Tandanor S.A., in the Syncrolift® Control Room.

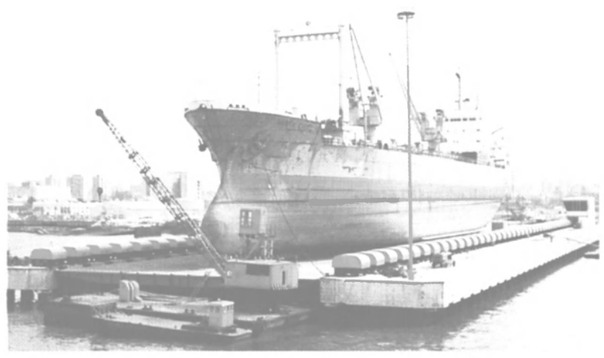
A Syncrolift® 184 meters (604 feet) long, by 32 meters (105 feet) wide, completed only 18 months after contract signing at the shipyard of Tandanor, Buenos Aires, Argentina, for vessels up to 40,000 dead-weight tons.



25,000 DWT vessel on platform awaiting transfer.



Vessel 30 minutes later in extreme rear transfer area.



Water level view of 25,000 DWT vessel on platform.

SYNCROLIFT® UPDATE:

- There are now 138 Syncrolifts® in 57 countries of the world.
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Tenn-Tom Towing Asks Title XI On Three Vessels To Cost $2.5 Million

Tenn-Tom Towing, Inc., Fairhope, Ala., has applied to the Maritime Administration for a Title XI guarantee to aid in financing the construction of two steel oil barges and one twin-screw towboat.

The 264-foot-long barges will be built by Nashville Bridge Company, Nashville, Tenn. Rayco Shipbuilders & Repairs, Inc., Bourg, La., will build the 1,350-bhp diesel towboat. Tenn-Tom Towing expects all three vessels to be ready for operation along the U.S. inland waterways by April 1981.

If approved, the Title XI guarantee will cover up to 75 percent of the cost of the towboat and 87½ percent of the cost of the barges, a combined total of $2,088,000 of the vessels' $2,499,800 estimated actual cost.

Sperry Gets $56-Million Navy Contract For Trident Equipment

Sperry Corporation, Sperry Division, Great Neck, N.Y., has been awarded a $56,369,000 negotiated fixed price incentive contract for fabrication, testing and delivering non-inertial equipment and components in the Fleet Ballistic Missile Submarine navigation subsystem for the FY 81 Trident production program. The Naval Sea Systems Command is the contracting activity. (N00024-81-C-4009)

Brochure Available On National Supply's Big Torque Converters

Big job torque converters for oilfield and industrial applications are described in a new six-page brochure from National Supply Company. The torque converters are designed for large prime movers of up to 2,000 hp, says the piece, and for tasks involving high load shocks. Typical applications listed by the brochure include drawworks and pump drives in the oilfield, and cranes, aggregate crushers, power shovels, and metal shredders among industrial applications.

A general section emphasizes benefits in extended service and reduced maintenance possible from converters by allowing the prime mover to operate at constant peak efficiency and absorb loads to cushion the entire drive train. The brochure provides drawings showing various mounting and cooling configurations available. Performance charts help selection from four models and 16 sizes available to the converter that best meets specific job requirements. Design features that promote durability and simplify maintenance are highlighted.

For more information and free literature on National Supply's torque converters,

Write 20 on Reader Service Card

R.E. Claypoole Named President Of GATX Terminals Corporation

Robert E. Claypoole has been elected president of GATX Terminals Corporation, a subsidiary of GATX Corporation, it was announced by **F.W. Theis**, president of GATX.

Mr. **Claypoole** joined GATX Terminals in 1961 and became plant manager of the Carteret, N.J., terminal in 1966. In 1968, he was appointed director of GATX Terminals' Antwerp, Belgium, facility. He returned to Chicago in 1970 as assistant manager-operations, and was elected vice president-operations in 1978.

◄ Write 177 on Reader Service Card

R.W. Thorpe Joins McMullen Associates As Vice President

John J. McMullen Associates, Inc., naval architects, marine engineers, and consultants of New York, has announced that **Richard W. Thorpe Jr.** has joined the company as vice president-corporate planning and development. He will report directly to **George A. Sawyer,** president of the company. Mr. **Thorpe** will be based in JJMA's Arlington, Va., office, and in addition to his primary duties, will be responsible for government affairs.

Richard W. Thorpe Jr.

Prior to joining JJMA, Mr. **Thorpe** served as assistant to the vice president of marketing and marine marketing manager for Bath Iron Works Corporation, where he had been employed for more than 15 years. His experience included responsibilities for marketing Navy and commercial ship construction, ship overhaul, and repair contracts. It also included the management of contract definition and research programs for both Navy and commercial contracts such as destroyer design, construction and modernization, commercial ship design and evaluation, and shipbuilding research as well as long-range business planning responsibilities for the shipyard. In his new position, Mr. **Thorpe** will manage JJMA's corporate planning, and will be responsible for liaison between JJMA and the various government agencies to which JJMA provides engineering and consulting services.

Mr. **Thorpe** is a graduate of Webb Institute of Naval Architecture and the Harvard Graduate School of Business Administration. Prior to his service at Bath Iron Works Corporation, he held various management and engineering positions with the South Portland Engineering Company, and the Bethlehem Steel Company in its nuclear ship design and construction programs.

MarAd Reorganizes Its Marketing, Domestic Shipping, Port Programs

The Maritime Administration has consolidated its marketing, domestic shipping, and port and intermodal programs, and restructured the management of its research and development activities.

This reorganization transfers responsibility for the Offices of Market Development and Port and Intermodal Development from the assistant administrator for commercial development to a newly created assistant administrator for marketing and domestic enterprise. In addition, the Divisions of Domestic Ocean Shipping and Inland Waterways have been transferred from the Office of Ship Operations and regrouped into an Office of Domestic Shipping under the direction of the new assistant administrator.

The assistant administrator for commercial development has been redesignated the assistant administrator for research and development, with the Offices of Advanced Ship Development, Advanced Ship Operations, and Maritime Technology reporting to this assistant administrator. Under this change, the National Maritime Research Center in Kings Point, N.Y., will report to the director, Office of Advanced Ship Operations.

Deputy Assistant Secretary **Bruce McAllister** has been designated acting assistant administrator for marketing and domestic enterprise, pending the appointment of a new assistant administrator. **James A. Higgins** has been named assistant administrator for research and development. **James G. Gross** will remain his deputy under the new title.

$16.7-Million Navy Contract For Nuclear Components Awarded To Westinghouse

Westinghouse Electric Corporation, Plant Apparatus Division, Wilkins Township, Pa., is being awarded a $16,663,000 modification to a previously awarded contract for Naval nuclear components. The Naval Sea Systems Command is the contracting activity. (N00024-74-C-5010)

Worthington's Multi-Stage Pumps Provide Flexibility —Literature Available

A line of multi-stage, donut-type pumps, called Multi-Line, from the Worthington Pump Division of the McGraw-Edison Company, is designed to provide high pressure at high efficiency on continuous service. They allow flexibility in service capabilities simply by changing the number of stages, or donuts, in the pump, and they require no routine maintenance, according to the manufacturer.

Worthington's Multi-Line pumps are ideal for a wide range of applications, including water and sewage treatment; they are also suitable for boiler feed, pressure boosting and high-pressure washing duties. They handle liquids with temperatures to a maximum of 212 F.

Multi-Line pumps are easily installed, can be mounted vertically or horizontally, and occupy a minimum space in either configuration. They offer no alignment problems, and are designed for quiet, continuous operation. Design advantages of Multi-Line pumps include in-line pipe connections, a unique thermal expansion compensator, standard TEFC motors, impeller and stage pieces in Noryl, and an all-metal pressure casing. In addition, they will accept rapid changes in liquid temperature without problem. Multi-Line capacities range to 130 gpm and heads to 800 feet. The pumps are offered in three sizes with substantial parts interchangeability among the three sizes.

For further information and a free, full-color descriptive bulletin about Worthington's Multi-Line pumps,
Write 21 on Reader Service Card

ITT Grinnell Introduces New Butterfly Valve— Literature Available

ITT Grinnell Valve Company, Inc. of Providence, R.I., recently introduced the Dyna-Lok high-performance butterfly valve. The new valve is designed to extend the range of conventional butterfly valves with shutoff capabilities of steel gate and ball valves.

