MARITIME
REPORTER
AND
ENGINEERING NEWS

Post Conference Report: 88th SNAME Annual Meeting

'Blue Ridge'

NASSCO Launches 1st Of Three Of New Carlsbad Class
(SEE PAGE 26)

Post Conference Report 88th SNAME Annual Meeting
(SEE PAGE 14)

DECEMBER 15, 1980

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After a disastrous fire or other mishap, we can perform a complete job of restoration. Our Bailey Group of companies, working in unison, will restore all the cooling and heating systems, rebuild ships' stores boxes, gratings, battens and doors, as well as bulkhead and overhead sheathing. We will insulate all public and living spaces and replace all of the damaged marine furniture.

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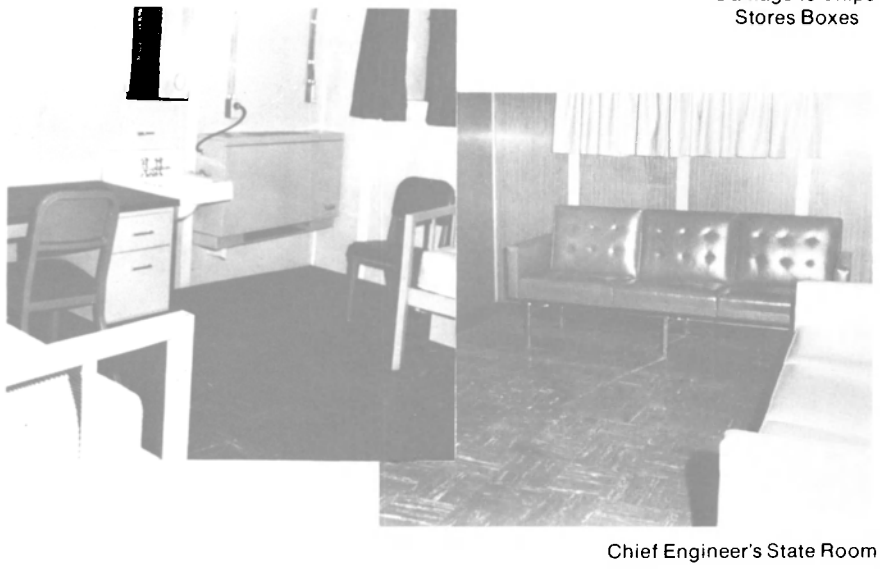
Crew's State Room

Damage to Ships' Stores Boxes



Chief Engineer's State Room

The complete job of ships' stores refrigerated spaces was completed recently by Bailey on the VLCC Bay Ridge for Seatrain Shipbuilding Corp. It included meat freezers (-10° F) and a fruit and vegetable cooler (+35° F) and featured "Bailite" panel sheathing and "Con-Elastic" decking.

It's a new concept, from steel to topcoat. Unique materials permit rapid installation and assure minimum maintenance and ease of repair. It's the system that was used in the jumboization of Farrel Lines SS Austral Entente and Austral Envoy when Avondale Shipyards added a 144' x 90' midsection to these ships. By thus increasing the refrigerator container capacity to approximately 2½ times its former size, it permitted us to house 768 reefer containers below deck in "envelope" refrigeration of -10° F.

SS Austral Entente At Port Newark after jumboizing

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MarAd Approves Title XI For Self-Unloader Costing $56.4 Million

Deputy Assistant Secretary for Maritime Affairs, Maritime Administration, **Bruce A. McAllister** has approved in principle an application by Oglebay Norton Co., Cleveland, Ohio, for a Title XI guarantee to aid in financing the construction of a self-unloading bulk vessel.

The 61,500-deadweight-ton vessel, which will have an overall length of 1,000 feet and a molded beam of 105 feet, is to be employed in the transport of iron ore pellets from Lake Superior to Lake Erie ports.

Bay Shipbuilding Corp., Sturgeon Bay, Wis., is the proposed builder, and delivery is expected in May 1981.

The Title XI guarantee will cover $49,368,000, or 87½ percent of the estimated actual cost of $56,421,000.

Newport News To Modify Five Exxon Tankers At Total Cost Of $100 Million

Exxon U.S.A.'s Marine Department recently announced plans for a $100-million program to modify five of its tankers. Newport New Shipbuilding in Newport News, Va., will do the work, which is expected to be completed by mid-1981.

The five tankers — the Exxon Baltimore, Exxon Boston, Exxon Jamestown, Exxon Lexington, and Exxon Washington—range in capacity from 240,000 to 300,000 barrels. The tankers have been used primarily to carry crude oil and petroleum products along the Gulf and East Coasts. After modification, they will be used primarily to move oil from the Hondo Field in the Santa Barbara Channel of California to Exxon's Bayton, Texas, refinery.

The first of the tankers to be refitted, the Exxon Lexington, has arrived at Newport News. Modification will include installation of new cargo pumps and cargo heating systems, along with ballast-water systems totally separated from cargo tanks. A special vapor-exchange connection will virtually eliminate emissions of hydrocarbon vapors during loading of the tankers.

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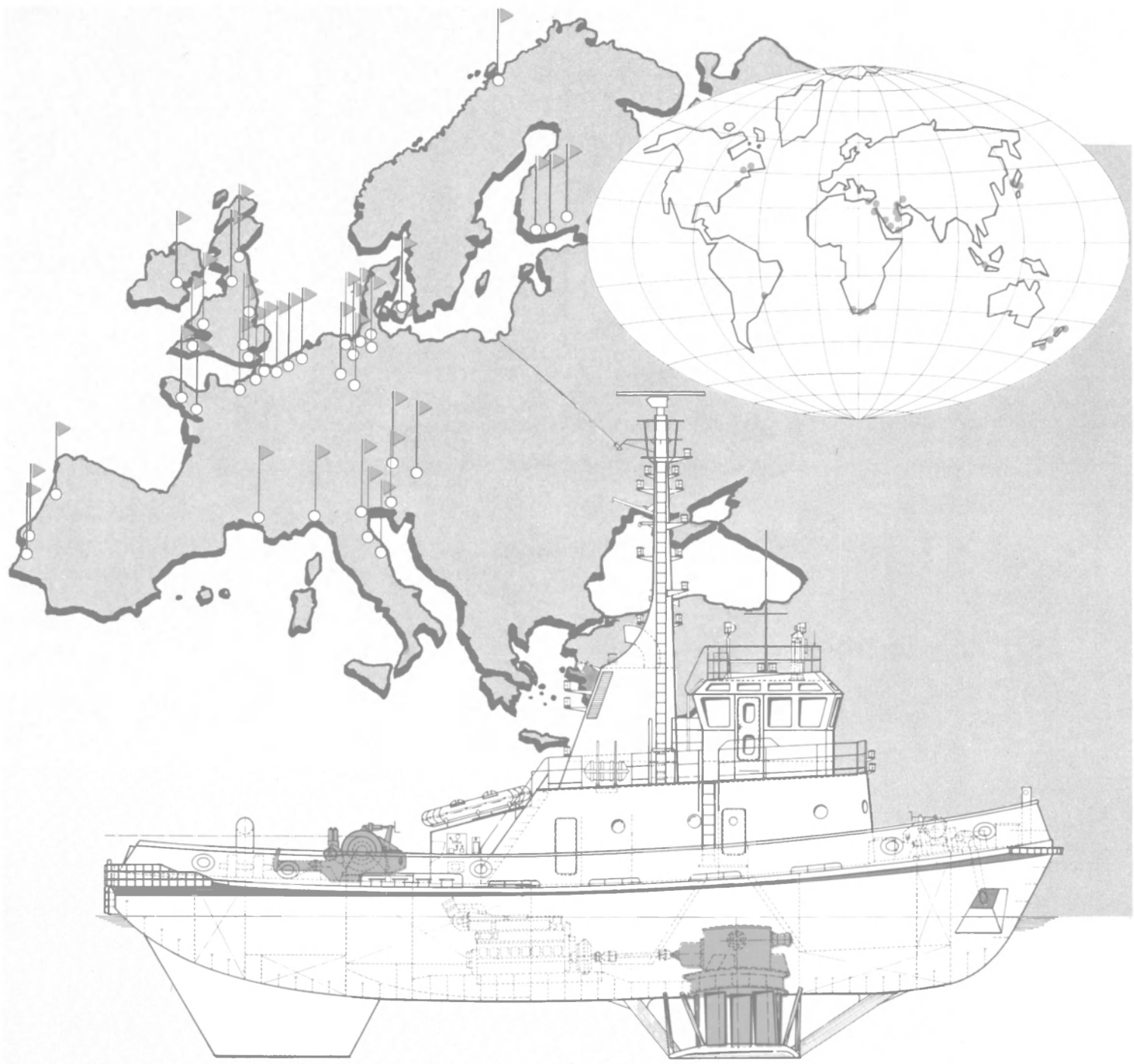

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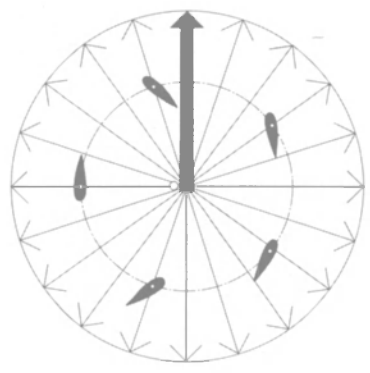

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Biospherics Receives USCG Certification For 'Oil Sentry'

Biospherics Incorporated, Rockville, Md., reported recently that it has received certification from the U.S. Coast Guard for its Oil Sentry®, oil-in-water monitoring instrument.

Commenting on the announcement, Dr. **Gilbert V. Levin,** president of Biospherics, said: "This is a big step forward for us. Through the Underwriters Laboratory, which is certified by the Coast Guard to validate oil-water separation devices and monitors of such systems, we have official confirmation that our Oil Sentry does indeed meet the rigid specifications established by the Coast Guard. (Coast Guard approval number 162.050/9002/0)

The marine model, constructed of stainless steel and monel, is a compact, reliable, accurate, and rugged version of the Biospherics' standard, commercial Oil Sentry. It is specifically designed to withstand shock and vibration and saltwater encountered at sea and on offshore platforms. It also resists solvents and films, and is automatic and self-cleaning. The unit continuously monitors the discharge for oil-water separator systems and directs the wastewater for processing when discharge standards would be violated.

The marine version (OS100M) being sold to shipbuilders is an on-line automatic monitor using forward light scattering and light transmission in a novel, patented way. The unique geometry of the sensor responds strongly to oil droplets, suppresses interference from suspended solids, and eliminates other sources of error such as water color, filament intensity changes, and temperature fluctuations. The self-cleaning feature employs a continuous wiper action that prevents deposits, algae growth, rust, or oil build-up. For further information on Biospherics "Oil Sentry",
Write 26 on Reader Service Card

Maine Company Gets $3.2-Million Navy Award To Upgrade Cranes

Middlesex Contractor & Riggers, Inc., Dracut, Maine, is being awarded a $3,176,000 fixed-price contract for the modernization of four 25-ton portal cranes at the Portsmouth Naval Shipyard, Portsmouth, N.H. The Naval Facilities Engineering Command, Northern Division, was the contracting activity. (N62472-80-C-1463)

Dixilyn-Field Asks Title XI To Build Two Rigs Costing $63 Million

Dixilyn-Field Drilling Co., 5005 Riverway, Houston, Texas, a subsidiary of Panhandle Eastern Pipe Line Co., 3000 Bissonnet Street, Houston, Texas, has applied for a Title XI guarantee to aid in financing the construction of two jackup drilling rigs.

Bethlehem Steel Corporation, Beaumont Division, Beaumont, Texas, and Levingston Shipbuilding Co., Orange, Texas, each will build one of the vessels. Both rigs are expected to be delivered in 1981, and will operate worldwide.

If approved, the Title XI guarantee would cover $42 million, or 75 percent of the vessels' $63 million estimated actual cost.

New Color Brochure Describes Scope Of Port Of Portland

The Port of Portland, Ore., is offering a new full-color brochure describing its unique marine cargo capabilities and handling advantages.

Subjects covered include operating philosophy, geography, and special services. A full listing of all regional and representative offices is shown on the inside back cover.

The "Portfolio Brochure" is available free of charge. For further information,
Write 27 on Reader Service Card

V.J. Lieggi Rejoins CDI Marine Company As San Diego Office Manager

Paul I. Beining, president of CDI Marine Company of Jacksonville, Fla., has announced the appointment of **Vincent J. Lieggi** as San Diego office manager. In addition to the office management responsibilities he will be responsible for West Coast marketing activities.

Vincent J. Lieggi

Mr. Lieggi graduated from the U.S. Naval Academy in 1965. After four years in naval service, he was employed by Newport News Shipbuilding as a mechanical engineer for fluid systems design. In 1973 he joined CDI Marine Company as a senior mechanical engineer, and soon became manager of the Philadelphia office. After leaving CDI in 1978 to serve as chief engineer for a commercial shipyard, Mr. **Lieggi** returns to CDI Marine with an expanded management background.

J.R. Farmer Appointed Vice President Of Offshore International

The Offshore Company of Houston has announced the election of **James R. Farmer** as a vice president of its wholly owned subsidiary, Offshore International, S.A. (OISA). As a principal operating company of The Offshore Company, this subsidiary conducts drilling operations on a worldwide basis. Mr. **Farmer** serves as division manager in Singapore and is responsible for OISA's operations in Southeast Asia.

1980 ABS Rules For Steel River And Intracoastal Vessels Now Available

The American Bureau of Shipping (ABS), an international ship classification society, has published the 1980 edition of *Rules for Building and Classing Steel Vessels for Service on Rivers and Intracoastal Waterways.* Many sections in the new edition contain revised data, the most significant being in Section Five. It incorporates standards regarding the design and construction of barges intended to carry dangerous cargoes in bulk that are in Title 46 of the *Code of Federal Regulations.* Calculations showing compliance with these requirements are to be submitted to ABS for review. Alternatively, ABS will accept written evidence that barges carrying dangerous cargoes in bulk are in compliance with U.S. Coast Guard regulations. Section Three includes new buckling requirements for deck and trunk structures of tank barges. Section Seven includes new requirements for steering gear tests and steering gear operational controls based on experience ABS has gained with these systems since the previous edition was published in 1971.

The cost of the 1980 edition of the *Rules for Building and Classing Steel Vessels for Service on Rivers and Intracoastal Waterways* is $20 in the United States; $22 in Canada, Central America, Colombia, Mexico, and Venezuela; $24 in other South American countries, Europe, and North Africa; and $26 in other African countries, Asia, Australia, and the Middle East. Copies can be ordered from the Book Order Section, American Bureau of Shipping, 65 Broadway, New York, N.Y. 10006, or from local ABS offices. State and local taxes should be added to the cost of the book where required.

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First of all, our dry docks can handle any size ship, from tug to VLCC. The Port of Portland's Dry Dock 4 is the largest on the West Coast. It's the only Coast facility that can handle the entire Alaskan crude fleet. In all, we have 4 dry docks—for ships up to 275,000 dwt. No West Coast ship is too big or too small for us.

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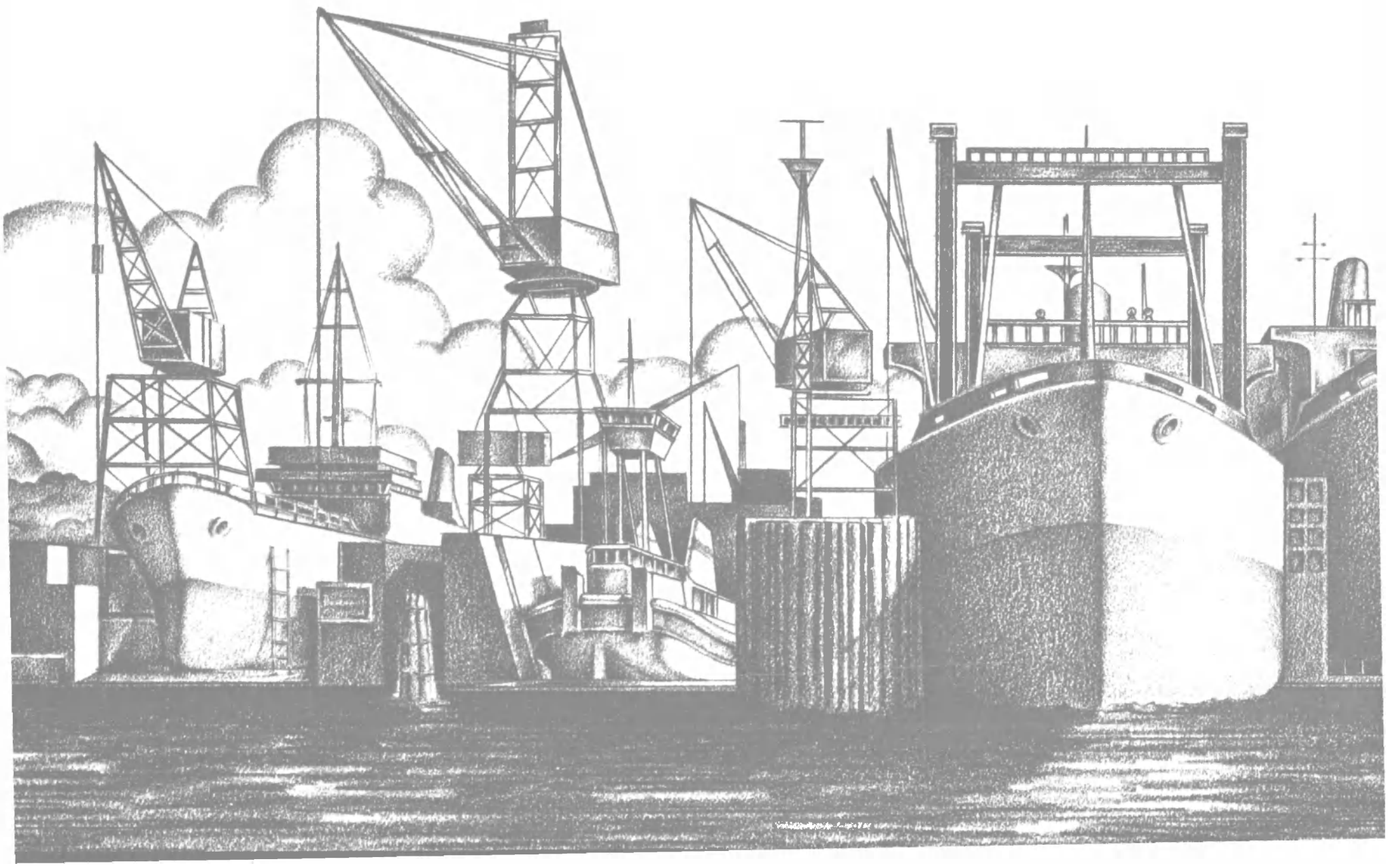

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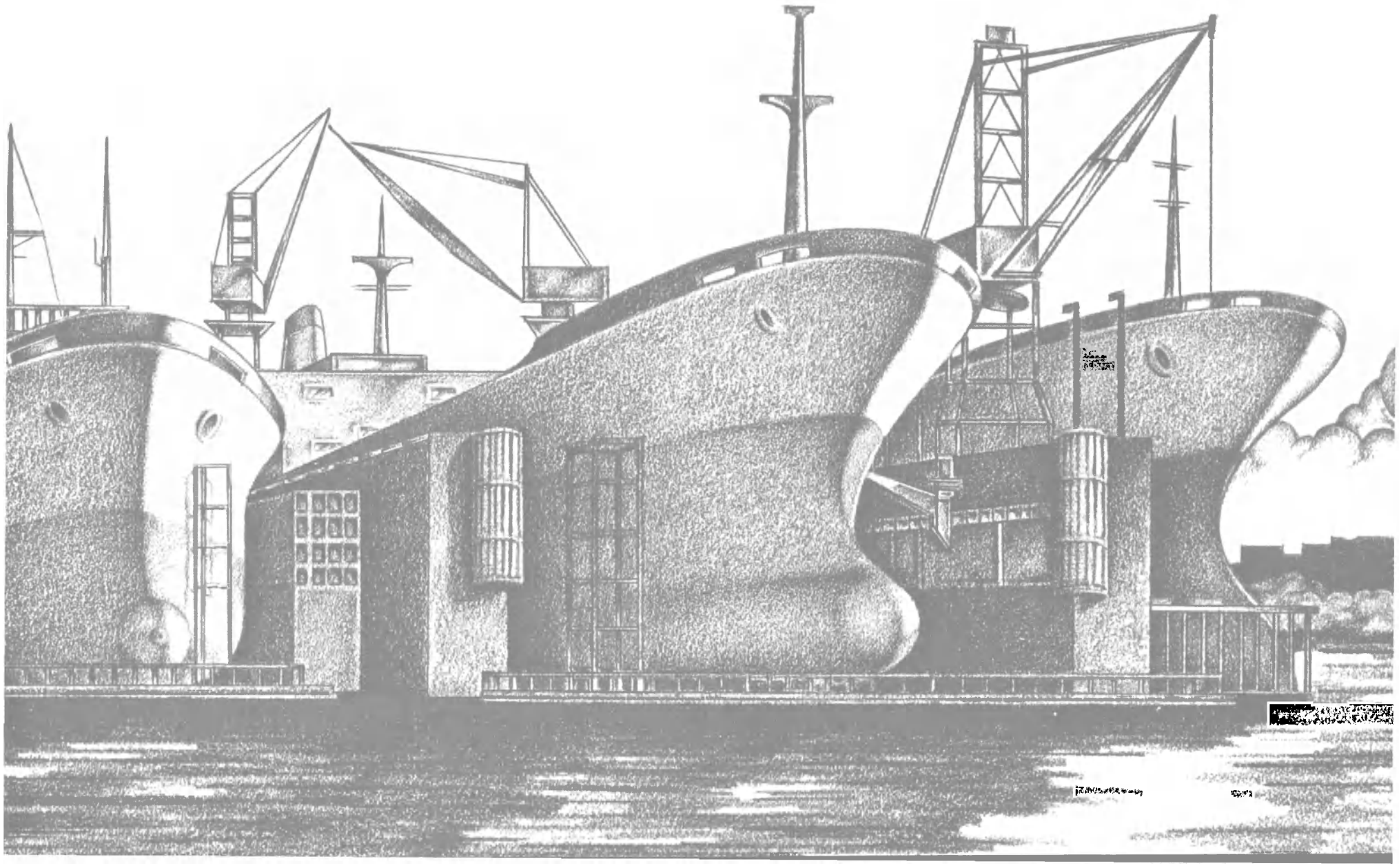

HUDSHIP Delivers 112-Foot Lamnalco Merlin

Hudson Shipbuilders, Inc. (HUDSHIP) of Pascagoula, Miss., recently delivered the utility ves- Lamnalco Merlin (shown above) to Lamnalco Ltd. of Kuwait. The new boat will join the fleet operated by Lamnalco, who operate their own vessels and manage vessels of other companies throughout the Arabian Gulf and Red Sea.