Use of this product is intended to cover a broad range of industrial applications including chemical, petrochemical power, cryogenic, and marine. The use of this simple design allows the user the option of many service applications with no seal or configuration modifications. Quarter-turn operation of the valve allows ease of automation with many alternatives, and wafer design allows ease of installation, according to the manufacturer.

The valve design combines features in a single product that include truly bi-directional shutoff, flange faces free of screws or holes, heavy valve stems and disc pins, low friction bearings, a double offset disc to reduce seat wear, and many more. The linear CV characteristic of the Dyna-Lok valve makes it ideal for modulating/control applications providing a lower cost alternative to conventional control valves in larger sizes and in less severe applications.

The valve is initially offered in sizes 3-12 inches 150 and 300 ANSI, wafer and single flange patterns in a soft seated design. Valve materials available are carbon steel and stainless steel. Other materials are available on request. Sizes through 36 inches and 600 ANSI class will be available in 1981. Automated versions of the Dyna-Lok valve are available with complete instrumentation to suit our customer needs.

For a free four-color brochure on ITT Grinnell's Dyna-Lok series, Write 22 on Reader Service Card

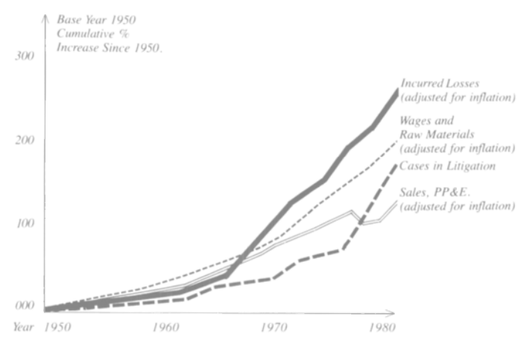
A word from BRI Coverage Corp., The Independent Insurance Broker, on understanding risk today:

Risk

Risk used to be sort of an educated guessing game. You relied on insurance to provide "adequate protection", paid a premium, and that was it.

Today, risk has to be calculated. To the letter. Reliance on insurance just won't suffice anymore. Because claims that were unheard of years ago are being brought forth every day and won. The number and variety of these claims are greater, and of course, the cost and settlement involved has also escalated geometrically.

No one can afford to be casual about risk anymore. The outrageous costs have shed a new light on risk. Particularly in the way that it's being handled. Management has begun to see risk for what it is – an important cost affecting the profitability of the company.



The acceleration in the growth of incurred losses is directly related to increases in exposure (sales, PP & E), cost of doing business (wages and raw materials), and a changing social climate (increase in the use of litigation). A change in any one of these factors will have a dramatic impact upon incurred losses.

——— Sales and value of PP & E – Growth in Sales and in valuation of PP and E represent changes in business activity which increase its risk of loss.

— — Cases in Litigation – Today's social environment has increased the likelihood that consumers, stockholders, government, competitors, suppliers etc. will bring legal action against a company. Changes in the number of cases in litigation (frequency) will impact risk of severe loss.

– – – – Wages and Raw Materials – The cost of doing business has increased substantially. This also has the effect of increasing the value of claims incurred.

——— Incurred Losses. The continued increase of the three variables, Wages and Raw Materials, Cases in Litigation and Sales, PP&E., result in the increase of Incurred Losses sustained by the company.

Survey Will Seek Ways To Increase Commerce At Great Lakes Ports

The marine consulting firm of McQuade-Cormany Associates, New York, will conduct a special trade and transportation survey on behalf of a group of labor, management, and state government officials striving to increase international commerce and shipping through Great Lakes ports and the St. Lawrence Seaway, it was announced recently. According to **F.X. McQuade** and **William Cormany,** their organization will explore the wide range of factors affecting both cargo flow and ocean vessel movement between the Midwest industrial heartland of the United States and North Europe and other overseas regions as one part of the trade promotion drive.

The study will include freight shipper needs, port capabilities, Seaway and pilotage tolls, competition from Canadian minibridge services, and U.S. Government policies that contribute to the decline in vessel services by American-flag ships at Great Lakes ports, among other issues, they said.

The report will be submitted to the broad-based group of labor officials, stevedore companies, state economic agencies, port authorities, customs brokers, agents, and other commerce-related interests involved in the program to stimulate shipping and trade servive in the Seaway-Lakes region.

It includes **Thomas W. Gleason,** president of the International Longshoremen's Association, AFL-CIO; **Patrick J. Sullivan,** secretary-treasurer of the ILA Great Lakes District; Senator **Don A. Moore,** chairman of the Illinois Commission for Economic Development; **C.N. Kritikos,** chairman of Ceres Terminals, Inc., and leaders of all major ports in the area, and many other individuals.

The McQuade-Cormany action will complement developments by area officials to reverse the decline in shipping in the Great Lakes port area. The promotion group has already held talks with U.S. and foreign ship operators, Federal Government officials, and commercial freight shippers in the effort to improve trade movement. These efforts will now be intensified by a variety of means including the pending trade survey, it was indicated.

Mr. McQuade and Mr. **Cormany** said that major emphasis in their effort will be directed to showing that vast cargo shipping potential exists in the Great Lakes region involving both liner and bulk cargo trade. The study, they said, will push for American-flag ships and foreign vessels to carry such freight to overseas areas directly from inland ports rather than overland transshipment to coastal areas as frequently occurs.

Panos T. Tsolainos Appointed President Of Rivergulf Agency

Rivergulf Agency, Inc. of New Orleans, agents and brokers for the marine trade, announced they have appointed **Panos T. Tsolainos** as president. A spokesman for the firm said the choice was made due Mr. **Tsolainos's** extensive marine experience in vessel operations, new construction, and the refurbishing of existing vessels.

The new management program that will be initiated is designed to increase the operational services the organization provides to vessels operating in the U.S. Gulf area. In addition to Rivergulf's agency operations, Mr. **Tsolainos** intends to make more extensive use of the company's existing large warehouse, storage and workshop areas, as well as to inaugurate the company's own floating repair facility which is scheduled for completion shortly within the port area.

A word from BRI Coverage Corp., The Independent Insurance Broker, on understanding risk today:

Risk Management

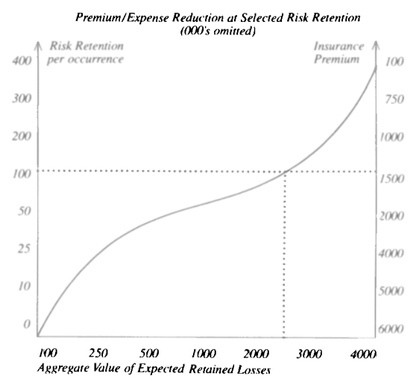
In the past, the term "risk management" was nonexistent, because insurance was an administrative function. A policy was written and the premium came out of a book. Basically, a company had only three options to save money: to change brokers, to change insurers or to change both. That was about all "managing risk" entailed.

The dramatic rise in the cost of insurance has necessitated a more sophisticated and disciplined approach to the management of risk.

Risk must now be identified in advance. In order to protect yourself, you can't afford to speculate – you have to be aware of every possible exposure.

Once identified and quantified you can see how much risk can be sustained and how much should be transferred. For every exposure, management has three options: to consider the risk as insignificant and not insure it, to transfer the risk entirely, or to strike a balance between self-assumption and transfer. The balance between not insuring, self insurance and full-insurance is one answer to cost-effective risk management. It opens up a new set of variables in the economics of risk management.

Premium/Expense Reduction at Selected Risk Retention (000's omitted)

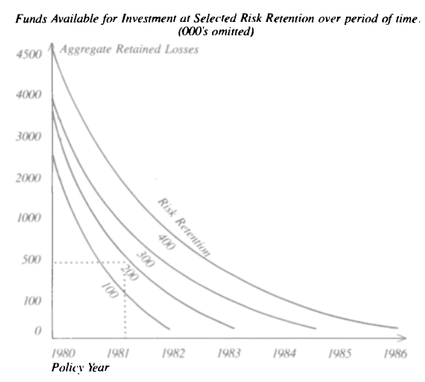


Selected Retention	*Aggregate Retained Losses*	+	*Insurance Premium*	=	*Cost*
0	*0*		*6000*		*6000*
100	*2500*		*1400*		*3900*
200	*3200*		*1000*		*4200*
300	*3800*		*750*		*4550*
400	*4500*		*100*		*4600*

A major objective of Risk Management is the decision concerning the balance between risk assumption and risk transfer. Striking the optimum balance is essential. At a risk retention of $100,000 per occurrence, the chart shows aggregate retained losses of $2,500,000, and a premium for insurance above the retention of $1,400,000. The total cost of $3,900,000 is substantially less than the $6,000,000 premium for insuring (transferring) the entire exposure.