The utility vessel T.E. Short, the initial boat of the 112-foot class built by HUDSHIP for Hudson Marine, was purchased recently by Lamnalco and renamed Lamnalco Falcon. That vessel is now operating out of Jeddah and the Red Sea ports of Saudi Arabia

The design of Merlin is HUDSHIP's standard 112-foot utility vessel hull, with some minor modifications to suit the owner's particular requirements. The lower house arrangement has been redesigned to accommodate 18 men in five cabins. The upper house has three single cabins for the captain, chief engineer, and a company official. The after deck, unchanged by the redesign, has a National 12½-ton crane mounted at the starboard stern corner to service the entire cargo deck.

Lamnalco Merlin is powered by twin GM Detroit Diesel 16V92NA engines, each rated 600 bhp at 1,800 rpm, with Twin Disc MG527 reduction gears. The power package was supplied by George Engine of Harvey, La. Engine controls are by Kobelt. On sea trials the vessel exceeded 10 knots in a loaded condition and logged 13 knots lightly loaded. Engines are monitored by a Marine Electrical Design system.

Auxiliary power is provided by two 50-kw Delco generators driven by Detroit Diesel 4-71NA engines.

The pilot house is arranged for maximum all-around visibility. It houses an assortment of electronic equipment, including Furuno model 1064 radar, Sailor 144 AC VHF radiotelephone, Sailor T-124 SSB radio, Sailor R-104 receiver, Raytheon 350 loudhailer, and Data Marine 2650 depth indicator.

Other equipment includes Aqualoy propellers, Cutlass shaft and stern bearings, Red Fox sewage treatment system, Peabody Barnes pumps, HBL anchor windlass, Hale fire pump, Perko running and navigation lights, Kahlenberg air horn, and Carlisle & Finch searchlights.

Navigation Product Manager Appointed At ITT Decca

Peter A. Tupas

Peter A. Tupas has been appointed product manager of ITT Decca Marine's navigation product line, it was announced recently by **George B. Woods**, director of engineering services for ITT Decca Marine.

Mr. **Tupas** will be responsible for providing marketing and technical support for ITT Decca Marine's Satellite Navigator, Loran C and Track Plotter products.

Mr. **Tupas** is a member of Master, Mates and Pilots, and was most recently a third mate on the S/S Sheldon Lykes cargo ship.

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Southern Natural And IOT Sign Interstate Purchase Agreement

An agreement for Southern Natural Resources, Inc. to purchase Interstate and Ocean Transport Company and its affiliated companies, which own and operate the largest U.S. independent fleet of coastal tank barges and tugs, has been signed by Southern Natural and IOT Corporation of Philadelphia, Pa., Interstate's parent company.

Henry C. Goodrich, chairman and chief executive officer of Southern Natural Resources, and **Adrian S. Hooper**, chairman, president and chief executive officer of IOT, jointly announced the signing recently. Terms of the acquisition, as announced last August when the preliminary understanding was reached, call for cash and short-term notes in excess of $100 million.

It is expected that the purchase will be closed by the end of 1980.

Incorporated in 1928, Interstate operates a fleet of 51 tank barges and 37 tugs between refineries and ports along the Atlantic and Gulf Coasts and is one of the nation's largest transporters of petroleum products. Its revenues for the fiscal year, ended June 30, 1980, exceeded $100 million.

"Interstate will be a strong addition to Southern Natural Resources and has significant growth potential in energy transportation," Mr. **Goodrich** said. "Interstate is regarded as one of the finest operations in its industry and fits in well with Southern Natural's own background in energy transportation and marine activities."

Southern Natural Resources is a large energy and natural resources concern, with interests in interstate natural gas pipelines, offshore drilling, oil and gas production, and forest products.

Riverway Shipyard Completes Rebuilding Of M/V Glen-Karen

The rebuilt 1,800-hp towboat M/V Glen-Karen (formerly the M/V Liberty Bell), shown above, was recently delivered by Riverway Shipyard Co. The M/V Glen-Karen went into the Riverway Harbor Service, St. Louis division of Riverway Co., as a Lock 26 turn boat.

The M/V Glen-Karen is the first 1,800-hp boat in the growing fleet of Riverway Harbor Service. In August, Riverway acquired the M/V Jonathan-B, a 910-hp boat, and currently they have 13 harbor boats in their fleet.

The M/V Glen-Karen is 80 feet long by 33 feet wide by 10 feet deep in the midbody with a 3-foot shear forward and a 4-foot-high raised deck aft.

The bow rake was completely rebuilt from the headlog back to the collision bulkhead. The new headlog and corners were built of ¾-inch plate with ¾-inch rub-bars welded over the corners. The new towknees and headlog were outfitted with rubber towknees from B-J Marine Products.

The M/V Glen-Karen was previously built with a retractable pilothouse. A new second deck, pilothouse, internal stairs and removable stacks were added by Riverway Shipyard.

The two General Motors turbocharged engines (rebuilt by Western Diesel) are 16V-149 Detroit Diesels rated at 900 hp at 1,800 rpm. They are operated from both the pilothouse and engine room by WABCO air controls.

The Twin Disc reverse-reduction gears turn the shafts at 7:1 ratio and were also rebuilt by Western Diesel. The new stainless-steel, 4-blade propellers are 76-inch diameter and were fitted to two new tailshafts.

Electric power is derived from two 4-71 Detroit Diesels (rebuilt by Western Diesel) operating at 1,800 rpm driving three-phase, 50-kw Delco generators.

A Tugalert 24-point monitoring and alarm system maintains a constant check on main and auxiliary engines and miscellaneous associated equipment in the engine room.

Deck machinery includes two Beebe electric 40-ton winches and one 1-ton boat hoist. A St. Louis Ship FAST System LS-2 was installed for treatment of sewage.

Riverway Shipyard has printed a new brochure depicting its activities in new construction, repairs, conversions, and manufacture of barge covers. For further information and free copies of the brochure,

Write **24** on Reader Service Card

John Nachtsheim, president-elect, addresses Annual Banquet.

SNAME Elects Nachtsheim Presid

88th Annual Meeting

The Society of Naval Architects and Marine Engineers at its 88th Annual Meeting, held on November 13, 1980 at the New York Hilton Hotel, elected **John J. Nachtsheim** as president. Mr. **Nachtsheim**, who is Assistant Administrator for Operations, U.S. Maritime Administration, will commence his two-year term on January 1, 1981.

Mr. **Nachtsheim** was graduated from Webb Institute of Naval Architecture in 1947 with a Bachelor of Science degree in Naval Architecture and Marine Engineering. He subsequently received an LLB degree from the George Washington University Law School and he attended the Harvard Business School.

Mr. **Nachtsheim** began his career with the Department of the Navy as a naval architect at its Bureau of Ships Design Division in 1948, and in 1958-59 he was Deputy Chief Design Engineer, Puget Sound Naval Shipyard. He returned to BUSHIPS, which later became the Naval Ship Engineering Center, as Chief Naval Architect for the years 1959-70. It was in these latter years that he was responsible for the contract design of all naval ships and major ship conversions.

In 1970, Mr. **Nachtsheim** joined the Maritime Administration as Deputy Assistant Administrator for Research and Development, and in 1973 he became Chief of the Office of Ship Construction. In this post, he was responsible for supervising merchant-ship construction in U.S. shipyards. For the five years following, he was instrumental in the contracting of $2.35 billion in merchant vessels.

Elected officers for 1981, from left, **Robert G. Mende**, secretary and executive director; **John Nachtsheim**, president-elect; and **Robert Axelrod**, treasurer.

As Assistant Administrator for Operations at MarAd, Mr. **Nachtsheim** is responsible to the Assistant Secretary of Commerce for Maritime Affairs in the day-to-day supervision of the entire range of maritime operations and associated maritime programs of the federal government.

A Fellow of the Society, Mr. **Nachtsheim** has been one of its most active members over the years, past member of many technical and standing committees, and the author of more than a dozen technical papers and publications. He holds the David W. Taylor Medal, and until his election was an Honorary Vice President of the Society.

Lester Rosenblatt, current president of the Society, presided over the business, technical and social meetings during this Annual Meeting. In his annual address, Mr. **Rosenblatt** stressed his deep concern over the current position of the U.S. merchant marine and the U.S. Navy.

Mr. **Rosenblatt** stated that he feels the message calling for more merchant ships has been heard in Washington. He said: "During the past year, a perhaps over-ambitious omnibus maritime bill was introduced in the Congress. It is currently becalmed and has little chance for passage this year. Nevertheless, common sense dictates that it, or one or more bills pointing towards the same goals, will be enacted during the coming year. Also, an important maritime goal was achieved when President **Carter** signed the Deep Seabed Hard Minerals Act into law on June 28, 1980. This law means much more than probable new ship construction orders for numerous shipyards and more jobs for many seamen in the coming years; it has a national security implication of enormous importance. It opens the door to self-sufficiency for the United States in at least four essential minerals — manganese, cobalt, copper and nickel.

The principal speaker at the 88th Annual Banquet of the Society was **David S. Lewis Jr.**, chairman of the board and chief executive officer of the General Dynamics Corporation.

Holding a B.S. degree in aeronautical engineering from Georgia Tech, Mr. **Lewis's** first job was at the Glenn L. Martin Company in Baltimore. He became chief of aerodynamics at McDonnell Aircraft Corporation in 1946, holding successively more responsi-

(continued on page 16)

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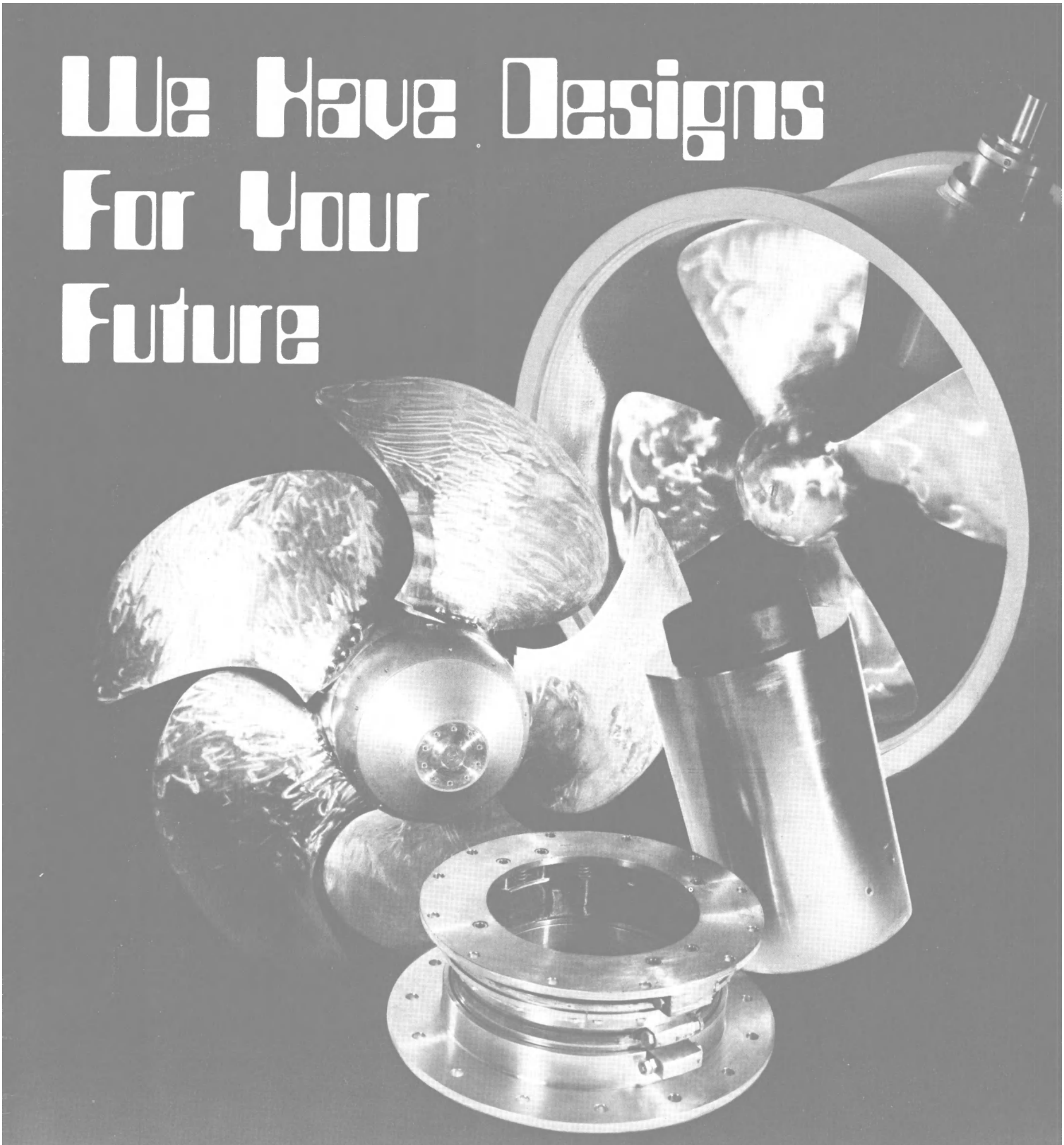

BIRD-JOHNSON COMPANY MARINE DIVISION

Power transmission products to satisfy tomorrow's needs. KaMeWa Controllable Pitch Propellers for fuel economy. KaMeWa Controllable and Fixed Pitch Thrusters for maximum safety. Cederval Stern Tube Seals for reliability. SKF Keyless Couplings for ease of installation. For details on how to put our technical expertise and experience to work for you, write or call Gary W. Dayton, 110 Norfolk Street, Walpole, MA 02081, (617) 668-9610.

Press Group Awarded Major Platform Contracts

Worley Engineering has been awarded a contract for the conceptual design and detailed engineering of three new platforms to be installed on the Rough natural gas field off the Humber.

British Gas plans to turn the field into a storage facility with gas being taken from the national gas transmission system during periods of low demand in summer, pumped into the field reservoir and withdrawn in large quantities during time of peak demand for gas during the winter.

This scheme is part of an approximately $9.4 billion expenditure program being undertaken over a five-year period by British Gas — the very large part of which is aimed at improving availability of gas at times of peak demand. Worley Engineering's contract will involve 180,000 man hours and apart from detailed design will include preparation of bid packages for equipment as well as backup services through to and including commissioning of the three platforms —two drilling and one production.

Based in London and in Houston, Texas, Worley Engineering is the front end engineering wing of the William Press group with contracts throughout the U.K., Europe, Australia, the United States and the Middle East.

From their corporate offices in the United States, Worley Engineering Inc. has also announced two contracts worth about $10.81 million for Shell in Nigeria.

The contracts were received through Scallop Materials Services New York, for the supply of two gas processing plants to Shell Petroleum Development Company Nigeria.

Worley is to provide engineering, procurement and construction supervision services as well as the supply of equipment for the two separate but basically identical gas processing plants.

Scallop Materials Services is a division of Scallop Corporation, a member company of the Royal Dutch/Shell Group.

Navy Salvage Contract Awarded To Tracor Marine

Tracor Marine, Inc., Fort Lauderdale, Fla., has been awarded an open-ended contract for marine salvage operations in the Gulf of Mexico by the Naval Sea Systems Command (Supervisor of Salvage).

J.P. Ducich Appointed Operations Director At Bultema Marine

John P. Ducich

John P. Ducich has joined Bultema Marine Transportation Inc. as director of operations. He will be responsible for costing, engineering repairs, schedules and sales, and will report directly to **Stanley J. Andrie**, president.

Bultema Marine Transportation Inc., a subsidiary of The Canonie Companies, Inc., is one of the largest transportation firms on the Great Lakes. Its fleet of tugs and barges deliver raw materials, products, and equipment where they are needed. In addition to transportation, Bultema Marine Transportation provides heavy lifting capabilities along with lightering, salvage, and icebreaking services.

Mr. **Ducich** most recently worked for Crowley Maritime Corporation and prior to that was with Foss/Dillingham Corp. He will work out of the Muskegon, Mich., office of Bultema Marine.

Why did ContiCarrier pick Jeffboat? It's simple. They wanted a fleet with a future.

ContiCarrier bought six towboats in all. Three 6000's, two 4200's and one 2800 retractable pilothouse.

The qualities they saw in Jeffboat vessels were what prompted the purchase. Jeffboat features heavier steel plate and more structural members as standard towboat construction. Control systems are equally sophisticated for ease of operation. The result: An efficient, durable, and trouble-free towboat recognized as an industry leader.

You might not need a fleet of boats as large as ContiCarriers, but you can be sure of one thing. Whether you're ordering one boat or six, you'll be getting Jeffboat quality and dependability every time. Write or call for a personal tour. Jeffboat, Division of Texas Gas Transmission Corp., Jeffersonville, Indiana 47130. (812) 288-0421.

JEFFBOAT

America's largest inland shipbuilder.

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Sixteen Key Appointments Announced At Bath Iron

President **John F. Sullivan Jr.** of Bath Iron Works recently announced 16 key appointments in a major managerial realignment to strengthen the shipyard's production and marketing capabilities.

"We are pleased that all the appointments came from within the company," he said. "They reflect the depth and strength of our organization."

The following promotions and organizational changes were announced by the chief executive.

Royce A. Young Jr. was promoted to vice president-operations. Previously vice president-production, he is a native of Topsham and a 1958 graduate of the BIW Apprentice Program.

Henry M. Stupinski was promoted from program manager-FFG Program to director of marketing for new ship construction. Prior to coming to BIW in 1977, Mr. **Stupinski** was general manager of Steel Span, Inc. of Avon, Mass., for three years.