Selection of the proper risk retention must also include consideration of the amount of funds freed for investment. These funds produce income which offset out-of-pocket costs.

Funds Available for Investment at Selected Risk Retention over period of time. (000's omitted)



Claims retained by the company through the mechanism of the risk retention are settled over time. This produces a significant cash flow advantage. These funds earn investment income which further reduce Risk Management costs.

The above chart illustrates the aggregate amount of loss retained by the company at different retention levels per occurrence, and the time-frame over which payment takes place. For example, a retention of $200,000 per occurrence results in an aggregate retained losses of $3,200,000. Since this sum would be paid out over five years, the company retains the residual balance for investment. At the end of 1981, two (2) years from the beginning of the program, the company still would be holding $500,000 for investment. Over the five-year time-frame, the total of earned investment income is $550,000.

Former Globtik Tanker Acquired For Texaco's British-Flag Fleet

Texaco Overseas Tankship Ltd., a wholly owned subsidiary of Texaco Inc., has purchased the 79,997-dwt tanker Globtik Windsor from Globtik Tankers London Limited. The ship, which has been renamed Texaco Windsor, was handed over in Singapore recently. The tanker will carry crude oil or heavy fuel oils in worldwide trade.

The Texaco Windsor was built in Japan by the Aioi shipyard of Ishikawajima-Harima Heavy Industries Co., Ltd. for Globtik, and completed in June this year. The vessel is equipped with systems to minimize pollution, including segregated ballast tanks, crude oil washing, a sewage system certified by the U.S. Coast Guard, and an oily water monitoring unit. It is equipped with an inert gas system and a full range of sophisticated navigational aids including satellite navigation, and is certified for unmanned operation in the engine room. The ship will operate with a British crew of approximately 28.

The ship has an overall length of about 810 feet (246.86 meters), beam of 131 feet (39.9 meters), and a designed loaded draft of 40 feet (12.19 meters). She is powered by a 10-cylinder Pielstick PC4 medium-speed engine, which has the capability to burn heavy fuel oil. She has been designed to achieve a low fuel consumption of approximately 45 tons a day at her normal service speed of 15 knots. The ballast tanks, slop tanks, and fore-and-aft peaks are fully coated with coal tar epoxy paint to minimize corrosion.

R.J. Willhite Appointed Research/Development Director For Esgard

Robert J. Willhite has been named director of research and development for Esgard Inc. He previously served as chief chemist for the company. Esgard manufactures and distributes internationally a variety of industrial rust and corrosion preventive products.

Mr. **Willhite** holds a Bachelor of Science degree in chemistry from the University of Missouri. After graduation in 1971, he joined the Cook Paint Company and worked four years as a formulator in the company's central research laboratory.

He was named chief chemist of Esgard in 1975. Mr. **Willhite** has developed numerous new products and methods, including a unique ballast tank coating that is practically non-toxic, and contains no petroleum oils. His current position will entail overseeing new product development, technical services to worldwide customers, and quality control.

New Pipe Installation Guide Available From Fiberglass Resources

An updated 88-page Pipe Installation Guide from Fiberglass Resources Corporation of Farmingdale, N.Y., contains all the necessary information required for field personnel to correctly assemble, test, and repair epoxy-fiberglass piping systems.

The convenient, pocket-sized manual has the needed information assembled for quick reference. Topics cover every aspect of field installation, from shipping, receiving, storage, pipe distribution, trenching, assembly (subheadings detail the different techniques for various fiberglass pipe products), testing, repair, etc. Reference data in chart form include dimensions, performance standards, and property specifications. A detailed index section further facilitates use of the guide.

Fiberglass piping products made by Fiberglass Resources include Kwi-Key® pipe and couplings, PJ® tapered joint piping components and systems, Tenex® ceramic lined pipe, and other piping systems used in the water handling, power generation, mining, mineral and ore processing, and related industries.

For free copies of the new Pipe Installation Guide from Fiberglass Resources Corporation,

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A word from BRI Coverage Corp., The Independent Insurance Broker, on understanding risk today:

Risk Management Economics.

As risk management cash outlays have increased, so has the intensity with which management has attacked the problem.

Which is where the economics enter in. The balance between risk retention and the transfer of risk to outside sources is essential to a cost-effective risk management program. Equally important are the tax implications and investment returns. In effect, the economics of successful risk management are dependent upon the methods of funding or non-funding you choose – the goal is to find the optimum position for your own circumstances.

Risk management has changed the meaning and economics of insurance. Those who truly manage risk use insurance as a tool, not as solution in itself. The proper application is entirely different – so are the results.

BRI Coverage Corp., recognized as one of the most imaginative brokers in the industry, knows this is the case. Rather than restructure its present services and organization, BRI formed Risk Management Economics. Risk Management Economics consists of a select group of highly skilled financial experts. Experts who work in close cooperation to refine and re-define the role of risk management in your company's insurance program. In so doing, it is now possible to achieve maximum control of cash flow, tight supervision of claims and other risk expenses.

All this really means is that the system can work on your behalf. If you agree with the concepts, then you'll probably also agree with our approach. Find out firsthand. Call Risk Management Economics at (212) 233-7171.

Risk Management Economics.

Selection for Optimum Risk Retention (000s omitted)

Selected Retention		Aggregate Retained Losses	+	Insurance Premium	=	Gross Cost	−	Estimated Accumulated Investment Income	=	Net Cost
0		0		6000		6000		0		6000
A	100	2500		1400		3900		150		3750
B	200	3200		1000		4200		550		3650
	300	3800		750		4550		725		3825
	400	4500		100		4600		850		3750

At a $100,000 retention, the aggregate of retained losses is expected to be $2,500,000. The insurance premium for coverage above the retention is $1,400,000. This produces a total cost of $3,900,000 (Section A), which is less expensive than the other alternatives. However, when the impact of investment income is added to the decision-making process, the best choice becomes the $200,000 risk retention. The apparent total cost of $3,650,000 is offset by investment income. Consequently the $200,000 alternative becomes the best economic choice.

Naturally, tax implications, payment streams of premiums, and the financial position of the company must also be considered before a final decision is reached.

Write **411C** on Reader Service Card

McDermott Plans To Expand Gulfport Division Shipyard

McDermott Incorporated announced that its Shipyard Group has purchased 70 additional acres in the Bayou Bernard Industrial District north of Gulfport, Miss., to expand the shipbuilding and repair facilities of its Gulfport Division.

Located on the Industrial Seaway approximately a mile east of the yard McDermott opened in June this year, the new yard will be a complete shipbuilding and repair facility, modeled after McDermott's other shipyards. The new shipyard will be capable of building seagoing tugboats, barges, integrated tug-barge combinations, fishing vessels, supply boats, jackup, and self-contained drilling rigs. It will also have facilities for making extensive repairs on these vessels.

"Yard development will begin immediately," said **V.J. LeBlanc**, vice president and group executive of the Shipyard Group. "By the time the new yard is completed in about three years, the total number of McDermott employees in the Gulfport area could reach 600. Today, we employ more than 100 workers at our Gulfport Division."

The Harrison County Development Commission has assisted McDermott in finding suitable land for the new yard in the Bayou Bernard Industrial Park, and has aided in its successful acquisition, according to the McDermott official.

In addition to the Gulfport Division, the McDermott Shipyard Group has yards in Morgan City and New Iberia, La. McDermott is a leading international energy services company. The company and its subsidiaries provide engineering and construction services to the offshore oil and gas industry and manufacture steam generating equipment, tubular products, insulating products, and automated machine tools.

Energy-Saving Skegs Proven In Barge Service

A Canadian invention said to reduce the power needed to tow loaded barges by up to 30 percent, introduced in 1976, has seen successful operation for the past four years fitted to a fleet of four 400-foot by 100-foot by 25-foot, 16,500-dwt semisubmerging barges.

Developed by Seaspan Development Company Ltd. in Vancouver, British Columbia, the device was conceived by Yugoslavia-born naval architect **Josip Gruzling**. It represents a dramatic breakthrough in skeg design, enabling a loaded barge to be towed at a higher speed with the same output of power, or at conventional speeds with a reduction in power of from 20 to 30 percent.

Detail of a Hydralift Skeg showing the underwater horizontal foil connecting the three vertical foils fitted to the port and starboard rakes of the barge.

Jacques Heyrman, vice president of Seaspan Development Company, which holds the U.S., Canadian, and foreign patents for the device, said that fuel consumption costs can be reduced by 20 percent or more if towed barges are equipped with the new skegs.

Traditionally, skegs have made a major contribution to barge transportation in all the oceans of the world. In the Pacific Northwest and elsewhere the first barges were converted sailing ship hulls towed behind a powered vessel. At the end of the towing line these hulls yawed and spun like a waterlogged kite. There were instances of the towing vessel being yanked out of control by the barge it was towing. Then someone invented the skeg, simply two blades or fins attached vertically to the stern of a barge and angled outward to the main axis of the hull. When the barge is towed, the two skegs exert a drag and automatically counter the barge's tendency to move sideways.

Conventional skegs increase total barge resistance by as much as 50 percent. The Hydralift Skegs not only provided directional stability but eliminated skeg drag almost entirely. It was proven by recent model tests at the tank test of B.C. Research that resistance was reduced to nearly that of the bare hull. Under ideal conditions it is theoretically possible to achieve a total barge resistance to slightly less than that of the bare hull due to the propulsive component of the lift generated by the skegs.

Since then, three sister barges have been similarly equipped. The Hydralift Skeg arrangement is the same for all four barges. As seen in the accompanying photograph, a set of three foils is joined at the port and starboard corners of the after-rake. Each

Stern view of the 16,500-dwt lumber carrier SEASPAN 270, fitted with Hydralift Skegs.

set of three foils is joined at the bottom by a horizontal member, also of airfoil shape.

Mr. **Heyrman** described the invention of the Hydralift Skegs as an amazingly simple and obvious concept. "It was simply a matter of transferring known principles from an air medium to a water medium," he said. "No moving parts, and yet this skeg system saves fuel and energy. To say the least, it is even a more timely invention today in view of the escalation in fuel prices over the past four years."

For further information on the Hydralift Skeg,

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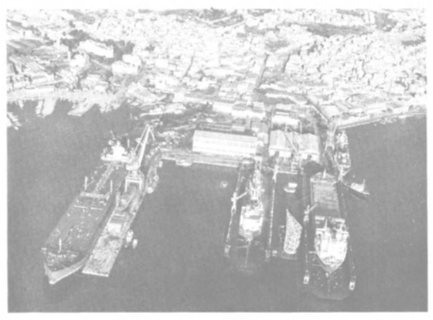
Wheeler Associates Named U.S. Agents For Greek Yard

Neorion Shipyards Syros Ltd. has appointed Wesley D. Wheeler to act as their exclusive agent in the USA. The facility is on the island of Syros, Greece, ancient capital of the Cyclades Islands in the Aegean Sea. Syros is a Mediterranean crossroads located close to the Dardanelles and the Suez Canal.



Neorion Shipyards' repair facility on the island of Syros, Greece, will be represented exclusively in the U.S. by Wesley D. Wheeler Associates of New York.

The shipyard was founded in 1861. In the 1970s the yard developed into one of the most complete and modern ship repair facilities in the Mediterranean. **Peter Nash,** managing director of A & P Appledore International Ltd., has been responsible for the reorganization of the facility. He has appointed **Thorsten Andersson** as yard manager, with **Donald McLean** as sales manager. Since reorganization, a parade of vessels from the fleets of Chevron, Esso, Mobil, Texaco, Shell, Maersk, Olympic Maritime, Ogden Maine, and Maritime Overseas have been repaired at the yard's facilities.

There are two modern floating drydocks, one of which can handle up to 75,000 dwt, the other up to 40,000 dwt. Wharfage is such that vessels up to 150,000 dwt can be accommodated. The extensive workshops can perform every type of machinery and hull repair, replacement, or reconditioning work. Cranage on the floating docks is one 15-ton plus three 10-ton units, and on the quays two 40-ton cranes. Two floating cranes are constantly available, one of 220 tons and one 70 tons.

Expansion is presently under way to construct a new quay to handle larger vessels for tank/hold blasting and coating. A new, larger steel plate shop will be added adjacent to the coating facility.

The yard has three 1,400-bhp harbor tugs and one large salvage tug. Modern tank-cleaning services are available with a separator capacity of 3,000 tons of dirty and clean oil. There is a bunkering station in the harbor, together with ships' agents, chandlers, and amenities such as shipping, hotels, and yacht club.

For a colorful brochure from Wesley D. Wheeler Associates, Ltd.,

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Samson Adds New Rope Stabilization Facility —Literature Available

The ability to stabilize and pre-tension ropes up to 15-inch circumference and 600,000 pounds tensile rating has been added to the Samson Engineering Center at its Shirley, Mass., Plant. Developed in conjunction with its Marine/Systems Division program for tug and barge tie-up and pushing lines, the stabilizing process reduces permanent elongation and provides a predictable "set" to the rope to give a tug better control when operating "in the notch."

Samson Stable Braid/Duron pushing lines with the new stabilization process are now being used in a number of areas to replace wire, providing increased safety and easier handling. Samson can also apply coatings to ropes up to 21-inch circumference and 1,260,000 pounds tensile using its Samthane process for increasing durability and cost effectiveness, particularly when compared with conventional wire rigging.

For descriptive information on the new Samson stabilization process,

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Samson Adds New Rope Stabilization Facility —Literature Available

The ability to stabilize and pre-tension ropes up to 15-inch circumference and 600,000 pounds tensile rating has been added to the Samson Engineering Center at its Shirley, Mass., Plant. Developed in conjunction with its Marine/Systems Division program for tug and barge tie-up and pushing lines, the stabilizing process reduces permanent elongation and provides a predictable "set" to the rope to give a tug better control when operating "in the notch."

Samson Stable Braid/Duron pushing lines with the new stabilization process are now being used in a number of areas to replace wire, providing increased safety and easier handling. Samson can also apply coatings to ropes up to 21-inch circumference and 1,260,000 pounds tensile using its Samthane process for increasing durability and cost effectiveness, particularly when compared with conventional wire rigging.

For descriptive information on the new Samson stabilization process,

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Clinton Mathews has been appointed assistant general manager, and **Jay G. Phelps** manager-cost estimating of Transamerica Delaval Engine and Compressor Division in Oakland, Calif.

Clinton Mathews

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Mr. **Mathews** has been with Transamerica Delaval for the past 13 years in engineering, service, and project management positions. After working for Chevron Shipping Company and Pacific Far East Line, Mr. **Phelps** came to Transamerica Delaval in 1967 and since then has held a variety of manufacturing positions. He is replacing retiring **Allan Greenland**.

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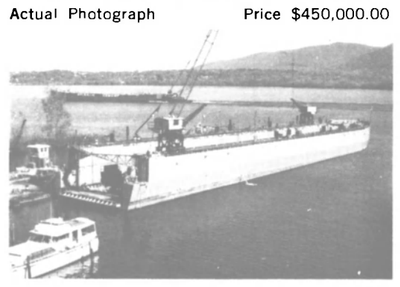

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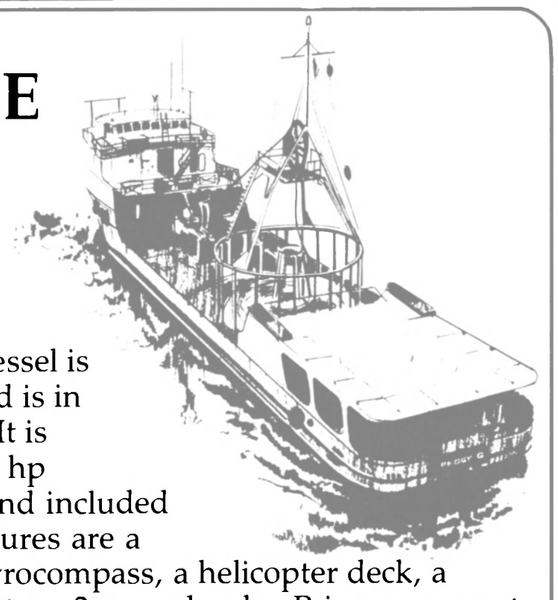

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If funding for the new program is approved, the Contractor eventually selected would have total responsibility for the work described above. The Foundation contemplates an incrementally funded contract(s) with an initial period of performance of at least four years with options for an additional four years.