Gordon H. Falt Jr., who previously served as manager of marketing-overhaul, was named director of marketing for overhaul and repair, where he assumes additional responsibilities. Mr. **Falt** has been employed at BIW for more than 20 years.

Steven G. Buttner was promoted to director of program management, having previously served as program manager of commercial new construction and Navy overhauls. He joined BIW in August of 1972 and has held a variety of engineering and planning posts.

Harland D. Hatch was promoted from production superinendent to production manager. In his new position, Mr. **Hatch** will be in charge of all production and shipbuilding functions in the yard. He will be directly responsible for such areas as structural services, machinery, sheetmetal works, carpenters, new ship construction and ship conversions.

Abbott Fletcher was promoted to program manager of FFG new construction. He previously had served as assistant manager of the guided missile frigate program. He came to BIW in 1953 from the Bendix Aviation Corp. in New Jersey, where he worked as a founding engineer.

Frank C. Leavitt Jr., who had served as FFG administration manager, was named program manager for FFG support services. A graduate of BIW's Apprentice Program, Mr. **Leavitt** has worked in the yard since 1955.

Robert J. Donovan was named program manager-commercial new ship construction. He previously had served as assistant program manager in that area. He started to work at BIW in 1972, after having served as a lieutenant in the U.S. Navy.

Jerry L. Steiner was named program manager of Navy overhaul and repair. He had previously served as overhaul planning manager. Mr. **Steiner** worked as a naval architect for Litton Industries in Los Angeles before coming to BIW in 1973.

Richard E. Outhuse was designated to be project manager of the Sun Dredge contract which BIW was awarded on September 25. A graduate of the BIW Apprentice Program, he has served as project manager or superintendent of several ship contracts in the past, including recent work on the USS Conyngham.

Karl H. Finnimore, previously a project engineer, was promoted to assistant program manager of the FFG Post Shakedown Availability Program. Mr. **Finnimore** came to BIW in 1977 from Bethlehem Steel in Beaumont, Texas, where he worked as a project engineer.

Dennis P. Sullivan was promoted to general foreman of sandblasting and paint services. Mr. **Sullivan** joined BIW five years ago.

Maurice J. Bisson was named general foreman of structural services, being promoted from a

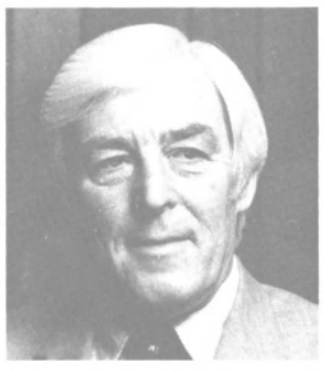
shipfitting foreman. He has been employed at BIW since 1953.

Donald J. Perron was promoted to foreman of shipfitting on the ways and water, after having previously served as an assistant foreman in that area. He has been employed at BIW for 17 years.

Maurice L. Cloutier was elevated from assistant foreman to foreman of the paint department. He has been employed at BIW for 23 years, starting to work on the yard after his discharge from the Marine Corps.

Cleon V. Pinkham was promoted to foreman of sandblasting and cleaning, previously having served as an assistant foreman in that area. He has been employed on the yard since 1958.

Kelly To Succeed Watkin As Head Of Delaware River Port Authority



James R. Kelly

James R. Kelly, director of the Delaware River Port Authority's World Trade Division and a past president of the North Atlantic Ports Association, has been named to succeed executive director **William W. Watkin Jr.** as head of the bistate agency. Mr. **Kelly** will also assume the new title of president when the appointment becomes effective following Mr. **Watkin's** retirement on May 1, 1981. The title of president will more accurately represent the responsibilities of the position, according to board chairman **F. Eugene Dixon Jr.**

Alfred L. Griebling, director of the Authority's Bridge Division, has been elected to serve as executive vice president under Mr. **Kelly,** also effective May 1.

Mr. **Kelly** first joined the Port Authority in 1960 as assistant director of the World Trade Division, and moved up to director in 1969. His entire professional career has been closely linked with the maritime trade. He has been a leader in area maritime activities since joining the Port Authority. In addition to having served as president of the North Atlantic Ports Association, he is a past president of the Philadelphia Maritime Society, a director of the American Association of Port Authorities, and executive secretary of the Delaware River Ports' Council for Emergency Operations.

$15-Million Contract For New Chemical Barge Awarded To GD-Quincy

General Dynamics' Quincy Shipbuilding Division recently received a contract, valued at approximately $15 million, from Coastwise Trading Company, Inc. of Delaware, for the construction of a 471-foot chemical carrier barge. The barge, which will transport paraxylene between the Gulf Coast and Atlantic Coast, will have a capacity of 175,000 barrels. It is scheduled for delivery in late 1981.

This is the fourth barge contract which Quincy Shipbuilding has received from Coastwise Trading Company within a year. In December 1979, Coastwise contracted with Quincy for the construction of three oil-carrying barges to be used in intercoastal service.

In recent months, Quincy has been successful in obtaining new Navy and commercial overhaul and construction contracts. Recently, the division was selected to build a $60-million, coal-carrying ship for New England Electric System.

Shown above at the SNAME Northern California meeting are (from left): **Thomas B. Cole,** chairman; **Roger L. Potash,** vice chairman and author; **Keith Michel,** Technical and Research Committee; and **James C. Stokesberry,** secretary-treasurer.

SNAME Northern California Hears Mini-OTEC Paper

A paper titled "Mini-OTEC Design and Testing" was presented by Dr. **Roger L. Potash** of Lockheed Ocean Systems at a meeting of the Northern California Section of The Society of Naval Architects and Marine Engineers in San Francisco recently.

An OTEC (Ocean Thermal Energy Conversion) plant uses the temperature difference between warm water on the surface and cold water deep in the ocean to generate power. Mini-OTEC was a small demonstration plant built cooperatively by the Lockheed Space and Missiles Co., the State of Hawaii, and the Dillingham Corporation. It was the first successful closed cycle-OTEC plant and the first at-sea OTEC plant. It produced power for about 600 hours between August 2 and November 18, 1980, while moored in approximately 3,000 feet of water off Keahole Point, Hawaii.

The author briefly described design, construction, installation, and operation of the barge-mounted plant, and emphasized that machinery and components were chosen for ready availability and that some were loaned or donated to the project. Therefore, Mini-OTEC was much less efficient than a larger, more thoroughly optimized installation would be. Approximately 15-kw net electrical power was generated from a generator output of about 50 kw and a theoretical thermal power of about 93 kw. No significant problems or breakdowns were encountered.

An extensive discussion period followed the paper. **Robert Steinbach** of Lockheed, who operated the Mini-OTEC Plant, was present in the audience and answered many of the questions.

Parmater Named President Bultema Dock & Dredge And LaCrosse Dredging

John R. Parmater has been named president of Bultema Dock & Dredge Company and LaCrosse Dredging Corporation. Both the Muskegon, Mich.-based firms are subsidiaries of The Canonie Companies, Inc. Mr. **Parmater,** a graduate of the University of Colorado holds a BSCE degree. Prior to this appointment, he served as vice president of operations for five years, and held the position of executive vice president of Bultema Dock & Dredge Company for one year. He has also served as vice president of LaCrosse Dredging Corporation since 1976.

John R. Parmater

Bultema Dock & Dredge Company specializes in dredging, marine construction, intake/discharge structures and subaqueous pipeline placement. LaCrosse Dredging Corporation, one of the oldest hydraulic dredging companies in the country, has been in operation since 1907, and specializes in hydraulic dredging.

PSI/LIAAEH CONTROLLABLE PITCH THRUSTERS

...a new generation

PSI/LIAAEN is proud to present o new generation of controllable pitch thrusters, either transverse or rotatable, for a wide range of applications.

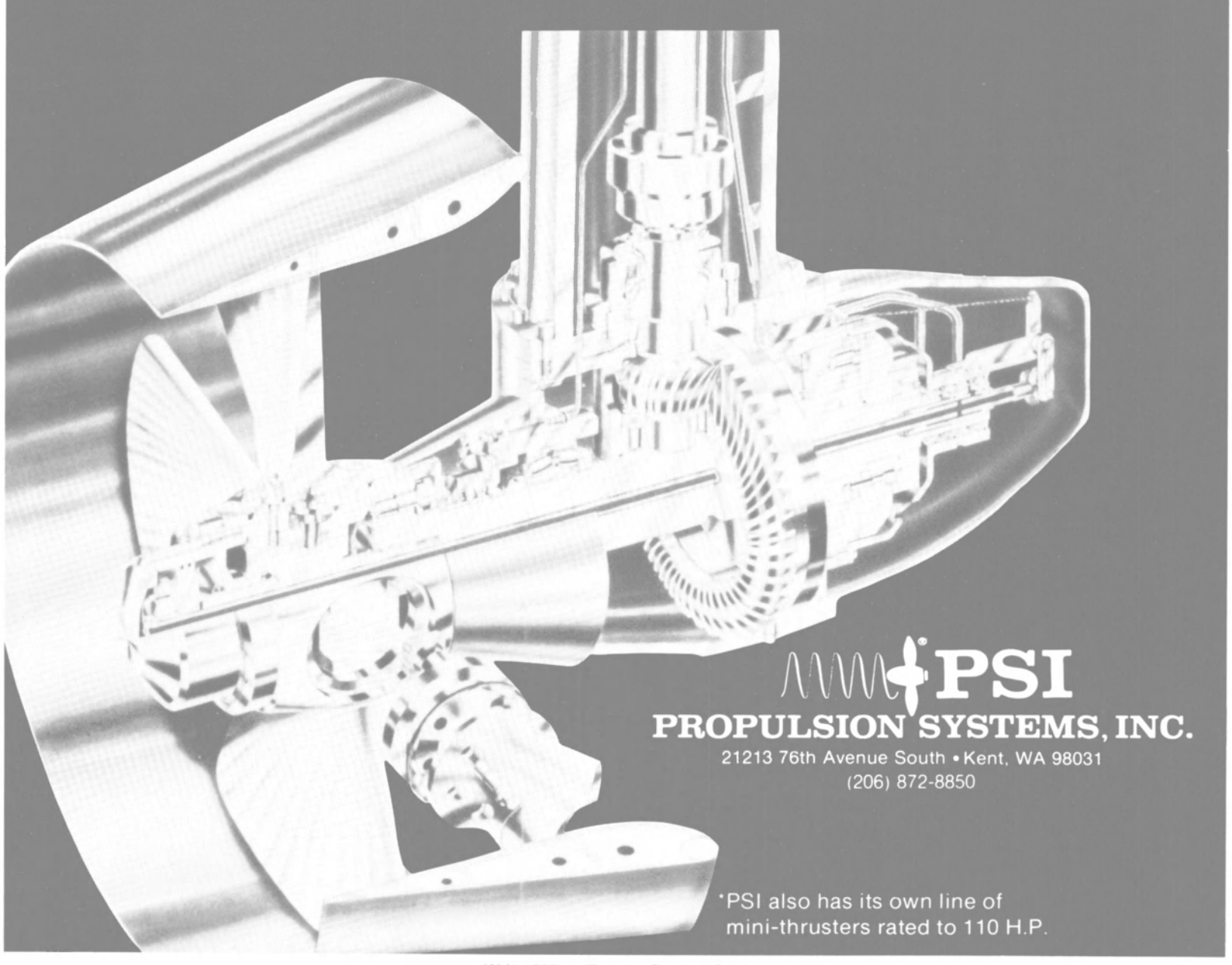
The basic unit consists of the well proven PSI/LIAAEN, E type, CP propeller mated to a robust, oil filled gear box which contains spiral bevel gearing and bearings, oil distribution arrangement and propeller pitch feed-back mechanism.

In addition, a patented PSI/LIAAEN feature allows removal of the low speed propeller shaft and hub assembly without disturbing the bevel gear setting. This feature eliminates needless down time in performing routine service or repair.

Output of these new thrusters ranges from 800 HP to 6,000 HP continuous service.

PSI is also the exclusive U.S. sales and service representative for Brunvoll fixed and controllable pitch thrusters ranging from 65 to 800 HP.

For further information and quotations for specific applications please contact P.K. Wennberg, Jr. for details.



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*PSI also has its own line of mini-thrusters rated to 110 H.P.

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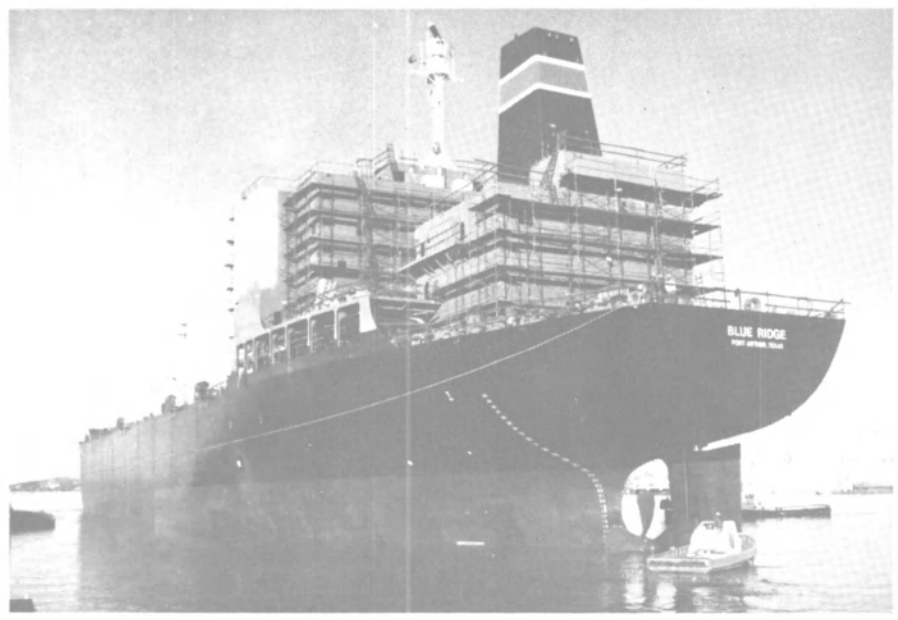
Linden Plans To Build Three Tug/Supply Boats Totaling $9.4 Million

Linden, Inc., Suite 201, 226 Carondelet Street, New Orleans, La., has applied for a Title XI guarantee to aid in financing the construction of three tug/supply vessels.

Zigler Shipyards, Jennings, La., is the proposed shipbuilder for the vessels. Upon their completion in 1981, the 165-foot-long, diesel-powered vessels will be employed in the U.S. Gulf of Mexico.

If approved, the Title XI guarantee would cover $8,295,000, or 87½ percent of the vessels' $9,480,000 estimated actual cost.

ON THE COVER



The S/S Blue Ridge, 37,500-dwt product carrier, shown being hauled from NASSCO's 1,000-foot-long building basin. The Blue Ridge is first of three Carlsbad-Class product carriers for West Coast Shipping, subsidiary of Union Oil Company.

NASSCO Launches The S/S Blue Ridge— First Of Three For West Coast Shipping

National Steel and Shipbuilding Company (NASSCO), San Diego, Calif., recently launched the 658-foot S/S Blue Ridge, the first of three 37,500-dwt product carriers that NASSCO is building for West Coast Shipping, a subsidiary of Union Oil Company of California.

The Blue Ridge hull was constructed in the company's flat-bottomed 1,000-foot-long building dock. Launching was accomplished by flooding the dock and floating out the vessel. The Blue Ridge will be berthed and outfitted at NASSCO with delivery scheduled for April 1981. It will be used to transport oil products from Union Oil's Beaumont, Texas, refinery to terminals on the Gulf and Atlantic Coasts.

The second and third product carriers for West Coast Shipping are currently under construction, and delivery is scheduled for June 1981 and August 1981, respectively. The vessels are a new NASSCO design designated as the Carlsbad Class. They are 100 feet in beam, have a 33-foot draft, and will carry 250,000 barrels of refined petroleum and petrochemical products from refineries to distribution centers.

The vessels will incorporate the most modern equipment available and will meet the latest safety and environmental protection standards including double bottoms, a clean segregated ballast system, an inert gas system, a sewage treatment plant, collision avoidance radar, and a backup steering system. They will have steam turbine engines for maximum fuel efficiency and conservation for their particular trade.

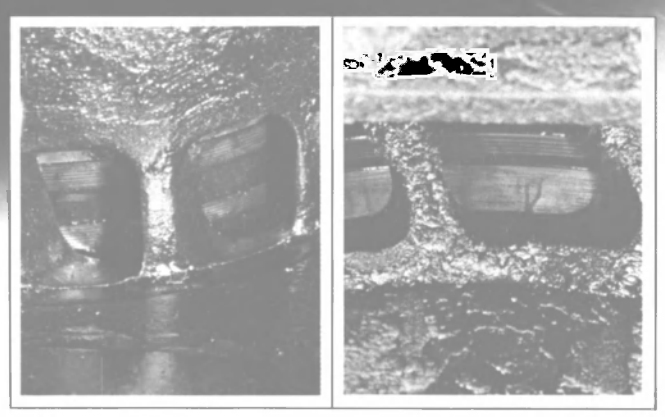
NASSCO currently has a $778-million backlog, including three Navy destroyer tenders, a Navy cable repair ship, and eight product carriers. The company is a wholly owned subsidiary of Morrison-Knudsen Company, Inc. of Boise, Idaho.

EDO Receives $6-Million Sonar Contract From A Foreign Navy

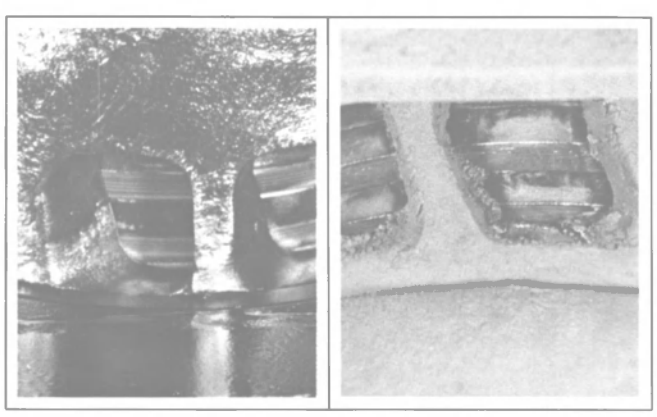
EDO Corporation, College Point, N.Y., designer and manufacturer of advanced electronic and specialized equipment for military, aviation, marine and industrial markets, has announced it has received a $6-million contract from a foreign navy for a quantity of EDO Model-780 series sonars.

William R. Ryan, chairman of the board of EDO, stated that this contract is the result of an intensive worldwide marketing campaign for the company's 780-series sonars. It includes an option to procure additional systems during the next two years at a price to be negotiated at the time of exercise. Work on this contract will be performed by the company's Government Products Division in College Point.

Keep the boat working



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.

What could you save with *Caprinus* R Oil? Try it in ALCO, EMD and Fairbanks Morse and *you'll know.* Write us for more information.

Write: Shell Oil Company, Manager, Commercial Communications, One Shell Plaza, Houston, TX 77002

*Caprinus is a trademark and is used as such in this writing.

Come to Shell for answers

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Ryan-Walsh Appoints Three Corporate Officers

Recent board action of Ryan-Walsh Stevedoring Company, Inc., Mobile, Ala., elevated three management employees to corporate officers.

Billy W. Parks was named vice president-engineering, and **Ross K. Drake** and **Bernard H. Greene Jr.** were named assistant vice presidents.

Mr. **Parks** joined Ryan-Walsh in 1979 as corporate equipment manager, coming from a marine construction career beginning in 1955, and including posts as vice president and general manager of Galveston Shipbuilding Company; project engineer for offshore construction and shipyard estimator for J. Ray McDermott, Inc. of New Orleans; and manager, engineering and maintenance for Radcliff Materials, Inc. of Mobile.

Mr. **Parks** holds a B.S. degree from Auburn University in civil engineering.