Organizations who believe themselves to be experienced in providing overall management and systems integration of projects of a comparable magnitude and complexity are requested to submit expressions of interest. Such organizations should have the following capabilities: (1) overall management and systems integration of projects of a comparable magnitude and complexity with a proven record of technical, budgetary and schedular proficiency; (2) senior personnel and facilities committed for this project and sources and/or methods of obtaining required skills and organizational capabilities; (3) an understanding of the unique problems associated with the design, conversion and operation of the drilling vessel; (4) experience in offshore drilling operations and major shipyard conversion; (5) experience in designing equipment of the type and kind required, and (6) previous history of successful subcontracting activities and joint venture undertakings.

Firms may undertake the role of systems integrating contractor (SIC) as either a prime contractor with appropriate subcontractors or by teaming together in a joint venture.

Sources submitting information should consider restricting submission of proprietary data. Any proprietary data should be marked accordingly.

This is not a Request For Proposal nor does it intend to pre-qualify specific sources. It is anticipated that Requests For Proposals will be issued on or about February 1, 1981, for the systems integration contract effort. For additional information please contact Chris Scott, Tel. 202-357-7544. Your response should be mailed to:

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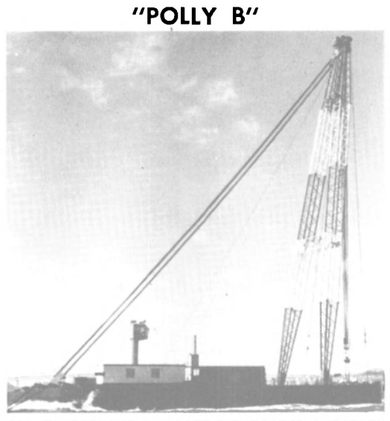

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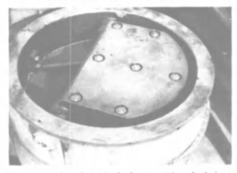

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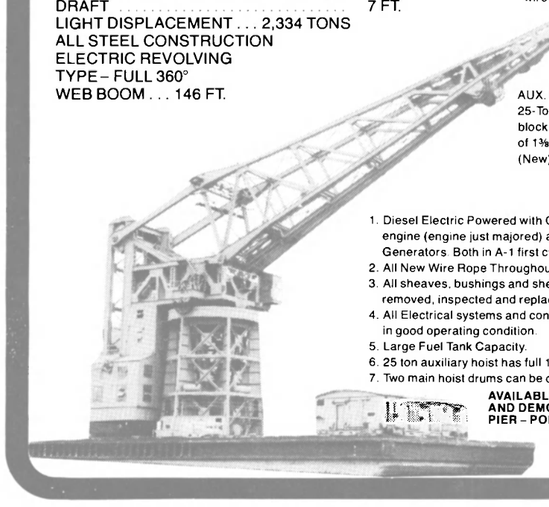

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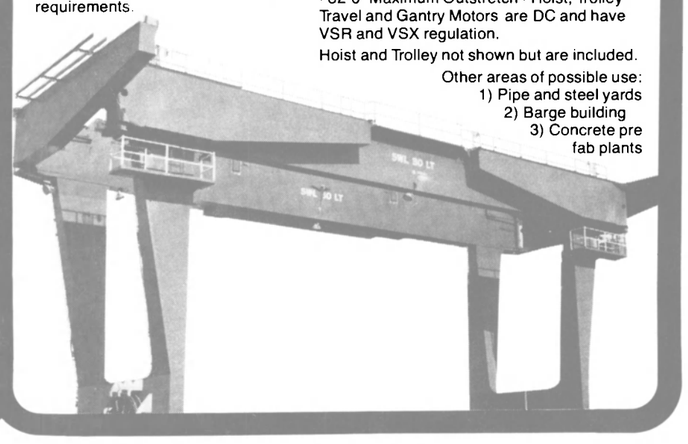

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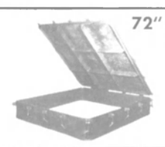

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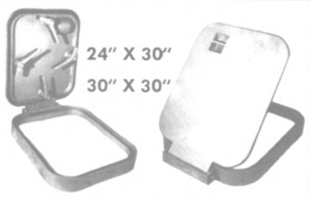

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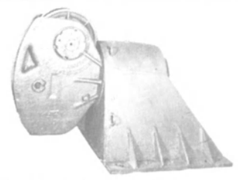

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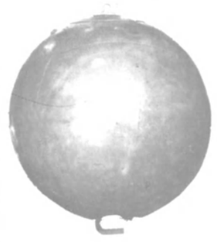

NEW — UNUSED SPHERICAL
MOORING BUOYS

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

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ALUMINUM LIFEBOATS

50 Person—Oar Propelled—26'X9'X3'10"

23" Centers on hooks — empty wt 2740 lbs. — total wt with passengers 11,993. With ridge pole, spreader & cover. Mfg by Marine Safety Equipment Co. Maleco release gear. Type B-1. Simultaneous release both ends. USCG approved No. 160,033/52/0.

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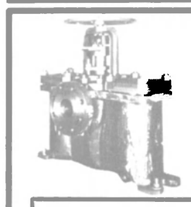

2½"
DUPLEX STRAINER

Steel—inlet center to base 9"—bolt circle 5½" — 150 lbs. — flange 11¾".

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250KW GM 12-V-71
DIESEL GENERATOR SET

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

CAN BE SEEN ABOARD ALCOA "SEAPROBE"

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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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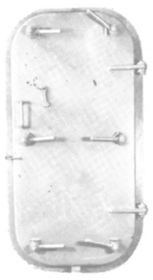
FOR SALE

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.

SIZE

26"x48" 26"x66"
26"x60" 30"x60"

EACH DOOR

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"X6½" 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.

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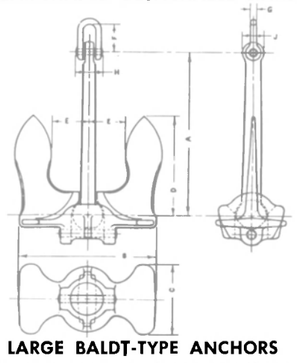
ANCHORS — CHAIN

DETACHABLE LINKS
PEAR-SHAPED DETACHABLE LINKS



LARGE BALDT-TYPE ANCHORS
16000 LBS/12000 LBS/8000 LBS/3000 LBS

10 EA. 5" x 15" I.D. STEEL RINGS
3 EA. R.P. ANCHOR SHAX 3⅞ STK, 3⅞ PIN

NEW CHAIN
10 X 90 Ft. 3" DILOK CHAIN — ABS
9 X 90 Ft. 2" DILOK CHAIN — ABS

NEW SWIVELS
3 EA. 2 5/16 — 3" E&E SWIVELS
13 EA. 3⅛ DETACHABLE LINKS

PEARSHAPED DETACHABLE LINKS
25 EA. #7 — 17 EA. #5

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— FOR SALE —

AFTER REMOVAL FROM

"R.V. ALCOA SEAPROBE" – BUILT 1970-71

ONE OF THE MOST ADVANCED DEEPSEA SEARCH AND EXPLORATION VESSELS EVER BUILT!

Equipment is immediately available for inspection and is still aboard the ship

FOR TUGS, FERRIES, CRANES, EXPLORATION, ETC.

ALL EQUIPMENT FOR AUTOMATIC PILOT & STEERING CONTROL including
2 VOITH SCHNEIDER CYCLOIDAL OMNI-DIRECTIONAL PROPULSION UNITS WITH DYNAMIC POSITIONING CAPABILITIES and ELECTRO-HYDRAULIC WINCH FOR HANDLING UNDERWATER PHOTOGRAPHIC EQUIPMENT & TV CAMERAS & SCANNERS

Winch handles 10,000 feet of 1½" electric cable. Unit is complete with slip rings & level wind. Mfg by Swann, Ltd.

SUBJECT TO PRIOR SALE, ONBOARD EQUIPMENT INCLUDES:

2 VOITH SCHNEIDER CYCLOIDAL OMNI-DIRECTIONAL PROPULSION UNITS

Size 24/E150 — 6-blade stainless steel propellers — blade orbit 2400mm — blade length 1500mm. Complete with Voith Schneider reduction gears AD40 and spare parts.

PROPULSION MOTORS

2 800HP 440/3/60 — 1775 RPM — squirrel cage — mfg by Electric Machine Co. — with 2 propulsion motor switchboards.

AUTOMATIC STEERING SYSTEM PILOT HOUSE CONTROL — ITT DECCA CONSOLES

2 Decca Arkkas steering systems complete with autopilot and provision for automatic positioning (X-Y) input. This system controls 2 Voith Schneider propulsion units with complete redundancy for backup and dynamic station keeping. The Decca consoles are located with one on bridge and one in Control Search Center.