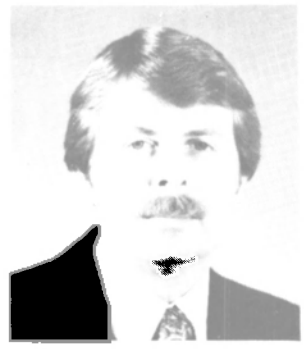
Mr. **Drake** came to Ryan-Walsh's subsidiary Southern Steamship Agency, Inc. from the U.S. Navy's Military Sealift Command, Vietnam, in 1973, and was transferred to the parent company in 1976 as ship superintendent trainee and then administrative assistant. He is a graduate of the University of South Alabama (B.S. degree in history), and holds the rank of lieutenant in the U.S. Navy Reserve.

Mr. **Greene,** coming to the assistant vice presidency as an operational assistant, has a waterfront background with Ryan-Walsh beginning in 1969, and including the position of ship superintendent.

He is a 1967 graduate of Murphy High School and attended the University of South Alabama.

Scott Dowdell Is Named Director Of Manufacturing Services At Jeffboat

Scott Dowdell has been named director of manufacturing services by Jeffboat Incorporated, one of America's largest inland shipbuilding companies.



Scott Dowdell

Mr. **Dowdell** started with Jeffboat in September 1966 as a cost analyst. At various stages of his career he has held positions of surface preparation supervisor, surface preparation foreman, assistant superintendent of the plate shop, production scheduler, senior production analyst, senior planning analyst, scheduling manager, project coordinator and materials manager. His new responsibilities will encompass data processing, industrial engineering, material control, planning and scheduling, and purchasing. Mr. **Dowdell** will report directly to **Robert W. Greene,** the president of Jeffboat.

Waterman Steamship Appoints M.W. Schafer Assistant VP Sales

Waterman Steamship Corporation has announced the appointment of **Michael W. Schafer** as assistant vice president sales with headquarters at 609 Fannin Street, Houston, Texas. In his new capacity, Mr. **Schafer** will be responsible for Waterman sales activities in the states of Texas and Oklahoma. Prior to his appointment, Mr. **Schafer** was employed by Waterman as an account executive in Houston. He brings more than 20 years of experience in the shipping business to his new position.

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

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

Imagine savings of about:

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

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

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

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

Here's how the system works.

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

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

Less drag means less fuel.

12-15% less fuel.

You're on solid ground with Intersmooth SPC.

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

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

12%.

15%.

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

Intersmooth SPC produces more revenue days.

A clean hull can mean longer periods between drydockings.

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

Less maintenance and repair.

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

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

Get in touch with your International Paint Representative now.

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

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

*Fuel at $160. per ton.

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

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Two Barges Completed By Dravo SteelShip

Dravo SteelShip Corporation of Pine Bluff, Ark., recently completed fabrication of two custom built 110-foot by 52-foot by 7-foot deck barges for J.S. Alberici Construction Co., Inc., St. Louis.

Each barge is outfitted with four spudwells, four double bitts, and four kevels. Each is equipped with an 8,000-gallon fuel tank that meets U.S. Coast Guard requirements for fuel containment.

The hull is ⅜-inch plate except bulkhead plating which is ¼-inch and rubrail, headlog and corner plating which is ½-inch.

Dravo SteelShip Corporation is currently constructing two 75-foot coastal tugboats, two 85-foot towboats, and several other pieces of marine equipment.

SMR Introduces Inexpensive SSB Radio —Literature Available

Southern Marine Research, Inc. (SMR), manufacturers of commercial grade marine electronics, have recently introduced a single sideband radio that is within the price range of the average boater who ventures into offshore waters.

The Sea Lab 6511, retailing at $649.95, allows the coastal boater the capabilities of constantly being in communication with the rest of the world. The SMR radio is said to be the least expensive SSB available today. Although the Sea Lab 6511 is priced as low as a quality VHF, there have been no sacrifices in quality or design features.

Solid state construction insures years of trouble-free operation and a high degree of reliability, the manufacturer states. An output of 65 watts provides communications capabilities over several hundred miles. Three factory-installed crystals (2182 kHz, the international distress frequency, 2638 and 2738, both ship-to-ship channels) are standard in the new SMR radio. The Sea Lab 6511 has the capacity for a total of 11 simplex or semi-duplex channels. Backlighting of a plastic panel indicates the channel being used. An indicator light also shows transmission is being made. A tuning clarifier allows the operator to fine-tune the radio for sharp and clear reception. Another unique design feature of the Sea Lab 6511 is the lack of an antennae coupler. This simplifies installation and reduces its cost.

The SMR single sideband may be console-mounted or installed overhead. A specially designed snap-off bracket allows the radio to be readily removed. Other features include an external speaker jack and a front-mounted microphone. The Sea Lab 6511 features rugged construction for either commercial or recreational applications. The SMR radio is a compact unit that weighs only 13 pounds.

For further information and free literature on the SMR radio, Write 28 on Reader Service Card

Seatrain Gets Approval To Repay $34.2 Million CDS On The Bay Ridge

The Maritime Subsidy Board has approved an application by Seatrain Lines, Inc., New York, N.Y., to repay approximately $34.2 million in principal and interest in construction-differential subsidy (CDS) received on the 225,000-deadweight-ton tanker Bay Ridge and permanently remove all domestic trading restrictions on the vessel.

Vessels built with CDS are restricted from operating in domestic service. Generally, they must operate in foreign commerce. However, the U.S. Supreme Court ruled last February that such ships could be used in domestic service if the CDS was repaid.

Seatrain previously repaid $27.2 million in subsidies on another tanker, the Stuyvesant, which is now operating in the Alaskan oil trade. The Stuyvesant was the ship involved in the test case decided by the nation's highest court.

Everything new but the name.

Simrad and Taiyo, longtime associates in Europe, have joined forces to bring American fishermen, work boat and commercial ship operators a new generation of computer-controlled navigation systems that are simple to understand and use!

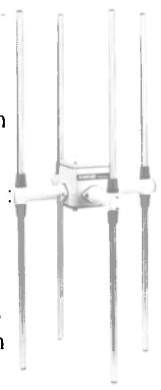
Recognized worldwide as pacesetters, Simrad/Taiyo incorporates the latest in technology with the highest standards of internationally respected quality and dependability.

Introducing the TL-856 Loran C Navigator

Highly sophisticated and micro-computer controlled, the TL-856 provides latest features for accurate and economical navigation, displays present position as Loran TD's or as Lat/Long. Memorizes ten different waypoints and calls up course and distance from your present position to any of the waypoints. Ground speed, time to destination, and cross-track error are always available. Automatically acquires and tracks master and all secondaries in a selected chain. Four tunable and two internally preset notch filters maintain high performance, even in severe interference areas. Built-in alarm and self-test functions constantly monitor the micro-processor and the displays for accuracy. All functions in one easy-to-install compact metal case. Designed and manufactured to meet or exceed the U.S. Coast Guard endorsed RTCM Minimum Performance Standard (MPS).

and the TD-L1520 Automatic VHF Digital Direction Finder

This professional, rugged VHF automatic digital direction finder scans eight channels to let you monitor the fleet, the weather, emergency and Coast Guard transmissions. Instantly locks on a radio beam to locate other ships or navigational beacons for quick courses and fixes. Read bearing directly or on digital display.



Digital readings are in one degree increments. The digital display shows bearing, channel selected, and a reading of signal strength on a level meter as a measure of distance from the station. Channels include VHF, U.S. weather, 121.5 MHz and international fishing frequencies. Works year after year without motors or moving parts.

The compact TD-L1520 can be locked onto one frequency or set to scan eight channels. It operates with Simrad/Taiyo's unique Adcock antenna for extremely accurate definition and sensitive performance.

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See them at your **SIMRAD** dealer.

A trusted name at sea.

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B&W To Test Coal-Oil Slurry Fuels Aboard Ship

Babcock and Wilcox Co. will perform shipboard testing of coal-oil slurry fuels in a marine boiler. The at-sea testing will be preceded by limited shoreside combustion characterization tests to optimize the slurry fuel coal concentration and size. Sea tests will be performed aboard the Cleveland Cliffs vessel Edward B. Greene.

Hitachi Zosen To Build Its First Semisubmersible Rig For U.S. Company

Hitachi Zosen recently received an order for one semisubmersible offshore oil drilling rig from Penrod Drilling Company, a member of the Hunt Group of Companies.

The rig is the first semisubmersible one to be ordered from Hitachi Zosen. An Enhanced Pacesetter type designed by Friede & Goldman, Ltd., U.S.A., the rig is capable of operating at water depths of up to 457 meters (1,500 feet). It can drill to a maximum depth of 7,620 meters (25,000 feet).

Including this order, Hitachi Zosen has received three orders from members of the Hunt Group. Of the 14 orders for jackup type rigs, two are now under construction for Offshore Investments Limited, also of the Hunt Group.

After delivery in July 1982, the rig will be chartered by Occidental Petroleum Corporation and will be operated in Australian waters.

Jones Elected VP-Marine Superintendent Of Farrell Lines

James P. Horn, president of Farrell Lines Incorporated, has announced that **Thomas Jones Jr.,** formerly marine superintendent, has been elected vice president-marine superintendent. Mr. **Jones** is a graduate of the U.S. Merchant Marine Academy at Kings Point, holding a Bachelor of Science degree in marine engineering. He sailed with the former Isbrandtsen Lines in various capacities up to and including chief engineer, before joining Farrell Lines in 1978 as port engineer.

C.R. Thompson Joins Parsons Brinckerhoff As Coal-Handling Specialist

Claude R. Thompson

Claude R. Thompson, a retired U.S. Coast Guard captain with 35 years of marine engineering experience, recently joined Parsons Brinckerhoff, the New York-based engineering, architectural, and planning firm. As a specialist in ports and dry bulk materials facilities, he will be involved in expanding the firm's role in the design of coal transshipment facilities along the Gulf Coast and the Atlantic Seaboard. Mr. **Thompson** will work out of the firm's McLean, Va., office.

L.R. Gilberti To Head Liquid Products Sales For Dravo Mechling

Louis R. Gilberti has been appointed sales manager, liquid products, for Dravo Mechling Corporation, the barge line subsidiary of Dravo Corporation. He will have overall responsibility for Dravo Mechling liquid sales activities.

Mr. **Gilberti** joined Dravo Mechling in 1956, and has served in various operations sales positions. Dravo Mechling, one of the nation's largest barge lines, provides common and contract towing service on the inland river system and the Gulf Intracoastal Waterway.

Omnithruster And Marteco Enter Agreement For European Representation

Charles M. Aker, vice president and general manager of Omnithruster, Inc., Los Angeles, Calif., a manufacturer of marine maneuvering and propulsion systems, has announced the signing of a representative's agreement with Marteco Ltd., S.A., Member of Marteco group of companies, based in Piraeus, Greece.

Marteco is headed by **Harry N. Petrakakos,** president; **Spyros E. Haviaris,** vice president, sales; and **Michael N. Petrakakos,** vice president, Technical Division, all of whom are members of The Society of Naval Architects and Marine Engineers, with over 15 years of experience in the marine industry as consultants, naval architects, engineers and surveyors working with shipbuilders, vessel owners and operators, naval architects and marine engineers. Marteco will coordinate the Omnithruster™ technical and marketing activities with its associated companies who, combined, will offer widespread sales and service capabilities in Europe.

Omnithruster manufactures a complete line of maneuvering and propulsion equipment using a unique application of hydrojet reaction force principles. Equipment is sized from 25 horsepower up to single thrust modules of 1,000 hp and combined thrust capable of 6,000 horsepower.

Sea Level Boat Plans To Build Two Tug/Supply Boats For $25 Million

Sea Level Boat Co., Inc., a subsidiary of CSI Hydrostatic Testers, Inc., 2205 Pinhook Road, Lafayette, La., has applied for a Title XI guarantee to aid in financing the construction of two offshore towing/supply vessels.

Both 192-foot-long, 2,500-horsepower vessels will be built by J. Ray McDermott and Co., Inc., New Iberia, La. Upon the vessels' delivery in 1981, Sea Level plans to use them in the Gulf of Mexico, Alaska, and off the U.S. East and West Coasts.

If approved, the guarantee would cover $7,581,000, or 87½ percent of the vessels' $8,664,158 estimated actual cost.

Garlock Releases New Version Of Expansion Joint Manual

An entirely new format for easier reference and latest product and technical information are features of a revised elastomeric expansion joint manual (CP-001) from Garlock Inc. The 32-page manual explains the advantages of elastomeric construction over metal expansion joints and provides detailed information on four basic designs. These are standard spool-type rubber and fabric joints, Guardian® "200" FEP-lined, rubber and fabric joints, Garflex® fully molded flowing arch joints, and Gylon® all-PTFE molded joints and flexible couplings.

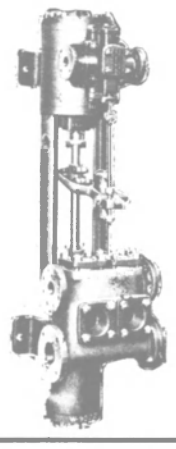
Design features, temperature and pressure ranges, media compatibility, movement capabilities, sizes, weights, and other pertinent data are given on standard styles. Special construction and material variations are mentioned and a number of specialty items shown.

Numerous other items of interest to architects, engineers, contractors, or end users are offered. Among them are schematic piping layouts showing proper use of expansion joints; temperature, pressure and head conversion charts; specification wording; pressure condition nomenclature; installation instructions and trouble tips.

For a free copy of Garlock's Bulletin CP-001,
Write 29 on Reader Service Card

PUMPS

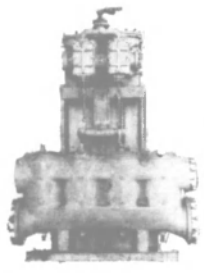
UNUSED WORTHINGTON VERTICAL SIMPLEX PUMPS



8 to 20 GPM—up to 350#. Also suitable for small boiler feed service. Steam WP 220# and 10# exhaust.
for Liberty Ships EC-2 & Victory Ships VC2, AP2 & AP3. (Fuel oil service) Liquid capacity from 7½x4x10—3" suction—2" discharge—1¼" steam—1½" exhaust. OAH 5'2"; OA depth 23"; OAW over air dome 2'2". Weight about 800#. Suitable

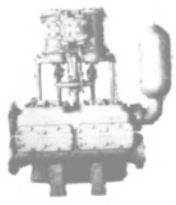
$1195

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



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

STEAM DRIVEN VERTICAL DUPLEX FIRE & GENERAL SERVICE PUMPS



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

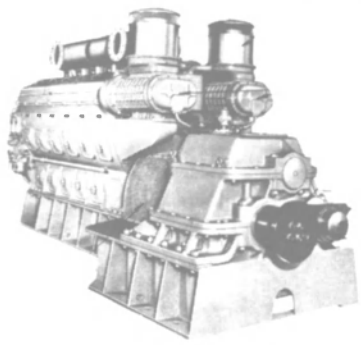
8" X 8" X 10" VERTICAL DUPLEX PUMP

Hendy design Suction 8" — discharge 6" — 160 GPM @ 100 PSI.

PRACTICALLY NEW

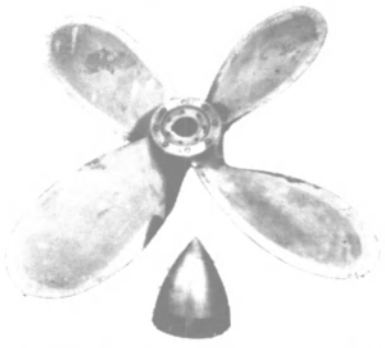
MATCHED PAIR GM 12-567A 900 HP DIESEL ENGINES

with Falk reverse & reduction gear



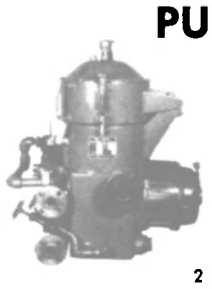
ENGINE: GM 12-567A—8½X10—VEE type—2-cycle—747 RPM—electric starting—serial Nos. 1041 & 1060. GEAR: Falk Air Flex—reverse & reduction—2.48:1 forward—2.52:1 reverse.

4-BLADE LST BRONZE PROPELLERS



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

RECONDITIONED—GUARANTEED DELAVAL PURIFIERS



LUBE OR FUEL OIL

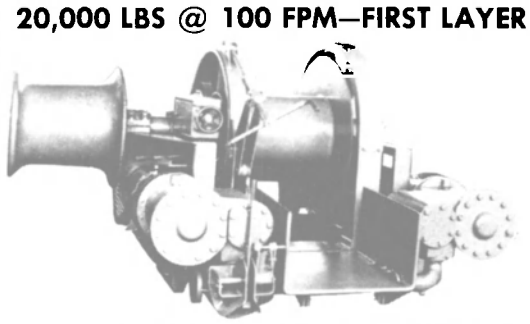
225 G.P.H.
55N-13 (Lube Oil)
55N-23 (Fuel Oil)

300 G.P.H.
65N-13 (Lube Oil)
65N-23 (Fuel Oil)

2 HP — 440/3/60/1750 RPM — Frame 224

STEAM MOORING WINCHES

12" x 14" — AUTOMATIC TENSIONING
with foot brake & declutchable gypsy head
20,000 LBS @ 100 FPM—FIRST LAYER



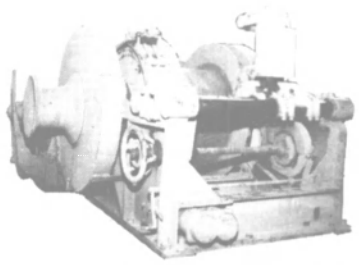
ALSO HANDLES 16,000 LBS @ 150 FPM OR 50,000 LBS @ 8 FPM

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

ALSO IN STOCK
12" x 14" Double Gypsy Unit

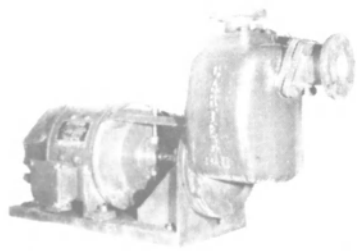
ALL UNITS CAN BE DEMONSTRATED RUNNING

100,000 LB. ALMON JOHNSON Constant Tension Mooring Winches



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

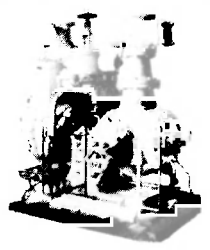
CARTER BRONZE SELF-PRIMING BILGE & GEN. SERVICE PUMP



85 GPM @ 50 lbs. — 3500 RPM — 2" X 2". 5 HP — 115 VDC — 1750 RPM motor.

$1466

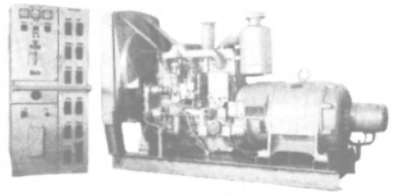
COFFIN FEED PUMPS — ALL SIZES — TYPE DE



3 TYPE DE-2
540 GPM 1870' NET HEAD

8450 RPM — 585 PSIG — 0°-200° superheat — exhaust pressure 15 lbs — NSPH 30 — typical serial 4683DE

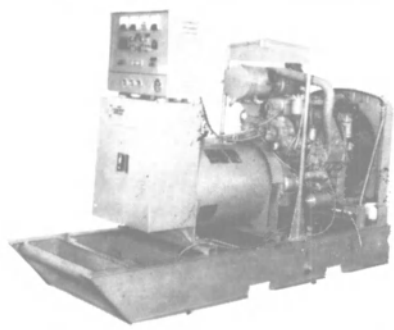
CUMMINS 75KW 93.8 KVA DIESEL GENERATOR SET



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

GM 4-71-T TURBO-CHARGED 100 KW 440/220/3/60 10 WIRE DIESEL GENERATOR SET

ALL VOLTAGES POSSIBLE



100 KW 440/220/3/60 generator driven by GM 4-71-T radiator cooled turbo charged diesel. P.F. 0.80—for T-2, etc. 1800 RPM. With switchgear. Generator is 10 wire—all voltages possible.