- 1 Baldt-type anchor — 4230 lbs
- 2 26' Aluminum lifeboats — oar propelled — 50-person — 530 cu ft — USCG approved — 23" centers
- 2 Sets of lifeboat davits for above lifeboats
- 3 Berger fairleads — 1¼"
- 2 Kohlenberg air horns — model D2
- 2 30HP Quincy compressors — 7½ X 4 X 4 — air cooled — 75 CFM @ 200 PSI — belt-driven by 440/3/60/1700 motor
- 83 Kearfott windows, fixed aluminum frames, 19" X 28"
- 4 Kearfott crank windows, aluminum frames, 19" X 28"
- 5 Kearfott windshield wipers — 18" blade — model K3-9120
- 14 Mooring bitts — 10"
- 12 Panama chocks — 14" x 10"
- 11 Steel fire doors — 26¾" X 74"
- 7 Watertight doors — 6-dog — 32" X 54"
- 8 Watertight doors — 6-dog — 32" X 66"

LIFEBOAT DAVITS
Type 24-40 MK 11 6000 lbs/arm or 12,000 lbs/Davit set will except manila or wire rope falls. USCG approved.

250KW DIESEL GENS.
2 — 250KW GM12-71 1800 RPM diesel generators — E.M. Bemac II — synchronous — 440/3/60. Complete switchgear — freestanding type

LIFEBOAT WINCHES
2 — CG approved No. 160,015/75/0 type 31-H — 6200 lbs w/load on single line — 13,000 lbs on 2 part line. Mfg by Marine Safety Appliance Co.

WARPING CAPSTAN
8500 lbs @ 90 FPM or 4250 lbs @ 180 FPM. Below deck mounted motor — 30 HP — 440/3/60 — with control

EMER. ONAN 40KW GEN.
Hercules model D4300 — 40KE — 50KVA — 64 amps — 440/3/60 — 1800 RPM — complete with emergency transfer switches & panels for automatic startup on power failure

WALZ & KRENZER USCG APPROVED HEAVY DUTY SLIDING DOORS W/FRAMES
All Doors Bolted In And Easily Removed

- 1 36" X 66" Steel watertight sliding door complete with local and remote gear boxes — electro-hydraulic
- 1 36" X 66" Horizontal hand mech. steel sliding door — complete with mechanical local & remote gear boxes
- 1 60" X 78" steel watertight sliding door. Complete with mechanical local and remote boxes

ALL THE ABOVE OFFERINGS CAN BE SEEN ABOARD "R.V. ALCOA SEAPROBE"
Located Panama City Port Authority Docks — Panama City, Florida

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Bailey Refrigeration Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231
R.W. Fernstrum & Company, 1716 Eleventh Avenue, Menominee, MI 49858
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 1139KB), Oakland, CA 94643
Wilson Walton International Inc., 66 Hudson Street, Hoboken, NJ 07030

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Johnson Rubber Co. (Marine Div.), 16025 Johnson St., Middlefield, Ohio 44052
Lucian Q. Moffitt, Inc., P.O. Box 1415, Akron, Ohio 44309
Morse Chain Company, Div. Borg Warner, So. Aurora St., Ithaca, N.Y. 14850
Waukesha Bearings Corp., P.O. Box 798, Waukesha, Wisc. 53186

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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
Combustion Engineering, Inc., Windsor, Connecticut 06095

BRAKES
Goodyear Aerospace (Industrial Brakes Division), Box 477, Berea, KY 40403

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 Soles Corp., 21 West St., N.Y., N.Y. 10006
Max Rouse & Sons, Inc., P.O. Box 5250, Beverly Hills, CA 90213

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Gulf Oil Trading Co., 1290 Ave. of the Americas, N.Y., N.Y. 10019

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MacGregor-Comarain, Inc., 135 Dermody St., Cranford, N.J. 07016

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

CLOCKS
Wempe Chronometerwerke Germany, Stubbenhulk 25 2000 Hamburg 11, Germany

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Colmac Coil, Inc., Colville, Wash. 99114

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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
Seatronic Engineering & Mfg. Co., 1230 E. Joppa Rd., Towson, MD 21204
Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.
Transamerica Delaval, Inc., Gem Sensors Div., Spring Lane, Farmington, CT 06032

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

CRANES—HOISTS—DERRICKS—WHIRLEYS
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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

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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
Teledyne Metal Finishers, 1725 East 27th Street, Cleveland, OH 44114
Teledyne Metal Finishers, 3125 Brinkerhoff Road, Kansas City, KS 66115
Twin Disc, Incorporated, Racine, Wis. 53403

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AM Bruning, 1834 Walden Office Square, Schaumburg, IL 60196

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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

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

EQUIPMENT—Marine
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Argo Marine, Div. of Argo Intl., 140 Franklin St., New York, N.Y. 10013
Baldt, Inc., P.O. Box 350, Chester, PA 19016
Comet Marine Supply Corp., 157 Perry St., New York, N.Y. 10014
Kearfott Marine Products, 550 South Fulton Ave., Mount Vernon, N.Y. 10550
J. H. Menge & Company, Inc., P. O. Box 23602, New Orleans, La.
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
Waukesha Bearings Corp., P.O. Box 798, Waukesha, Wisc. 53186

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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
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Morse Chain Company, Div. Borg Warner, So. Aurora St., Ithaca, N.Y. 14850
Seaward International, Inc., 6269 Leesburg Ave., Falls Church, Va. 22044

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General Electric Credit Corp., P.O. Box 8300, Stamford, Conn. 06904
Greyhound Leasing & Financial Co., Greyhound Tower, Phoenix, AZ 85077
Kidder, Peabody & Co., Inc., 10 Hanover Square, New York, N.Y. 10005
Salomon Brothers, One New York Plaza, New York, N.Y. 10004
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FITTINGS & HARDWARE
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Robvon Backing Ring Co., 675 Garden St., Elizabeth, N.J. 07207

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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 (Phoceenne Sous-Marine S.A.), 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
Voss, Inc., Building J, 7029 Huntley Road, Columbus, Ohio 43229

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Comar 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

INFORMATION—Marine
Maritime Data Network, 300 Broad Street, Stamford, CT 06901

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Bailey Carpenter & Insulation Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231
Dupont Company, Nemours Bldg.-RM C31H6, Centre Rd. Bldg., Wilmington, DE 19898
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Port Electric Supply Corp., 157 Perry Street, New York, N.Y. 10014

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

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Schmahl and Schmahl, Inc., 1209 S.E. Third Ave., Fort Lauderdale, Florida 33316
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Seaworthy Engine Systems, 36 Main Street, Essex, CT 06426
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T. W. Spaetgens, 156 West 8th Ave., Vancouver, Canada V5Y 1N2
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Richard R. Taubler Inc., 8 Columbia St., Milford, Del. 19963
Thames Engineering Consultants Inc., P.O. Box 589, New London, Ct. 06320
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Undersea Systems, 112 W. Main St., Bay Shore, N.Y. 11706
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XPLO Corporation, 229 Fifth Street, Gretna, LA 70053

NAVIGATION & COMMUNICATIONS EQUIPMENT
American Hydromath Co., Buckwheat Bridge Rd., Germantown, N.Y. 12526
Collins Marine Corp., Pier 32, San Francisco, CA 94105
Communication Associates, Inc., 200 McKay Road, Huntington Station, N.Y. 11746
Comsat General Corp., 950 L'Enfant Plaza, S.W., Washington, D.C. 20024
Daronics Company, P.O. Box 204, Bocca Raton, FL 33432
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
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
Rockwell International, Collins Telecommunications Products Division, Cedar Rapids, IA 52406
Simrad Inc., 1 Labriola Court, Armonk, N.Y. 10504
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
Ferrous 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., First State Tower, Suite 509, Houston, TX 77015
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 Lindwood Avenue, Ft. Lee, NJ 07024
Butterworth Systems Inc., 224 Park Ave., Florham Park, N.J. 07932

PAINTS—COATINGS—CORROSION CONTROL
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
The Skybryte Co., 3125 Perkins Ave., Cleveland, OH 44114

PETROLEUM SUPPLIES
Houston Marine Services, Inc., First State Tower, Suite 509, Houston, TX 77015
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., 22, Funade-cho 2-chome, Naniwa-Ku, Osaka, Japan
Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030

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
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
Motive Power Corp., P.O. Box 365, Mineola, NY 11501 70124
Omnithruster Inc., 15418 Cornet Ave., Santa Fe Springs, CA 90670
Oosterhuis Industries, P.O. Box 30587, New Orleans, LA 70190
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 Boatbuilding 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
Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030
Transamerica Delaval, Inc., IMO Pump Div., P.O. Box 321, Trenton, NJ 08602
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
Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.

SANITATION DEVICES—Pollution Control
Argo Marine Pollution Systems Division, 140 Franklin St., New York, N.Y. 10013
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
Research Products/Blankenship, 2639 Andjon, Dallas, Texas 75220
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
Spider Staging Sales Co., P.O. Box 182, Renton, Washington 98055
Trus Joist Corp., P.O. Box 60, Boise, Idaho 83707

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.), Moatschappij 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, Valparíso, 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
Bergeron Industries Inc., P.O. Box 38, St. Bernard, La. 70085
Bethlehem Steel Corp., One State Street Plaza, N.Y. 10004
Blount Marine Corp., P.O. Box 368, Warren, RI 02885
Boeing Marine Systems, P.O. Box 3707, Mail Stop 14-11, Seattle, WA 98124
Ira S. Bushey & Sons, Inc., 764 Court Street, Brooklyn, N.Y. 11231
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
Coastal Dry Dock & Repair Co., Building 131, Brooklyn Navy Yard, Brooklyn, N.Y. 11205
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
Empressa Nacional Bazan, Paseo de la Castellana 65, Madrid 1 Spain
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/New York, 29 45 Richmond Terrace, Staten Island, NY 10303
Jeffboat, Inc., Jeffersonville, Ind. 47130
Keppel Shipyard Ltd., P.O. Box 2169, 325, Telok Blangah Road, Singapore 4
Kockums Shipyard, S-201, 10 Malmo 1, Sweden
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
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 Navi), P.O. Box 1395, Genoa, Italy 16100
Paceo, 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 Estercizio Bacini Napoletani, Via Marinella 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 1903, Morgan City, LA 70380
Tacoma Boatbuilding Co., Inc., 1840 Marine View Drive, Tacoma, WA 98422
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
Zigler Shipyards, P.O. Box 2607, Morgan City, La. 70380

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
Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030
Salwico, Inc., 77 River St., Hoboken, N.J. 07030

TANK LEVELING INDICATORS
Transamerica Delaval, Inc., Gem Sensors Div., Spring Lane, Farmington, CT 06032
Vu-Gage System, 150 E. 42nd St. (Room 910), New York, NY 10017
Zesco, Inc., 3131 Brian Park, Suite 1095, Houston, TX 77042

TECHNICAL MANUAL PREPARATION
Benhof, Inc., 2468 N. Jerusalem Road, N. Bellmore, NY 11710

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
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
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

UNDERWATER SERVICES—Contracting
SeaTec International Ltd., Blackburn Industrial Center, Gloucester, MA 01930

VALVES AND FITTINGS
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
Rockwell International, Flow Control Division, 400 N. Lexington Avenue, Pittsburgh, PA 15208
Stacey Valve Co., 29 Meserole Ave., Brooklyn, N.Y. 11222
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 of America, Inc., 16014 Cowley Road, Grafton, OH 44044

WATER PURIFIERS
Everpure, Inc., 660 N. Blackhawk Dr., Westmont, IL 60559

WINCHES AND FAIRLEADERS
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.

U.S. SHIP CONSTRUCTION CONTRACTS

1 — MERCHANT SHIPS UNDER CONSTRUCTION OR ON ORDER AT U.S. YARDS — NOVEMBER 1, 1980

Builder	Owner	Total No.	Type	Hull Nos.	Est. GT (Each)	Est. DWT (Each)	Est. HP (Each)	Est. Total Cost ($Mil.)
American Ship Building	Interlake Steamship	1	Bulk	909	32,000	59,000	D-16,000	50.0
Avondale Shipyards	Waterman Steamship	1	LASH	2308	30,500	21,500	T-32,000	70.0
	American President Lines	3	Container	2329-31	36,000	32,800	D-43,200	330.0
	Suwanee River	3	Tug/Barge	2323-8	16,000	41,300	D-18,200	111.6
	Ogden Marine	2	Products	2318-19	25,000	42,000	D-15,000	100.0
	Eagle Dredging	1	Dredge	2320	4,200	4,900	D-7,500	30.0
	Corps of Engineers	1	Dredge	2322	6,000	8,000	D-5,200	67.5
	United States Trust	1	Dredge	2332	—	—	—	30.0
Bay Shipbuilding	American Steamship	1	Bulk	724	12,000	23,500	D-7,500	25.0
	Ogelbay Norton	1	Bulk	726	33,000	50,000	D-14,000	52.4
Bethlehem-Sparrows Point	Artemis Marine	1	Tug/Barge	4652	32,000	47,000	D-18,200	52.6
	First-Fifth Tug/Barge	5	Tug/Barge	4653	32,000	47,000	D-18,200	266.0
Equitable Shipyards	City of New York	2	Ferry	1713-14	3,000	4,200	D-4,000	30.0
	American Atlantic	1	Cargo	1717	999	2,000	D-4,000	28.5
General Dynamics-Quincy	Bulkfleet Marine	2	Tug/Barge	55-6	12,000	27,000	D-8,000	NA
	New England Electric	1	Collier	—	23,500	36,000	T-12,000	60.0
Levingston Shipbuilding	Levingston Falcon I	3	Bulk	751-3	23,500	36,000	D-14,800	120.0
Mangone Shipbuilding	Sun Transport	1	Products	—	1,500	2,750	D-1,900	NA
National Steel & SB	Union Oil	3	Products	415-17	24,500	37,500	T-13,000	150.0
	American Tankships	5	Products	419-23	24,500	37,500	D-11,400	239.0
	American Trading Trans.	3	Products	424-6	27,000	44,000	D-11,400	153.0
Norfolk Shipbuilding	Corps of Engineers	1	Dredge	178	2,950	2,950	D-2,250	18.5
Southern Shipbuilding	Great Lakes D&D	1	Dredge	120	3,300	4,400	D-3,000	NA
Sun Shipbuilding	Sun Trading & Trans.	2	Products	676 -7	17,000	31,000	D-16,200	72.0
	Waterman Steamship	3	RO/RO-Cont.	679-80, 82	15,000	23,500	T-32,000	207.1
	Corps of Engineers	1	Dredge	681	—	—	D-7,000	65.0
	Calif. & Hawaii Sugar		Tug/Barge	683	20,000	37,000	—	25.0
Upper Peninsula SB	State of Michigan	1/4	Tug(1)/ Barge(4)	—	2,000	3,600	D-8,000	35.5

2 — OFFSHORE DRILLING RIGS UNDER CONSTRUCTION OR ON ORDER — NOVEMBER 1, 1980

Builder	Owner	Name	Type	Delivery
Alabama Dry Dock Mobile, Ala.	Diamond M	Diamond M Hunter	Semisub.	12/81
Baker Marine Ingleside, Texas	Diamond M	Don E. McMahon	Jackup	12/80
	Huthnance	Charger I	"	6/81
	Huthnance	Charger II	"	9/81
	Magnum Marine	Mr. Demp	"	11/81
	Magnum Marine	(unnamed)	"	2/82
	Magnum Marine	(unnamed)	"	5/82
	Marine Drilling	J. Storm XV	"	3/81
	Pool Company	Pool 53	"	3/81
Bethlehem Steel Beaumont, Texas	Broughton Offshore	Broughton II	Jackup	2/81
	Griffin-Alexander	Griffin-Alexander I	"	4/81
	"	" II	"	6/81
	"	" V	"	5/82
	Houtech Energy	Houtech I	"	8/81
	"	" II	"	10/81
	"	" III	"	3/82
	"	" IV	"	9/82
	Keyes Offshore	Keyes 200	"	12/80
	Marine Drilling	J. Storm XVI	"	7/81
	"	J. Storm XVII	"	9/81
	O & U Drilling	(unnamed)	"	1/82
	Temple Drilling	Commanche	"	11/80
Bethlehem Steel Sparrows Point, Md.	Griffin-Alexander	Griffin-Alexander III	Jackup	3/82
	"	" IV	"	5/82
	Houston Offshore	Sabine III	"	6/81
Ingalls Shipbuilding Pascagoula, Miss.	Transworld Drilling	Transworld 69	Submersible	7/81
	" "	" 70	"	8/81
	" "	" 72	"	12/81
	" "	" 73	"	1/82
	Bonito Offshore	(unnamed)	Jackup	3/82
	Chiles Drilling	Yucatan	"	9/81
	Global Marine	Glomar JU XI	"	11/81
	"	" XII	"	1/82
	"	" XIII	"	3/82
	Huthnance Drilling	Vanguard I	"	7/81
	Keyes Offshore	Keyes 300	"	3/81
	"	" 301	"	5/81
	"	" 302	"	6/81
Levingston Shipbuilding Orange, Texas	Dixilyn-Field	DF-87	Jackup	4/81
	Noble Drilling	(unnamed)	"	10/81
	Bridas S.A.P.I.C.	Rio Colorado I	"	11/80
Marathon LeTourneau Brownsville, Texas	Chiles Drilling	Seabee	Jackup	3/83
	Global Marine	Glomar JU IV	"	5/81
	"	" V	"	8/81
	"	" VI	"	10/81
	"	" XVI	"	6/83
	Keydril	Key Manhattan	"	1/81
	Penrod Drilling	Penrod 86	"	2/82
	"	" 88	"	5/82
	"	" 90	"	8/82
	Rowan Drilling	(unnamed)	"	4/83
Marathon LeTourneau Vicksburg, Miss.	Penrod Drilling	Penrod 87	Jackup	5/82
	"	Penrod 89	"	9/82
	"	Penrod 91	"	1/83
	Rowan Drilling	Charles Rowan	"	3/81
	"	Arch Rowan	"	6/81
	"	Gilbert Rowan	"	10/81