WITH SWITCHGEAR / ALARMS / DISCONNECT

PLEASE NOTE:

Our Marine Dept. & Warehouse is no
250 Scott St. at McHenry — Baltimore

KNOWN 'ROUND THE WORLD

THE BOSTO

313 E. BALTIMOR

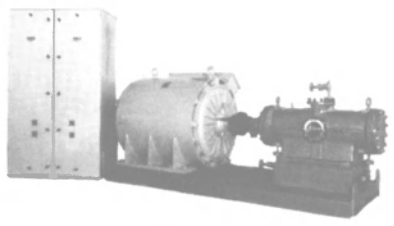
Marine V

CABLE: BOSIRON—BALTIMORE

700 G.P.M. @ 150 P.S.I.
NEW — UNUSED

MOTOR DRIVEN ROTARY HORIZONTAL PUMPS

WITH 4-SPEED 440/3/60 MOTOR



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

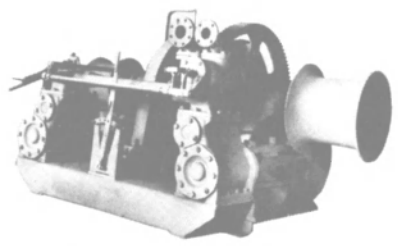
9 X 12 2-SPEED ALL-STEEL

STEAM WINCHES

for use as General Service or

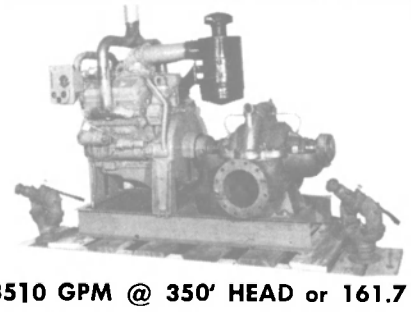
MOORING WINCHES

20,000 LBS @ 110 FPM—7,450 @ 250 FPM



DRUM CAPACITY: 1250' of 1" wire in 9 layers or 2200' of ¾" in 12 layers. Weight 11,300 lbs. DRUM DIMENSIONS: 22" diameter—20" between flanges; flange diameter 40"; two 16" gypsies. DRUM BRAKE: Contracting band type — asbestos lining — foot operated. WINCH DIMENSIONS: 12' long—8' wide — 5' 10" high. Reconditioned by U.S. Navy. Equal to new.

DIESEL DRIVEN FIRE PUMP



3510 GPM @ 350' HEAD or 161.7 PSI

Pump: 10" x 8" horiz. split case. Also 2000 GPM @ 110 PSI and 1450 RPM. Unused—all steel—will sell separtely. Diesel: GM 6V-71 or 6-71 in-line, radiator or heat exchanger cooled.

located at
Md. 21230

NEW PHONE
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n METALS co.

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ehouse (301) 752-1077

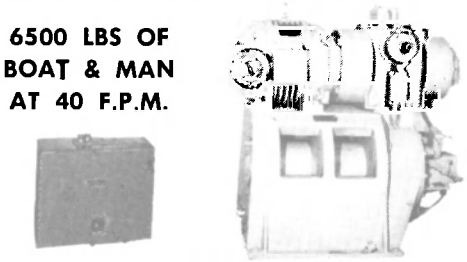
D. U.S.A. TWX 710-234-1637

DAVIT – WINCH

Mfg. by Skagit

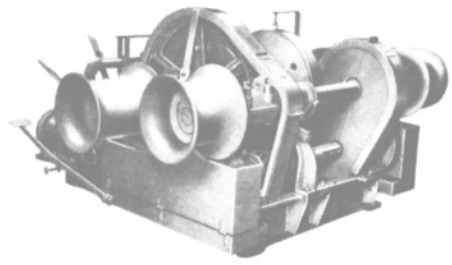
Rated 4000 lbs. @ 80 FPM

6500 LBS OF BOAT & MAN AT 40 F.P.M.



Motor: 13.5 HP — 440/3/60. Designed for ½" 6x37 wire rope. Divided drum with 2 spooling areas. Drum 8½ wide — 4" flange — 10" diameter. Complete with level wind. Also capable of manual operation by crank in case of motor failure. Hand brake & speed limiting brake are provided for holding & lowering boat by gravity. Non-magnetic.

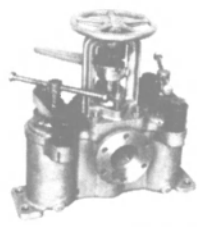
7x12 10,000 LB AH&D CARGO WINCH



2-Speed — single drum — reverse throttle operation. LINE PULL: low gear 10,000 lbs — high gear 5,000. LINE SPEED: low gear 125 FPM based on 1st layer of 7/8" diam. rope — high gear 250 FPM based on 1st layer of 5/8" diam. rope. DRUM: 26" diam. — 20" long — 26" flange diam. Rope capacity of drum: 7/8" diam. rope in 6 layers — 650'; 5/8" diam: rope in 8 layers 1200'. Steam preassure at throttle 115 lbs. Operating weight 6450 lbs.

DUPLEX STRAINERS

4" and 6"



FOR SALTWATER OR LUBE OIL

PORTABLE - EMERGENCY

3" DIESEL GENERAL SERVICE AND FIRE PUMP

70 GPM @ 105 PSI

WITH HAND PRIMING

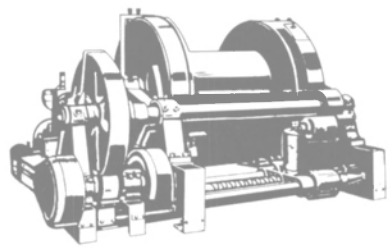
ENGINE: Mfg. by V.M.—air-cooled model HR192A—13.5 HP—3000 RPM—rope start (crank optional). PUMP: Hale—cast iron—3"—N.P.T.—hand priming—weight 410 lbs. Carrier mounted with 2 pneumatic tires for easy handling or 2-man hand carry. Ideal for oil barge, tankers, dockside, etc use.

LARGE STEAM

TOWING ENGINE

9 X 10 TWIN ENGINE DRIVE

Air or Steam — 125/250 PSI



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

ALSO AVAILABLE

Large towing ring — 36" I.D.

T-2 EQUIPMENT

Selected Items Listed

T-2 UNUSED G.E.
MAIN PROPULSION
STEAM TURBINE WITH ROTOR

10 Stage — 435# — 720°T.T.

Turbine complete with rotor — serial No. 109166 — 4925/5400 KW — 3600/3720 RPM — 10-stage — 435# — 720°TT — 28.5" VAC.

WESTINGHOUSE
538KW TURBINE ROTORS

WESTINGHOUSE 538 KW AUX. GENERATOR EXCITER ARMATURE
400 KW REVOLVING FIELDS

We have both types:
110KW — 32KW — 5.5KW
110KW — 28KW — 5.5KW

FOR G.E. 525 KW
T-2 TURBO GENS.

- G.E. DORV-325M TURBINE ROTORS

AMPLIDYNE GENERATORS – ABS

NEW STYLE—LY148
ABS-READY-TO-GO
IN STOCK
FOR
IMMEDIATE
DELIVERY

MAIN CIRCULATING PUMP

complete — Ingersoll-Rand 24CVM.
New certif. 1979 — completely rebuilt.

TANO Wins Contracts Worth $10.7 Million For Vessel Automation Systems

TANO Corporation of New Orleans has won contracts for marine automation systems for 17 new oceangoing vessels since January of 1980. The dollar value of contracts awarded to the company so far this year is $10.7 million. TANO president **James J. Reiss Jr.** believes the company has been successful in obtaining all such contracts let thus far in 1980, effectively establishing the company as a leader in marine automation.

The new vessels in which TANO systems will be installed include seven CATUGs to be built by Halter Marine, New Orleans; three 30,000-dwt containerships at Avondale Shipyards, New Orleans; five tankers at National Steel and Shipbuilding Company, San Diego; an oceangoing dredge at Avondale; and a new Landing Ship Dock (LSD-41), the first of a series of such vessels being built for the Navy at Lockheed Shipbuilding and Construction in Seattle.

All of the new vessels are powered by either medium- or slow-speed diesel engines. TANO has specialized in automated control of such power plants since the mid-1970s. Common to all of the new TANO systems is central engine room monitoring, alarm, and control with a bridge control console, making it possible to operate the vessel with the engine room unattended for extended periods. Additional system refinements include: cargo/ballast control for the containerships; integral bell loggers for the tankers and LSD-41; throttle control for the LSD-41 and one of the CATUGS; and a sophisticated data/alarm/performance monitor logging system for the three containerships.

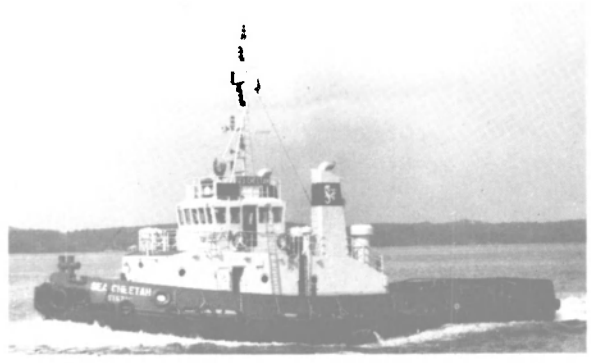
TANO's experience in marine automation dates from 1969. During the past 11 years, the company has made more than 75 system installations and expects the total to exceed 100 by the end of 1980. Since about 1973, diesel power plants have been gaining in popularity for oceangoing vessels; TANO's last installation on a steam-turbine-powered vessel was in 1978.

The company is fully integrated in the production of marine systems with facilities and personnel at its New Orleans headquarters and manufacturing plant for all aspects of system design, metal fabrication, assembly, and testing.

For further information on TANO marine systems,

Write 25 on Reader Service Card

First Of Two Tugs To Sembawang Towing— More To Be Ordered

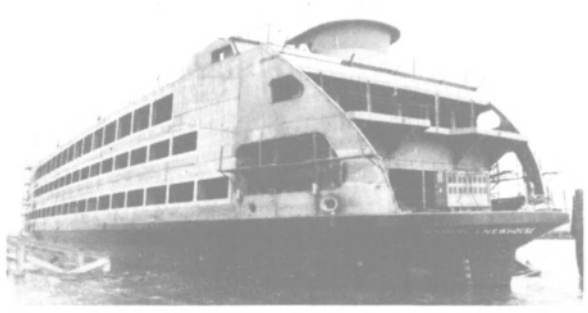


In order to provide better tug services and to diversify its activities, Sembawang Towing has embarked on a program to modernize its fleet. The company has recently taken delivery of a highly versatile tug, Sea Cheetah, shown above. The tug, built at Singapore Slipway, is powered by two 1,350-bhp Hedemora V12A diesel engines. The vessel's compact size, high maneuverability, and shallow draft enables it to handle vessels up to VLCC size in restricted waters.

The tug was built to owners requirements and ABS Classification for unrestricted service. During the official trials, a speed of 14 knots as against the specified speed of 12.5 knots, and a bollard pull of 38 tons as against the specified pull of 35 tons were achieved. One unique feature is the 360-degree steerable rudder propellers, which give the tug the ability to move in all directions — ahead, astern, and "walk" sideways — without making headway.

The completion of this contract represents an example of the successful cooperation between three local companies: Sembawang Towing Company, the owners, who originally considered placing the orders abroad but then decided that they should be built in a Singapore shipyard to support the local marine industry; Singapore Slipway, who built the tug; and thirdly Hedemora Diesel S.E. Asia, who have scored a success in providing the engines which were partly manufactured and fully assembled in Singapore. Another local company, Kenton Marine (Pte) Ltd., acting as owners consultant, also played an important role in bringing the project to a successful completion.

Sembawang Towing took delivery of the second vessel in the series, Sea Leopard, which will be Lloyd's Registered Class. The company intends to place further orders for this similar class of vessel in the future.



FERRY 'NEWHOUSE' LAUNCHED—Equitable Shipyards, Inc. of New Orleans recently launched the ferryboat Samuel I. Newhouse, second of two 310-foot, double-ended vessels under construction for the City of New York. The 5,000-gt ferry is powered by four General Motors EMD 16-645-E2 diesel engines, each rated 1,950 bhp at 900 rpm — 3,900 bhp forward and 3,900 bhp aft.

Bay Shipbuilding Will Build A Self-Unloading Barge For Beker Shipping

Bay Shipbuilding Corp. has announced the signing of a contract to build a saltwater self-unloading tug notch barge for Beker Shipping Company of Greenwich, Conn. Beker Shipping Company is a subsidiary of Beker Industries Corp., a major producer of phosphate rock, phospheric acid, and fertilizer. This will be the first vessel built for Beker Shipping Company by Bay Shipbuilding Corp.

Witnessing **Erol Y. Beker,** vice president, Beker Shipping Company, sign the contract are (from left): **George K. Geiger,** vice president and general manager, Bay Shipbuilding Corp.; **Paul Stolzer,** associate counsel and assistant secretary, Beker Industries Corp.; and **Erol Beker,** chief executive officer and chairman of the board, Beker Industries Corp. The signing took place at Beker Industries, Greenwich, Conn.

The 610 by 78-foot barge will be of all-welded construction with the stern fitted with a deep notch to accommodate a tug of 7,200 bhp. To be used for transportation of phosphate rock and other bulk cargoes, the vessels will be fitted with self-unloading equipment, which includes an unloading boom conveyor, capable of discharging 4,000 short tons of phosphate rock per hour.

This will be the third saltwater tug notch barge recently built by Bay Shipbuilding Corp., located in Sturgeon Bay, Wis. Bay Shipbuilding Corp., a subsidiary of The Manitowoc Company, Inc., is noted for building large self-unloading and barge-type vessels.

General Dynamics Names Baker And Main To New Marketing Posts

General Dynamics, Quincy, Mass., recently announced two new appointments to its Marine Operations Marketing Group.

Nicholas M. Baker was named marketing director commercial marine, and **Donald J. Main** was made manager of commercial marketing.

Nicholas M. Baker

Donald J. Main

Mr. **Baker** was assistant marketing director for international business at the corporation's Pomona Division. Prior to joining General Dynamics in February 1979, he held a number of positions with General Electric including manager-international Navy marketing in Geneva. He is a graduate of the University of Washington.

Mr. **Main** joins General Dynamics from Tampa Shipyards, Inc. in Tampa, Fla., where he was vice president, marketing. He is a graduate of the Maine Maritime Academy. He is active in The Society of Naval Architects and Marine Engineers.

Double-Skin Fuel Barge Delivered By Riverway Yard

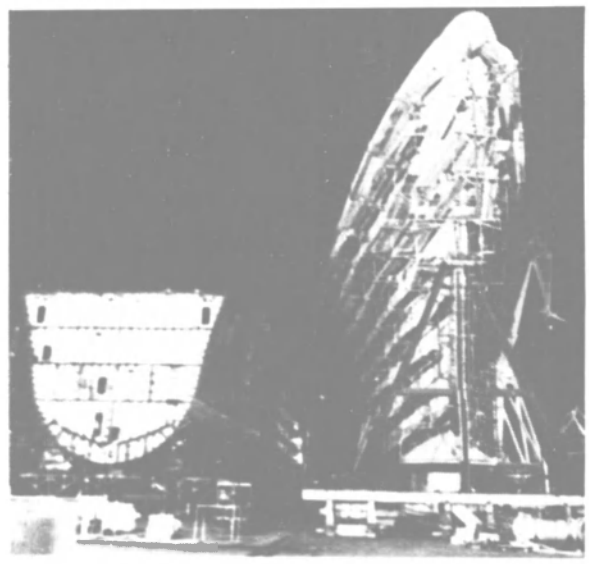
Riverway Shipyard Company, Grafton, Ill., recently completed construction of a new double-skin, raked tank barge for Waterways Winona, Inc. of Winona, Minn. It will be used as a midstreaming fuel barge for service in Winona. The double-skin raked barge measures 130 feet by 30 feet by 9¾ feet. The hull is ⅜-inch plate and has 5/16-inch bulkheads. The headlog and corners are ¾-inch plate. Continuous ¾-inch rub-bars are located top and bottom on both sides. The corners have ¾-inch corner wrapper plates.

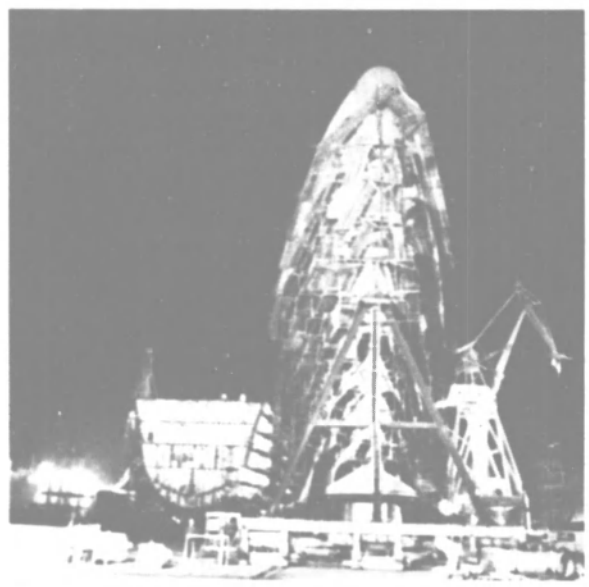
The barge has four fuel oil tanks and three dirty oil tanks built in the hull. Located on the deck are two lube oil tanks and two potable water tanks. Fuel oil capacity is 136,212 gallons; dirty oil capacity is 11,018 gallons; lube oil capacity is 3,000 gallons; and potable water capacity is 20,000 gallons.

The fuel oil is unloaded by way of a Byron-Jackson deep well pump at the rate of 500 gallons per minute powered by a GM Detroit Diesel 4-71 engine. The total off-loading time is approximately 4½ hours. A dirty oil/water separator designed by National Marine Service processes dirty oil at 10 gallons per minute. Three dirty oil tanks in the bow rake allow processing of dirty oil while the barge is in operation.

Two lube oil pumps, one potable water pump as well as the towing lights and dirty oil/water separator are electrically operated from power received from the towboat pushing the barge.

The barge is certified by the United States Coast Guard for the carriage of Grade "D" products and below. Riverway Shipyard Company is a wholly owned division of Riverway Towing Company, Minneapolis, Minn. The shipyard is concerned primarily with marine repairs and the design, engineering and construction of deck barges, liquid tank barges, drydocks, barge covers, and towboats.





SHIP SAILS OVER LAND—The three hull modules of the Ticonderoga, CG 47, first ship of the new class Aegis guided missile cruisers now under construction for the U.S. Navy by Ingalls Shipbuilding Division of Litton Industries, were moved into position for joining at the shipyard facility in Pascagoula, Miss., recently. Ingalls builds the three modules separately side-by-side for the 563-foot ship, then moves the sections over land into position for joining. The ship's deckhouse, built as a separate module, will be lifted aboard the hull prior to the ship's launching next year.

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If we can't save you money, we don't deserve your business.

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Twin Disc Announces Two New Transmissions —Literature Available

Twin Disc, Incorporated, a leading manufacturer of marine transmission in the 52 to 1,193-kw (70 to 1,600-hp) range, announces the availability of shallow-case ratio versions of both the MG-518 and MG-520 marine transmissions.

Three ratios for the MG-518 have been added which are ideal for crewboats and similar intermediate-duty, high-performance vessels for above 522 kw (700 hp) at 2,100 rpm. These new ratios include 2.00:1, 2.47:1 and 2.94:1. The MG-518 reaches down to the power range midway between the MG-520 and the MG-514. The MG-518 is approved for use with the Caterpillar 3412T and 3412TA (limited ratios), the Cummins KTA-1150, the Detroit Diesel 16V-71, and other compatible marine diesel engines.

Four ratios have been added in the shallow-case version of the MG-520. These include 2.02:1, 2.97:1, 3.44:1, and 4.03:1. Initially this model is being recommended for heavy-duty crewboat service in the lower 671 kw (900 hp) range at 2,100 rpm. The MG-520 is adaptable to Caterpillar 3412TA and D-353 engines, the Cummins VTA-1710-M2, the Detroit Diesel 16V-92, and other compatible marine engines.

For additional information and free literature on the MG-518 and MG-520 marine transmissions,
Write 30 on Reader Service Card

Title XI Sought For Ten Tug/Supply Boats Costing $37.9 Million

Marsea Marine Seven-Seventeen, Inc., Suite 1044, ITM Building, New Orleans, La., has applied for a Title XI guarantee to aid in financing the construction of six 2,560-horsepower and four 3,900-horsepower tug/supply vessels.

Halter Marine, Inc., is the proposed builder for the 2,560-horsepower vessels; Quality Shipyards, Inc., Houma, La., is the proposed builder for the remaining vessels. No delivery date has been set, but the vessels are expected to be employed in the U.S. Gulf of Mexico.