2 — OFFSHORE DRILLING RIGS UNDER CONSTRUCTION OR ON ORDER AT U.S. YARDS — NOVEMBER 1, 1980 — (Con.)

Builder	Owner	Name	Type	Delivery
	"	Cecil Provine	"	3/82
	"	(unnamed)	"	9/83
Vemar Shipyard Channelview, Texas	Atwood Oceanics	Richmond	Submersible	9/81
	Penrod Drilling	Penrod 170	"	12/81
	"	Penrod 171	"	4/82
	"	Penrod 172	"	8/82
	Cliffs Drilling	(unnamed)	Jackup	7/81

3 — MAJOR U.S. NAVAL VESSELS UNDER CONSTRUCTION OR ON ORDER AT U.S. YARDS — NOVEMBER 1, 1980

Builder	Type	Navy Nos.	No.	Est. Contract Value, $Mil.
Avondale Shipyards	Fleet Oiler	AO-177-9	3	$216.0
	" "	AO-180, 186	2	146.2
Bath Iron Works	Guided-Missile Frigate	FFG-16	1	59.4
	"	FFG-21, 24, 26	3	178.2
	"	FFG-29, 32, 34	3	147.0
	"	FFG-36, 39, 42	3	209.9
Boeing Marine Systems	Missile Patrol Hydrofoil	PHM-2	1	21.3
	"	PHM-3-6	4	178.0
GD-Electric Boat	Attack Submarine	SSN-698-1	2	856.0
	"	SSN-700-4	5	2,171.4
	"	SSN-705-10	6	2,605.6
	"	SSN-719-20	2	—
	Trident Submarine	SSBN-726	1	285.4
	"	SSBN-727-9	3	699.4
	"	SSBN-730	1	354.5
	"	SSBN-731-2	2	699.0
Ingalls Shipbuilding	Missile Cruiser	DDG-993-6	4	1,400.0
	Destroyer	DD-997	1	—
	Aegis Missile Cruiser	CG-47	1	287.8
Lockheed Shipbuilding	Sub. Tender	AS-41	1	—
Marinette Marine	Fleet Ocean Tug	T-ATF-16-9	1	7.6
	"	T-ATF-170-2	3	25.1
National Steel & SB	Destroyer Tender	AD-42-4	3	502.2
	Cable Repair Ship	T-ARC-7	1	107.0
Newport News SB	Attack Carrier	CVN-70-71	2	—
	Attack Submarine	SSN-711	1	103.2
	"	SSN-712-15	4	—
	"	SSN-716 18	3	380.8
Peterson Builders	Patrol Gunboats	F-PGG-1-9	9	78.9
Tacoma Boatbuilding	Missile Patrol Chaser	F-PCG-1-4	4	52.5
	Med. End. Cutter*	WMEC-901-4	4	130.0
	Med. End. Cutter*	WMEC-905-13	9	378.0
Todd-San Pedro	Guided Missile Frigate	FFG-14	1	48.7
	"	FFG-19, 23, 25	3	151.0
	"	FFG-27, 30, 33	3	147.0
	"	FFG-38, 41, 43	3	214.8
	"	FFG-46	1	67.7
Todd-Seattle	Guided-Missile Frigate	FFG-17-18	2	99.3
	"	FFG-20, 22	2	100.7
	"	FFG-28, 31, 35	3	147.0
	"	FFG-37, 40	2	143.2
	"	FFG-44, 48	2	135.3

*For U.S. Coast Guard.

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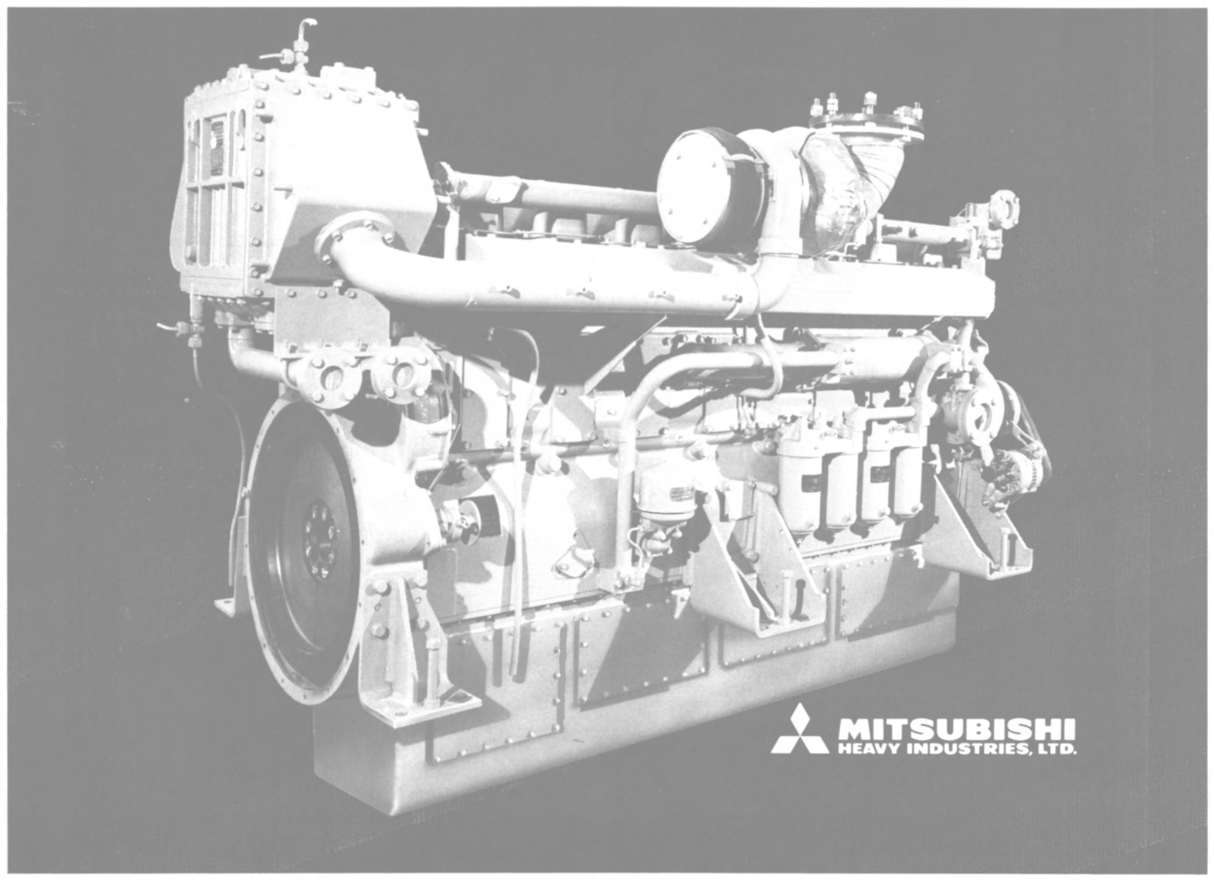

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