If approved, the Title XI guarantee would cover $33,162,000, or 87½ percent of the vessels' $37,-900,000 estimated actual cost.

P.J. Wright Joins Alliance Marine As VP Sales-Marketing

Kenneth E. Cochran Jr., president of Alliance Marine Services, New Orleans, has announced that **Phillip J. Wright** has joined the company as vice president of Sales and Marketing. He will be responsible for all marketing for the company, including towing and affreightment of liquid and dry bulk commodities throughout the inland waterways.

Phillip J. Wright

Mr. **Wright** is a graduate of the University of Tennessee, and has more than 20 years of experience in marketing and sales management on the inland waterways. He was formerly with Dravo Mechling, joining them in 1956, becoming vice president-Sales in 1977.

Mr. **Cochran** states: "We are fortunate to have a man of **Phil's** experience and ability heading our marketing effort."

Mr. **Wright** and his family will be moving to New Orleans, where the company is headquartered.

Alliance Marine Services owns and operates towboats and barges transporting petroleum and chemical products throughout the inland waterway industry.

Roy L. Sea Joins Tracor Marine As Assistant To President

Roy L. Sea

Roy L. Sea has joined Tracor Marine, Inc., Fort Lauderdale, Fla., as assistant to **Joseph D. Deal Jr.**, president. Mr. **Sea** will be responsible for marketing, business development, corporate planning and special projects.

Richard Gil Named VP Of Comfort-Mate

Richard Gil has been named vice president of Comfort-Mate. He will be responsible for the operation of the Interior Department. Mr. **Gil** has been with Comfort-Mate for 10 years.

Comfort-Mate is also celebrating its 10th Anniversary. The company started in 1970 manufacturing deck chairs and has since become one of the largest diversified suppliers of maritime furniture. Comfort-Mate now offers a complete line of deck and interior furniture.

New Shipboard Fuel Blending Unit From IMO Pump Division

IMO® Pump Division, Monroe, N.C., Transamerica Delaval Inc., has developed a unit to blend heavy fuel oil with diesel oil in order to lower power costs of running ship service diesel generator sets and other auxiliary engines.

Normally, the use of blended fuel presents logistics problems and commands a premium bunkering fee. With the new Delaval unit, however, any vessel may blend its own fuels onboard and suit the blend to continuously varying combustion conditions.

The new fuel oil blending unit mixes streams of heavy fuel oil and marine diesel oil to produce a blend of desired viscosity. Signals from a full flow viscometer are fed back through solid state circuitry to control the flow of diesel oil, giving a blend which varies between minimum and maximum viscosity limits set by engine room personnel. Within operating limits, it is not necessary to know the viscosity of the fuels being blended. The system is temperature-compensated and fully automatic but feedback signals may be overridden in a manual operation mode. IMO three-screw pumps give the unit high reliability. An optional alarm is triggered if the unit operates improperly for more than 2-3 minutes.

The Delaval fuel oil blending unit can handle Bunker C or other heavy oil at 100-250°F and diesel oil at 50-120°F. Blends can range from 700 to 2500 SSU at blending temperature. The new IMO Division unit requires 460-volt, 60-Hz, 3-phase current. Power consumption is only 2 kw. The entire blending unit stands 70 inches tall, occupies 40 by 30 inches of deck space and weighs 750 pounds.

Bud Hawks, Transamerica Delaval spokesman, said that while the fuel oil blending unit was designed primarily for the marine market, he foresees adoption by shoreside industries wherever small and medium size stationary diesel engines are used.

For more information and free literature on the new IMO oil blending unit,
Write 31 on Reader Service Card

SNAME San Diego Section Hears About Alternative Fuels

Officers and guests at recent SNAME San Diego Section meeting are (left to right): **Wes Hickman,** chairman; **Don MacDonough,** vice chairman; **Tom Schroppe,** author; **Steve Donley,** papers chairman; and **Kurt Schmidt,** secretary-treasurer.

The San Diego Section of The Society of Naval Architects and Marine Engineers opened its 1979-80 program year by holding its first meeting at the Naval Officer's Club in San Diego, Calif.

J. Thomas Schroppe, president of Foster Wheeler Boiler Corporation, presented a timely paper titled "Alternative Fuels for Marine Boilers."

The marine boiler has been the workhorse of our merchant marine for well over 50 years, but during the past 7-8 years, second thoughts have been given concerning this plant. This second look has been generated by oil crises of 1973 and the continual escalation of oil prices since that time. This paper offers coal as the alternate fuel, based on the abundance and the present economics.

The paper focused on the present two options available to shipowners for coal firing, which are the pulverized coal or stoker-fired systems. Coal burning methods, coal feed systems, air and gas systems and the environmental aspects, which are the major concern of both the shipowners and shipbuilders, were highlighted. The paper concluded with the operational and maneuvering conditions that can be expected with this fuel, and a brief on the future coal burning alternatives.

The 50 members and guests in attendance concluded the meeting with a question and discussion period.

New Literature Features Hydraulic Marine Crane

The Unit Mariner Model 150-H hydraulic marine crane is featured in a new eight-page brochure from the Unit Crane & Shovel Corp.

Detailed specifications for the 15-ton-capacity pedestal-mounted crane include lifting capacities with boom lengths through the maximum 60-feet, wire rope data, winch performance, and general machine features and specifications.

The Model 150-H has full 360-degree rotation, a choice of main and auxiliary hydraulic winches, boom lengths from 30 to 60 feet, and a variety of control options. It is available with a remote power package, including diesel or electric prime mover, hydraulic pump and pressurized hydraulic oil and fuel tanks.

For copies of the new literature on Unit Crane & Shovel Corp.'s Unit Mariner Model 150-H, Write 32 on Reader Service Card

Aluminum pilot boat **Carolina,** designed by C. Raymond Hunt Associates and built by Gladding-Hearn Shipbuilding, was delivered recently to the Charleston (S.C.) Branch Pilots Association. High-speed vessel is powered by twin Detroit Diesel 8V92 turbocharged engines.

High-Speed Pilot Boat Delivered By Gladding-Hearn

The Carolina, a 55-foot aluminum pilot boat, was christened recently by **Mrs. Ernest F. Hollings,** wife of South Carolina's Senator, for the Charleston Branch Pilots Association. The ceremonies at the Carolina Yacht Club in Charleston were attended by the Senator and more than 200 guests, and were followed by a reception hosted by the pilots and their wives.

Prior to the christening, the Carolina had been delivered from Massachusetts where it was on display at the American Pilots Association convention in Boston. The boat was built by Gladding-Hearn Shipbuilding of Somerset, Mass., and designed by C. Raymond Hunt Associates of Boston. **George Duclos,** Gladding-Hearn vice president, and **Winn Willard** of Hunt Associates represented the builders and designers at the christening ceremonies.

An identical boat, the Palmetto State, is nearing completion at the Gladding-Hearn yard, and will be delivered this year. The two all-aluminum, high-speed boats will allow the pilots association to provide upgraded service for the port of Charleston, according to Association president **E. Randall Swan Jr.**

The boats' design is based on a high deadrise or deep-V hull for safety and comfort offshore in all weather. They are the first high-speed, all-aluminum boats built by Gladding Hearn in its 25 years of pilot boat construction.

The boats are powered by twin GM Detroit Diesel 8V92 turbocharged engines yielding a 23.5-knot top speed on trials.

The boats are divided into five watertight compartments with access via watertight doors. Forward is a crew's quarters and toilet compartment with shower. The pilothouse is midships forward of a pilots' lounge with complete galley. Aft is the pilots' sleeping quarters.

Carolina and Palmetto State share many modern features, including cabin top boarding platform, automatic Halon fire-extinguishing system, housetop plexiglass dome for 360 surveillance from the helm, reverse cycle air-conditioning, radar and three VHF radios, full perimeter rubber fendering, microwave cooking, tinted safety glass, red night lighting, and thick, resilient rubber flooring.

Sperry Gets $2 Million In Orders For Collision Avoidance Systems

The Sperry Division of Sperry Corporation recently received orders for 50 CAS II collision avoidance systems, totaling more than $2 million, from several Japanese shipowners, bringing the total number of Sperry collision avoidance systems sold worldwide to more than 500. The CAS II system was introduced by Sperry in September 1979.

Sanko Steamship Co. Ltd. of Tokyo was the largest single purchaser of the CAS II systems, ordering 30 of the 50 units after conducting a three-month at-sea test of the system aboard a 172,-000-dwt oil tanker. All the systems will be installed on oil tankers. The orders came through Tokyo Keiki Co. Ltd., an affiliate of Sperry Division in the Far East.

The Sperry CAS II system is a compact cabinet which uses state-of-the-art microprocessor-based electronics, providing simple and reliable operation even under adverse environmental conditions. The system also uses built-in test equipment (BITE) to allow rapid localization and repair of faults. Sperry offers training to shipboard personnel on the operation and repair of the system. In addition, Sperry provides a worldwide network of more than 250 service centers with trained engineers for servicing Sperry marine products.

R. Barker Price Named Manager Of Contract Administration At Jeffboat

R. Barker Price has been named manager of contract administration of Jeffboat Incorporated, one of America's largest inland shipbuilders.

R. Barker Price

Mr. **Price** started work at Jeffboat in December 1978 as a contract manager and has been serving in that capacity since joining the company. Previous to his employment at Jeffboat, Mr. **Price** worked as a project engineer at American Commercial Barge Line and was owner/president of his own small boat company.

As manager of contract administration, Mr. **Price** will report to **Wayne LaGrange,** vice president of production.

Enlargement Of Suez Canal Requires

Special And Unique Tugs

R.H. le F. Ashburner and N.H. Norrbin*

Since opening in 1869, enlargement of the cross section of the Suez Canal has been carried out at frequent intervals such that the original cross section of 300 square meters for ships of up to 6.7 meters draft has increased to 1,800 square meters by 1963 when it could accommodate ships of up to 11.3 meters draft. By 1967, traffic in the Canal had reached a level not far short of capacity when acts of aggression led to closure of the Canal for exactly eight years until the reopening on June 5, 1975. Throughout this time, plans were being made by the Suez Canal Authority (SCA) for the eventual reopening with account being taken of the changing pattern of world shipping, particularly tankers, in order to plan the future development of the waterway.

As soon as the Canal was reopened, work commenced on enlargement of the cross section to 3,300 square meters to accommodate vessels of 16.2 meters draft. Since the capital investment required for such a scheme is enormous, SCA sought the assistance of consultants to check its strategy. Two separate but similar studies were made: the first by a British team led by Maunsell Consultants Ltd., and the other starting shortly afterward by a French team led by Sogreah. It is noteworthy that both teams reached similar conclusions independently and that these largely agreed with the program envisaged by SCA. Following the first phase of development, this program included a second phase to accommodate vessels of 20.4 meter draft and having a cross section area of 5,400 square meters.

It is interesting to note that since reopening in 1975, Canal traffic increased rapidly to an average of 54 vessels per day in 1977, and now has increased to about 57 vessels per day. The non-oil traffic accounts for about 85 percent and has considerably exceeded the 1967 level. Oil trade has reached only about 20 percent of the preagression level in terms of tonnage though it has included regular transits, about an average of 25 per month, of tankers in excess of 200,000 dwt passing southwards in ballast at very shallow draft with the propeller not fully submerged. Once the first phase is open, the Canal will be able to accommodate laden 120-150,000 dwt tankers and ULCCs in ballast of up to 375,000 dwt. The intention of the second phase is that it would accommodate laden 260,000-dwt VLCCs.

Canal capacity is strongly dependent upon the gap left between ships in a convoy, particularly VLCCs. Accordingly, as part of the feasibility study some 1:40-scale trials were made with a model VLCC, and it was concluded that tug assistance would be required if convoy intervals were to be safely kept within reasonable limits. The use of tugs to escort large ships transiting the Suez Canal is not new and the present regulations require up to two tugs to be in attendance on large laden tankers or those in ballast. These tugs are free running ahead or astern of the vessel ready to assist if required; they are never permanently attached except when towing a pontoon or a "dead" ship.

With the advent to the Canal of much larger tankers having a greatly reduced power to displacement ratio, it is not unreasonable to expect that past practice in respect to tugs might need to be modified. It was with this in mind that in 1978 the SCA issued terms of reference and invited submissions for the detailed study and design of matters associated with the stopping and mooring of large ships in the two phases of Canal development. This study was awarded to a consortium of British consulting engineers comprising Maunsell Consultants Ltd., and Rendel, Palmer & Tritton.

The scope of this work involved full-scale stopping and mooring trials in the Suez Canal as well as simulator studies both for these trials and for future enlargement of the Canal. It was therefore appropriate for the Maunsell-Rendel consortium to enlist the help of others. Marine consultants Cleghorn, Wilton and Associates advised and assisted in the tanker stopping trials, both in the field and on the simulator, and also provided the necessary pilots and tugmasters for the various trails. Study of mooring procedures and line handling was the main responsibility of Captain Colin McMullen & Associates, who also assisted in the field and simulator trials. Simulator modeling and operation were undertaken at the Swedish Maritime Research Center (SSPA). Other mathematical and laboratory modeling of vessel interaction and mooring-line forces were performed by the British National Maritime Institute (NMI). The trials tanker was provided by Shell International Marine Ltd.

Tugs used in the trials would ideally have been of between 10 and 20 tons bollard pull, but the only ones available from the Suez Canal fleet were rated at about twice this power. Those used were one Voith Schneider tug with a bollard pull of 35 tons (two units of 1,500 bhp each) and two duckpeller tugs, each with a bollard pull of 45 tons (two units of 1,600 bhp each).

Principal observations made during the trials were:

1. Although currents can be of assistance in providing bank pressure, care must be taken to maintain the alignment of the ship parallel to the axis of the Canal;

2. One tug aft on a bridle provided the most compact and effective means of controlling the stopping maneuver though the extra power provided by two tugs on the other rigs did reduce the stopping distance;

3. A tug running free some 200 meters ahead ready to come under the bow and take a line or push once the ship's speed had decreased to three knots was found to be the most acceptable procedure;

4. Although no strong adverse winds were encountered, such conditions would undoubtedly represent the major cause of difficulty in the stopping maneuver.

5. A duckpeller tug aft on a 30 meter bridle was able to sit in the vessel's wake with engines idling in neutral. On quarter wires the outboard engine was kept at minimum revolutions ahead holding the tug alongside and against the pressure of the ship's wake.

On the basis of earlier simulator work, desk studies and the field trials, it was decided that an appropriate size of tug for handling laden VLCCs and ULCCs in ballast would be one with a bollard pull of about 60 tons.

Tug Performance

One of the main objectives of the simulator study was the evaluation of the comparative merits of alternative arrangements for tugs. The task of these tugs will be to control the ship from swinging during a stopping maneuver rather than to reduce the stopping distance. When the ship has been brought to a rest, the tugs may be used for garing-up along the side bank.

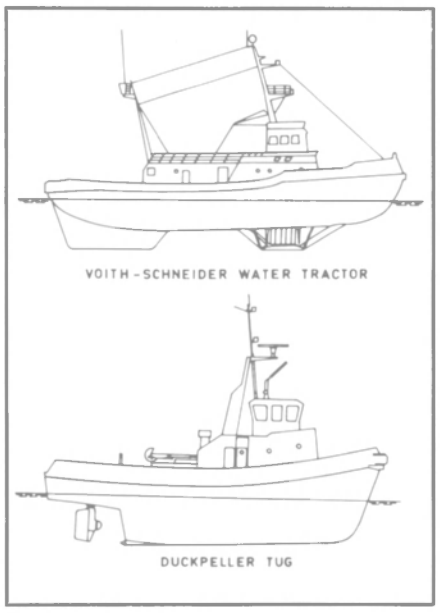


Figure 1 — Tugs with Omni-directional propulsion devices for the Suez Canal.

The relatively high convoy speed in the Canal as well as the presence of the sloping side banks of the narrow channel pose special handling problems for which tugs with omni-directional thrust capabilities are likely to be best fitted. Typical examples are tugs with cycloidal (and variable pitch) propellers or rotatable rudder-propellers. Figure 1 illustrates a Voith Water Tractor with two vertical-axis Voith Schnieder propellers and duckpeller tug with two ducted thrusters astern. In view of the experience obtained, the simulator tugs were assumed to be fitted with rotatable rudder-propellers.

Needless to say the maneuvering qualities of omni-directional tugs are further improved by the twin-screw arrangement; a common joystick control input actuates a certain thrust for each of the propellers to produce the pull or push, or the turning moment desired. The thrust vector diagram is mainly eliptic, the astern and sideway bollard pull being some 75 or 80 percent of the ahead value. Typical turning rates at zero forward speed are in the order of 180° in 10 seconds.

Recommendations

The main recommendations to be made by the consultants as a result of the field and simulator trials were the requirement in respect of tugs, the details of such tugs and the manner in which these should be deployed. Although it is obviously import-

(continued on page 46)

*Mr. **Ashburner**, Maunsell Consultants Limited, and Mr. **Norrbin**, Swedish Maritime Research Center, presented the paper abstracted here before the recent International Symposium on Ocean Engineering Ship Handling 1980 held in Gothenburg, Sweden.

Suez Canal Tugs

(continued from page 44)

ant that the tugs be designed to fulfill their role in assisting in the stopping maneuver, it is expected their use in such a role will be infrequent and they must, therefore, function equally efficiently while being towed behind, or escorting ahead of a VLCC. Similarly it would obviously assist in operational planning if a common design could be derived to fulfill each role associated with escort duties, which might at times involve the need to perform a conventional tow.

Tugs with a bollard pull of 60 tons would be required to handle safely either 260,000-dwt laden VLCCs in phase 2 or 375,000-dwt ULCCs in ballast in phase 1. By analogy, the existing 40-ton tugs should be adequate to escort 150,-000-dwt laden tankers in phase 1.

Normal Canal transit speed for large vessels is up to 16 km/hr so that in order to be effective the escort tugs should have a free running speed of 20 km/hr.

Propulsion systems should be of the multi-directional type and in view of the stable behavior of the duckpeller tugs, the use of twin rotatable propellers located aft was incorporated in the consultant's design. The stern tugs need not be of the multi-directional type but such a tug would seem advisable to give maximum operational flexibility.

Deck equipment should include a forward towing hook, cruciform bollard and rope/wire handling winches. Towing equipment also should be provided aft, and some tugs should be equipped with fire-fighting equipment.

Tug Attachment

The main purpose of the stern tug during the stopping maneuver is to assist in the directional coursing of the ship which itself provides most of the stopping power. The bridle rig, Figure 2, is considered to be more effective than the American rig, Figure 3, in performing this role, and in addition would:

1. Interfere less with navigation buoys due to its more compact nature;

2. Not be sensitive to the backwash from the ship's propeller during the latter most critical stages of stopping;

3. Involve handling fewer lines when being made fast. In addition, all line handling onboard ship would be carried out on the poop deck where there always is an ample number of winches, etc. This is not usually the case on the main deck of a VLCC, which is the area where the American rig would need to be attached;

4. Avoid the possibility of a tug becoming trapped between the ship and the Canal bank.

5. Give rise to less bank erosion from tug propeller wash, and

6. Be less expensive to the ship operator in terms of transit dues.

The bridle legs on either large vessel would be about 30 meters in length, and in rigging the bri-

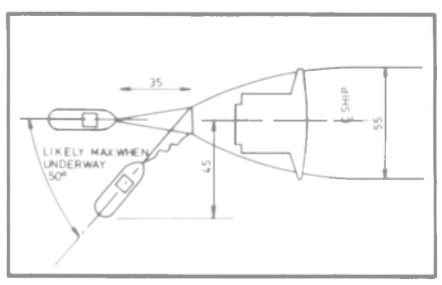
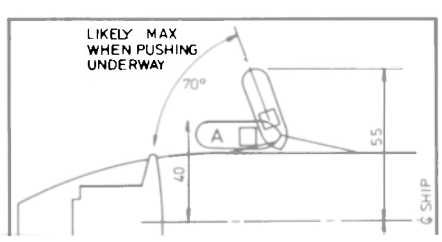


Figure 2 — The bridle rig is considered best for use of the astern tug in the Canal.



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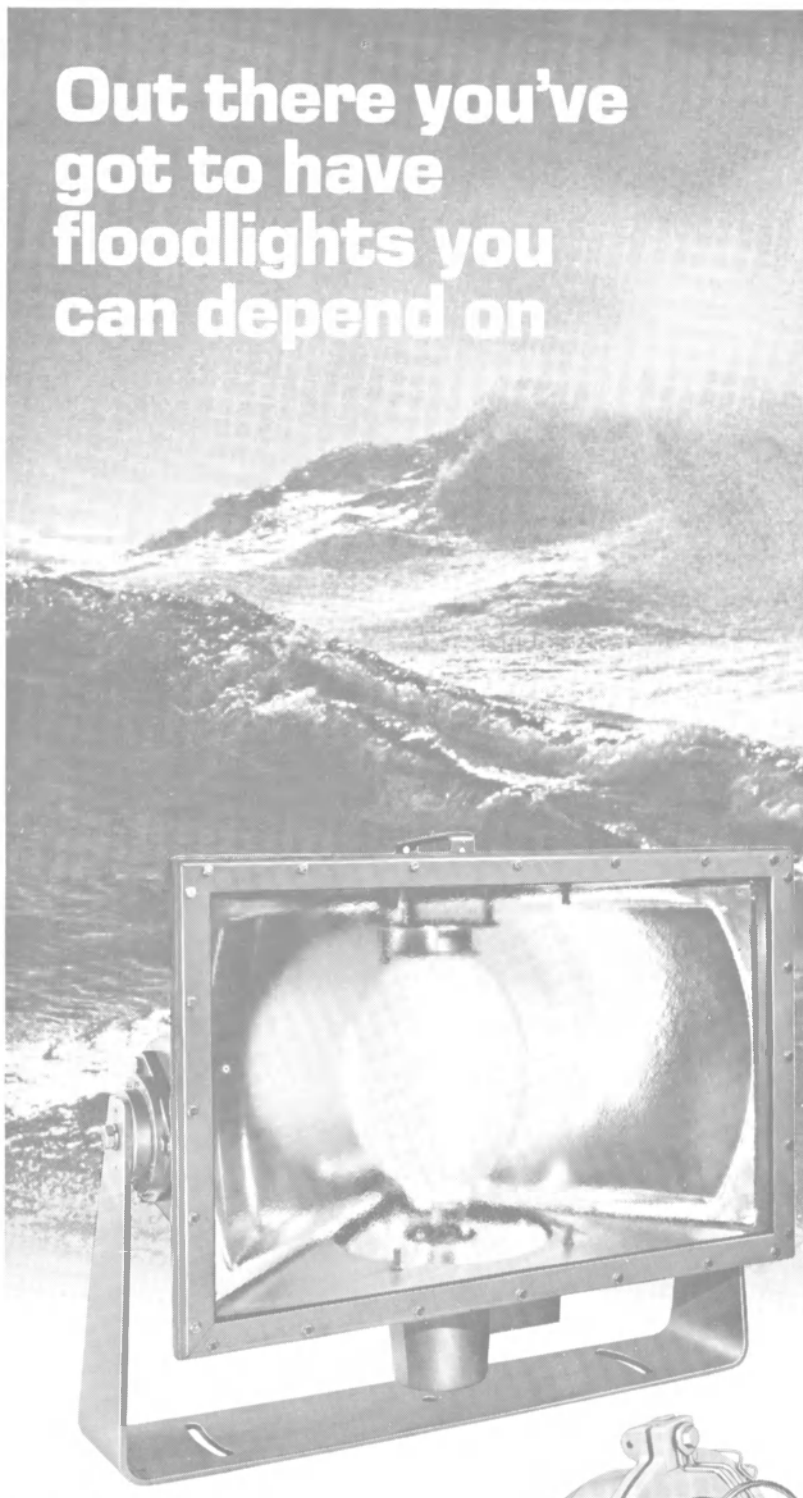

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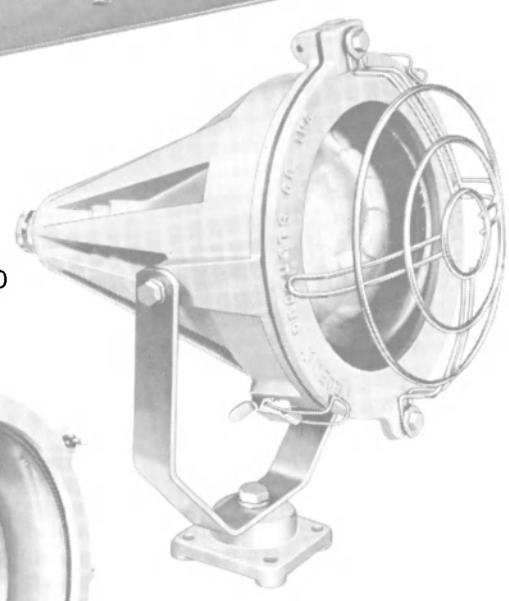

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Suez Canal Tugs

(continued from page 44)

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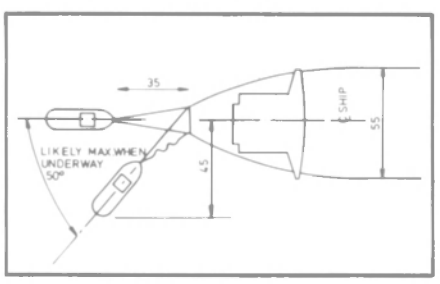

Figure 2 — The bridle rig is considered best for use of the astern tug in the Canal.

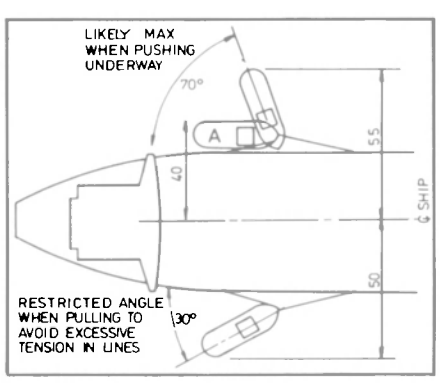

Figure 3 — The American rig used in the Canal would require more room than the bridle.

dle the leads on the ship should be chosen to provide the widest possible angle for the bridle and the bridle lines should be attached to bitts on the poop deck.

A bow tug would be necessary with either rig, and a "snatch-wire" should be rigged from the bow of the ship ready for use by the tug if required.

Due to the long towing distance and relatively high speed, the stern tug should run in the same sailing attitude as the ship.

Steel-wire towing lines should be used. Although artificial fiber lines could perform satisfactorily, the use of these must be carefully monitored to ensure that they are replaced both regularly and whenever severe usage could have led to thermal damage.

Tug Deployment

The stern tug should be attached throughout the Canal transit so as to be ready to act at immediate notice and not be subject to uncertainty or delay, as might be the case in poor weather, at night or even at all times now that tanker crews are continually being reduced in number.

The bow tug should run free some 200 meters ahead of the ship, ready to be called in to assist as the bow falls off during the latter stages of stopping.

Transit of large vessels in 2.5 knot head or stern currents should be avoided whenever possible, and transit of laden VLCCs should not be permitted under wind speeds in excess of 25 knots. For ULCCs in ballast, a limit of 20 knots should apply.

Stopping procedure would normally involve reducing the ship's speed without the use of tugs until a speed of about 11 km/hr is reached. At this stage, the stern tug could safely be brought into use. To avoid severe interactive effects the bow tug should not be used until the ship's speed has reduced to about 7 km/hr, at which time it could push or take up the snatch line and be able to pull or push.

Once stopped, the tugs can assist the ship over to the bank, the bow tug by pushing on the forward shoulder and the stern tug, still attached, by pushing against the outboard leg of the bridle which should be bearing against the vessel's stern.

From an analysis of the results of the trials, it was possible to give an indication of the gap which should be left ahead of large ships in a convoy. The separation between ships is defined in the Suez Canal Rules of Navigation in terms of a minimum time interval to be maintained ahead of various classes of ships. The basic criterion for ship separation is obviously a distance, but in practice a time interval is easier to apply and check, though it is only relevant at one speed, conveniently the normal convoy speed.

Cliffs Offshore Asks Title XI To Build One $25-Million Rig

Cliffs Offshore, Inc., a subsidiary of Cliffs Drilling Co., Suite 3150, Two Allen Center, Houston, Texas, has applied for a Title XI guarantee to aid in financing the construction of one cantilevered jackup rig.

Vemar, Inc., Channelview, Texas, is the proposed builder of the 185-foot by 160-foot rig. The vessel is scheduled to be completed in July 1981, and will be operated in the Gulf of Mexico off the coasts of Texas and Louisiana.

If approved, the guarantee would cover $19,081,000, or 75 percent of the rig's $25,441,000 estimated actual cost.

$185-Million Navy Contract To Ingalls

Ingalls Shipbuilding Division, Litton Systems, Inc., Pascagoula, Miss., is being awarded a $185,015,561 cost-plus-fixed-fee contract for long lead material to be used in the construction of AEGIS cruisers. The Naval Sea Systems Command is the contracting activity. (N00024-81-C-2021)

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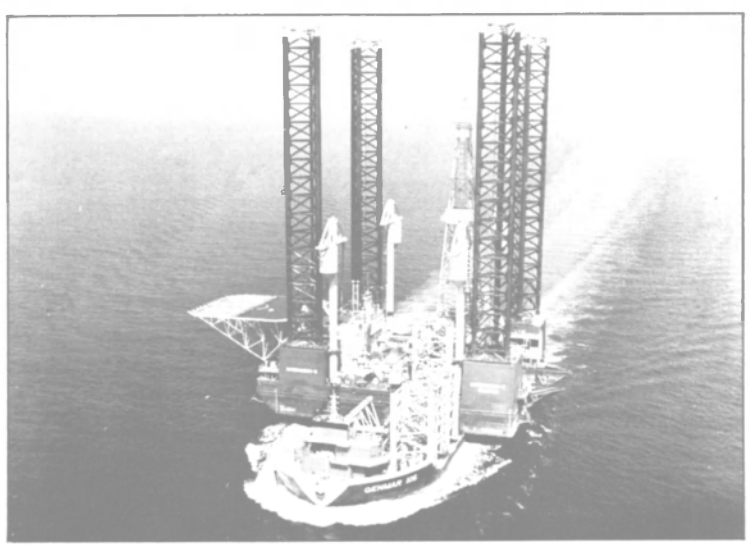

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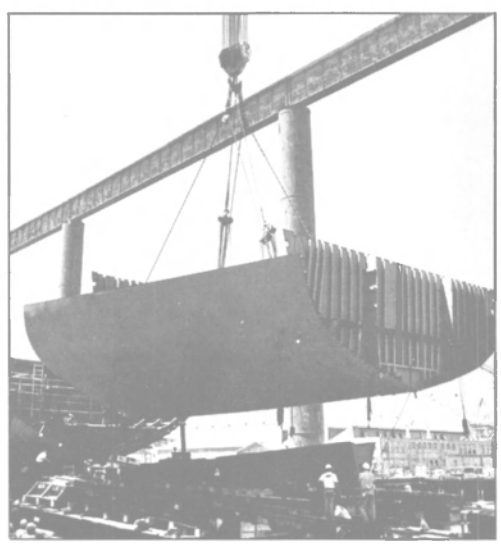

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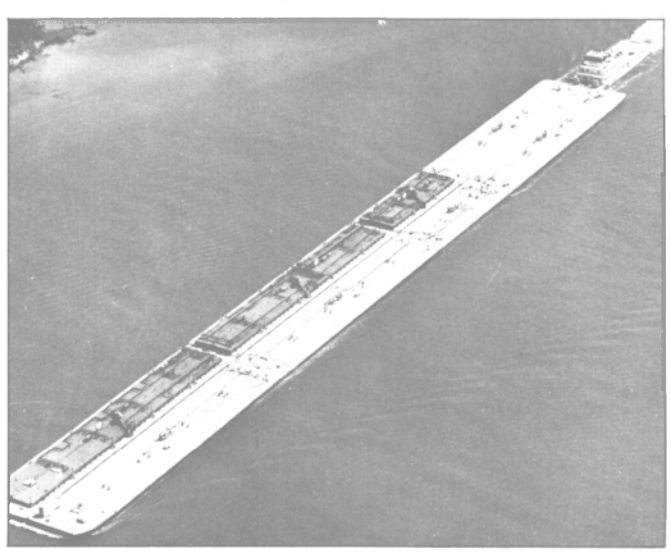

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MARITIME REPORTER AND ENGINEERING NEWS

W.N. 'Pete' Guild Will Design New Series Of Tugs For Arrow Marine

Arrow Marine president **Conrad W. Horst** announced recently that he has contracted with Savannah consulting naval architect **W.N. "Pete" Guild** to design a new series tug for his company. The tugs will measure about 133 feet in length, by 38 feet in beam, and are being designed for high bollard pull, with capability for shallow-draft operations.

The new type vessels will serve as docking tugs for VLCCs and ULCCs, and for rig moves and long tows. Firefighting and pollution control will be a primary concern. Additional details will be announced later.

Arrow Marine, headquartered in Houston, owns and operates a fleet of offshore supply/utility vessels throughout the Gulf of Mexico. **"Pete" Guild** specializes in consulting and designing vessels for the offshore oil and fishing industry, and works as an owner's representative during construction and/or repairs, worldwide.

Crowley's Construction Operations In Alaska Are Reorganized

Crowley Martime Corporation has restructured its Alaskan construction operations to concentrate on marine and highly specialized shoreside projects, according to a recent announcement by **Leo L. Collar,** CMC executive vice president, San Francisco. The move will make available to operators on Alaska's North Slope a large fleet of road maintenance equipment.

Crowley Constructors, Inc., longtime Crowley subsidiary headquartered in Long Beach, Calif., will actively pursue selected Alaskan construction projects within its scope of interest. Crowley Constructors recently has been involved in several marine construction projects in Alaska, and has developed during 33 years of operation a full range of specialized and marine construction capabilities that include dredging, piledriving, building marine structures, and installing underwater pipelines. The company owns and operates several derrick barges with lift capacities of up to 350 tons each, bottom-dump barges for dredge-spoil operation, tugboats, and other service vessels.

Crowley Maritime Corporation is an international marine transportation firm with interests in construction, trucking, marine salvage, and environmental protection services.

CDI Marine Opens D.C. Office—Names Hunley Manager

Paul I. Beining, president of CDI Marine Company, has announced the opening of a new CDI Marine Company office in Washington, D.C. The design office, located in Crystal City at 1735 Jefferson Davis Highway, will provide quick response for engineering and design services to the U.S. Navy and other Government agencies. **William H. Hunley** has joined CDI Marine Company as manager of the Washington operations. Mr. **Hunley** recently retired from the Naval Sea Systems Command after a highly distinguished career of more than 30 years in Government service. His most recent position was as the Technical Director and Deputy Director of the Ship System Management and Integration Office in SEA 03.

William H. Hunley

Mr. **Hunley** graduated from George Washington University with a B.S. degree in mechanical engineering after having served in the U.S. Army. He later earned a B.S. degree in naval architecture and marine engineering from the University of Michigan.

He is a member of the Executive Committee of The Society of Naval Architects and Marine Engineers, and is the National Membership Committee chairman. He is also a member of the American Society of Naval Engineers, having served on the council from 1978 to 1979. He is past president of the Association of Senior Engineers of the Naval Ship Systems Command, and a member of the Marine Technology Society.

CDI Marine Company, headquartered in Jacksonville, Fla., has a network of permanently staffed design offices with over 700 professional and technical employees located in key marine areas throughout the U.S.

$5.3-Million Navy Support Contract Awarded To Tracor

Tracor Inc. has received a $5.3-million contract from the Naval Sea Systems Command for continued engineering and technical support for the U.S. Navy's strategic and attack submarine fleet. The contract work will be performed in the company's Applied Sciences Group operations in Rockville, Md., and Groton, Conn.

William C. Moyer, group vice president for Tracor Applied Sciences, said that Tracor's effort is directed at providing the technology necessary for the development and implementation of dedicated maintenance and modernization programs to support the submarine Extended Operating Cycle (EOC) concept. The submarine EOC program extends the interval between submarine overhauls to achieve a higher, stabilized level of deployed submarines, and maintains a high state of readiness at lower cost. According to Dr. **Moyer,** Tracor has been providing engineering and technical support to the submarine EOC program since its inception in 1974.

William F. Thompson, division vice president of the Systems Technology Division of Tracor Applied Sciences, announced that **L.B. Cable Jr.** will continue as program manager for the contract. The work will be performed in Tracor's Submarine Engineering Department in Rockville under the direction of Mr. **Cable,** and in Groton under the direction of **M.P. Hall.**

SNAME Great Lakes/Rivers Elects Colletti Chairman

John P. Colletti has been elected chairman of The Society of Naval Architects and Marine Engineers (SNAME) Great Lakes and Great Rivers Section. Previously, Mr. **Colletti** served as vice chairman, Great Rivers, and authored two technical papers entitled "The Buckling of Barges in River Service," and "New Construction and the Marine Surveyor."

Mr. **Colletti** is president of John P. Colletti & Associates, Inc., marine engineers and surveyors, Pittsburgh, Pa., and Buffalo, N.Y. A graduate of the U.S. Merchant Marine Academy, Mr. **Colletti** is a licensed marine engineer, certified marine surveyor, and an accredited agency of the U.S. Department of Labor, O.S.H.A. Title 29 Part 1919, for the inspection of maritime cranes and derricks.

Underwater Maintenance Gets Order To Equip All Conoco Tankers

Conoco has placed an order with the Underwater Maintenance Company of Chandlers Ford, Hampshire, England, to equip their entire tanker fleet with Neutrally Buoyant Hull Aperture Blanks. On several occasions in the past, Conoco has purchased these to enable emergency repairs to sea valves to be carried out afloat.

In the past, sea inlets were sealed by divers using improvised blanks made from sheets of plywood and rubber. However, as sea chests became larger and draughts deeper, this became more difficult and more dangerous. To solve the problem, Underwater Maintenance Company originally produced these blanks to meet Classification Society requirements for inwater surveys. They are constructed to a design approved by Lloyd's Register of Shipping.

The company has already supplied blanks for more than 70 vessels, and they are now included in the specification of many new ships when they are built.

For more information on Underwater Maintenance Company's Neutrally Buoyant Hull Aperture Blanks,
Write 33 on Reader Service Card

W.D. Wheeler Associates Appointed U.S. Agents For Astilleros Del Golfo

Astilleros Del Golfo, S.A. (ADG), Tampico, Mexico, has named Wesley D. Wheeler Associates, Ltd. of New York City as agents. The Wheeler firm of international maritime consultants will act as ADG's exclusive representative for the United States and other areas not presently covered by agents.

Located on a 25-acre site in Madero/Tampico in Mexico, ADG operates one of the most modern abrasive blasting and coating plants in that country, with emphasis placed on total performance.

The highly automated blasting facilities are based on a closed system supplied by C.A.B. of Houston; some special components were designed and built by ADG's own fabricators. Two grit silos have a capacity of 1,000 tons each.

While repairs are not the main reason for the existence of the Tampico yard, the usual structural and piping renewals can be performed simultaneously with blasting and coating. Although drydocking is not now available at the facility, a graving dock is planned for construction in 1981.

For further information on Astilleros Del Golfo,
Write 34 on Reader Service Card

Philip Bannan Named A Division Manager At Western Gear Corp.

Philip B. Bannan was promoted to the position of division manager for the Heavy Machinery Division of Western Gear Corporation. The move was announced by **Ade K. Eitner**, group vice president of Western Gear.

Mr. **Bannan** takes his new post with a thorough knowledge of the workings of the Heavy Machinery Division and Western Gear Corporation. He has served the Division in the capacity of manufacturing manager and, more recently, as assistant division manager. Previously, Mr. **Bannan** was on a special assignment in which he was involved in establishing a computerized production control system at the Heavy Machinery Division.

Prior responsibilities for the corporation include various management positions for Western Gear's Cochran Western Corporation Subsidiary. His corporate experience also takes in a tour of duty in Western Gear's Washington, D.C., office as regional field marketing manager.

Calendar Of Coming Events

Communications Equipment Exhibition **Jan. 27-30**
Sponsored by the U.S. Department of Commerce.
U.S. Export Development Office, Mexico City, Mexico. Contact International Trade Administration, Room 6015, U.S. Department of Commerce, Washington, DC 20230; (202) 377-2952.

33rd Annual Technical Meeting **Feb. 10**
Sponsored by the Canadian Shipbuilding & Ship Repairing Association.
Hyatt Regency Hotel, Montreal, Canada. Contact **Mrs. Joy MacPherson,** CSSRA, 100 Sparks Street, Suite 801, Ottawa, Ontario, Canada; K1P 5B7; (613) 232-7127.

1981 Annual Meeting **Feb. 11-13**
Sponsored by the Water Resources Congress.
Chase-Park Hotel, St. Louis, Mo. Contact WRC, 955 L'Enfant Plaza North, S.W., Washington, D.C. 20024; (202) 488-0688.

11th Annual International Diving Symposium **Feb. 16-18**
Sponsored by the Association of Diving Contractors.
Hyatt Regency Hotel, New Orleans. Contact **Dave Neeb,** ADC, 1799 Stumpf Blvd., Gretna, LA 70053; (504) 362-0074.

1981 Oil Spill Conference **Mar. 2-5**
Sponsored by the American Petroleum Institute, Environmental Protection Agency, and U.S. Coast Guard.
Atlanta Hilton Hotel, Atlanta, GA. Contact 1981 Oil Spill Conference, Suite 700, 1629 K Street N.W., Washington, DC 20006; (202) 296-7262.

Shipboard Management Seminar **Mar. 10-13**
Sponsored by Maine Maritime Academy.
Maine Maritime Academy, Castine, Maine. Contact Capt. **George M. Marshall,** Center for Advanced Maritime Studies, Maine Maritime Academy, Castine, ME 04421; (207) 326-4311.

4th Latin American Dredging Congress **Apr. 6-10**
Sponsored by the Latin American Dredging Association.
Camino Real Hotel, Mexico City, Mexico. Contact **John Huston,** P.O. Box 6372, Corpus Christi, TX 78411; (512) 853-6512.

Offshore Technology Conference **May 4-7**
Sponsored by The Society of Naval Architects and Marine Engineers and 11 other technical societies.
Astrodomain, Houston. Contact OTC, 6200 North Central Expressway, Dallas, TX 75206; (214) 361-6604. (Preview in April 1 issue of MR/EN)

Nor-Shipping '81: The 8th International Shipping Exhibition **May 11-16**
Organized by Norges Varemesse (The Norwegian Fair Organization).
The Sjolyst Centre, Oslo, Norway. Contact Mrs. **Else-Marie Gehrken,** Norges Varemesse, P.O. Box 130 Skoyen, Oslo 2, Norway; telex 18748.

Propellers '81 Symposium **May 26-27**
Sponsored by SNAME under the auspices of the Hampton Roads Section.
Cavalier Hotel, Virginia Beach, Va. Contact **Andrew Szypula,** CTD, Bethlehem Steel, Sparrows Point, MD 21219; (301) 477-6832. (Preview in May 15 issue of MR/EN)

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

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

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

Hitachi Completes Bulk Carrier Mount Penteli

The 60,433-dwt, 224-meter (about 735 feet) bulk carrier Mount Penteli (shown above) was delivered to her owner, Metropolitan Bulk Transport Corporation, Liberia, recently by Hitachi Zosen. It was constructed at the yard's Hiroshima Works (Innoshima).

The Mount Penteli is the largest Hitachi Zosen-developed Panamax type capable of sailing through the Panama Canal. The ship can carry various kinds of freight, including grain, ore and coal. Since grain can be taken on the upper wing tanks, the ship's carrying capacity can be increased.

The new vessel is powered by a Hitachi-Sulzer 6RND 76M diesel with an improved fuel injection system. This engine, in combination with the "derating" method for control of maximum engine output, is reported to be very fuel efficient.

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- NHL-Norwegian Hydrodynamic Laboratories

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If you fit the qualifications above for either position, and wish to be considered, send your resume and salary history to Gerald Maxwell, Dept. MOMR-1215, The Coastal Corporation, Nine Greenway Plaza, Houston, Texas 77046.

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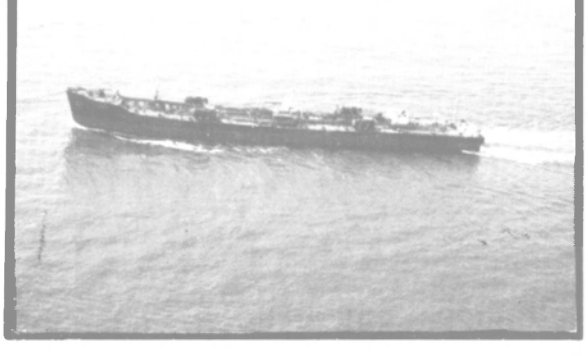

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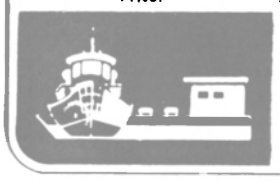

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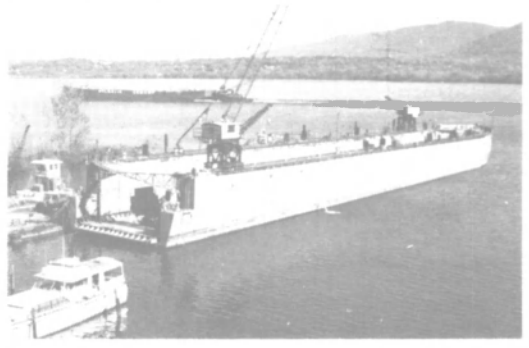

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If funding for the new program is approved, the Contractor eventually selected would have total responsibility for the work described above. The Foundation contemplates an incrementally funded contract(s) with an initial period of performance of at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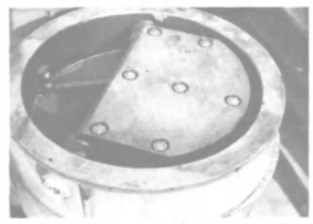

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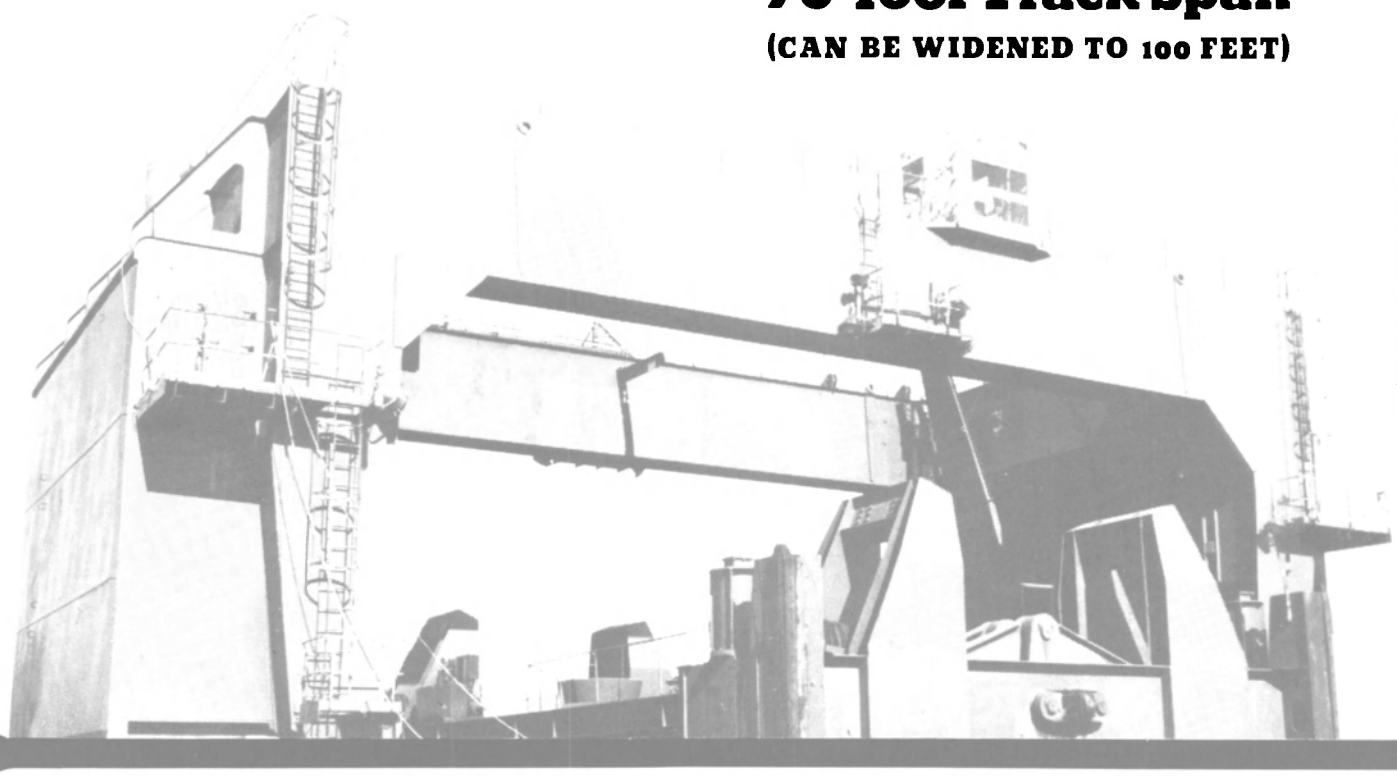

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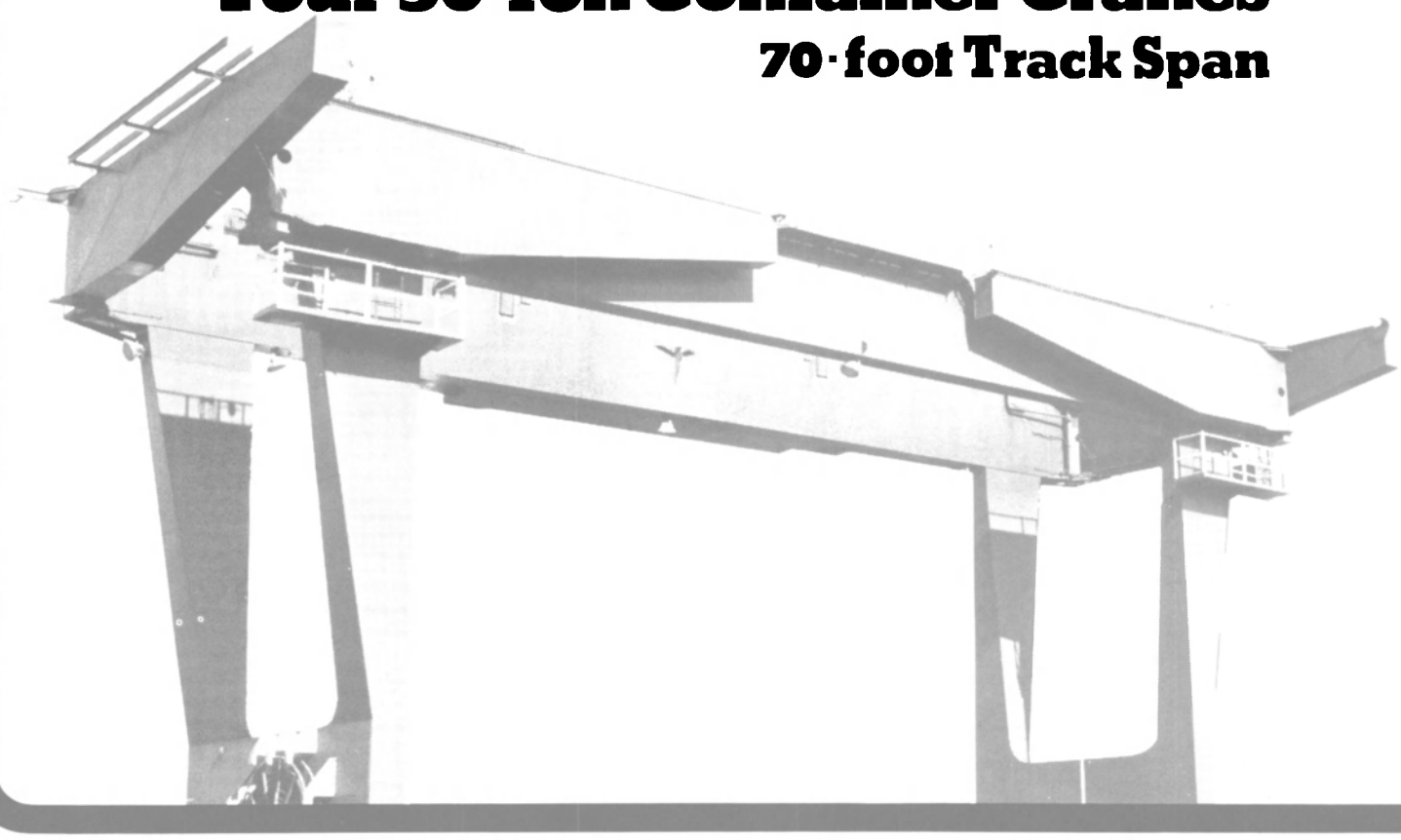

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32'0'' Maximum Outstretch

Hoist, Trolley Travel and Gantry Motors are DC and have VSR and VSX regulation.

Hoist and Trolley not shown but are included.

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

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

ZIDELL

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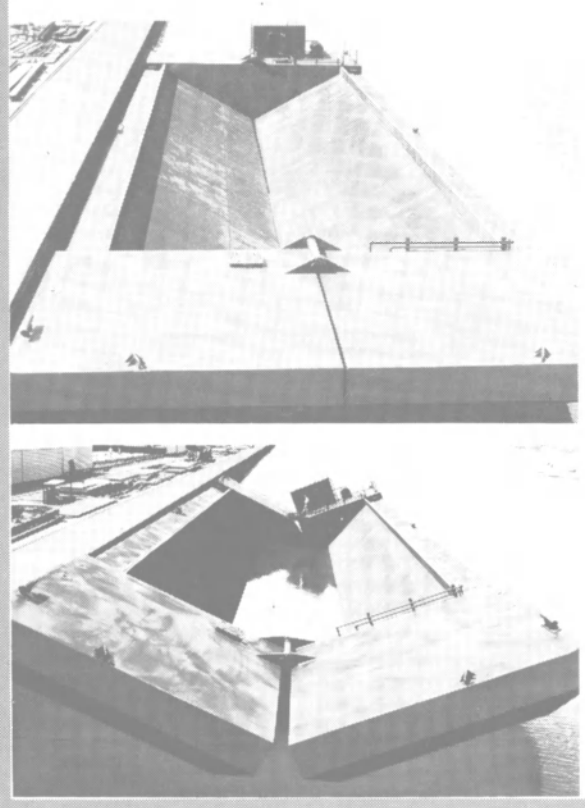
AVAILABLE FOR IMMEDIATE DELIVERY

Split Type Self Dumping Scows



Built 1979. For sale, long or short term charters

SPECIFICATIONS

ABS loadlined for USCG-approved offport dumping

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

American Crane Barge

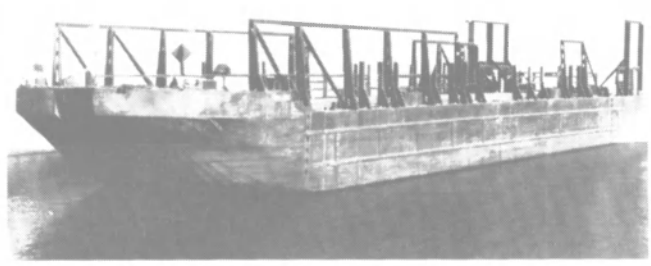
BARGE DATA

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

CRANE DATA

Manufacturer	American Hoist & Derrick Co.
Model & Type	305 Revolver
Capacity	125 T
Boom (Certified rating with 140' length, 160' available)	
20 part rigging	2,200 ft., ⅞"ϕ - 6 x 36 I.P.S.
4 part standing standing bail	2-186 ft., 1¾"ϕ - 6 x 36 I.P.S.
Main Hoist (Certified rating: 58.5 T. @ 50' to 100', 8 part rigg.)	
20 part rigging	3,250 ft., 1"ϕ - 6 x 36 I.P.S.
Aux. Hoist (Certified rating: 10.0 T. @ 100') 15 T. Capacity	
2 part rigging	635 ft., ⅞"ϕ - 6 x 66 I.P.S.

Bulk Petroleum Barges



ZBO-260

Type: • Ocean unmanned service • Grade "B" bulk cargo • Dunnaged deck for general cargo

USCG: • Documented with "Certificate of Registry" • Operating "oceans" • Official No.: 280390 • Net: 2045 • Gross: 2045 • Length: 260.0' Breadth: 52.1' • Depth: 18.3'

ABS: International Load Line (valid until 25 May 1983) Cert. No. 61-13,337-5.

Aux. Machinery & Pumps: (1) Cornell deep well pump (6") starboard unit driven by one 6-71 G.M. diesel. (1) Fairbanks deep well pump. Port unit driven by one 3-71 diesel. (1) Hydraulic pump, alternator unit driven by one 3-71 G.M. diesel

Fill & Discharge Lines: 8" lines with 6" suction.

Capacity: Eight tanks – 29,600 bbls.

Deck Cargo Dwt. at Loadline: 4000 S.T.

ZTB-601

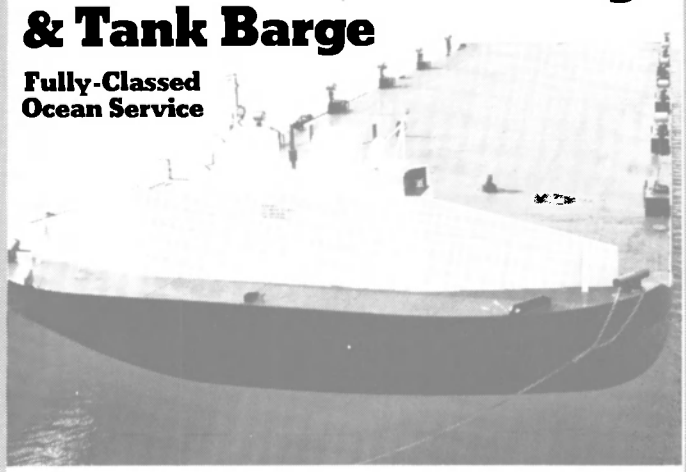
Type: • Ocean unmanned service • Grade "B" bulk cargo

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

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

Combination Deck Cargo & Tank Barge

Fully-Classed Ocean Service



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

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

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

Thomas A. Sherwood or
Andy Canulette, Jr.

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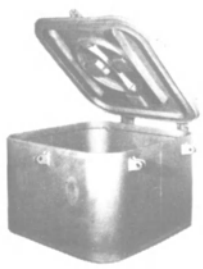
AFTER REMOVAL FROM

HATCHES, HATCHES and MORE HATCHES. WE'VE GOT' EM!

24" X 24" X 10"
4-DOG

72" X 72" X 12"
16-DOG

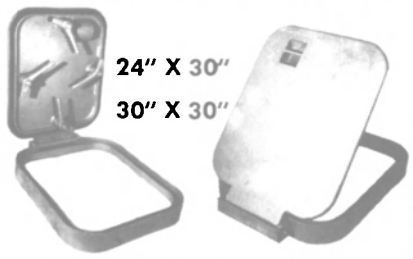


36" X 36" X 24"
WITH 19"
CIRCULAR
STEEL
MANHOLE
IN
COVER

NEW UNUSED FLUSH HATCHES

54" X 66"
54' X 77"

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



24" X 30"
30" X 30"

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

18" DIAM X 10"
SCUTTLE

60" X 42" X 12"
10-DOG

20" DIAM X 4"
SPRING
LOADED
4-DOG

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

24" X 24"
ROUND
QUICK-
ACTING
4-DOG
SCUTTLE

36" X 26" 7-DOG
TANKER EXPANSION
TRUNK

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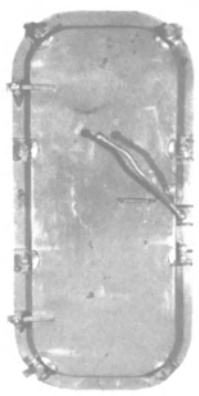

QUICK-ACTING LEVER OPERATED WATERTITE DOORS

26" X 66"
8-DOG
Rights & Lefts

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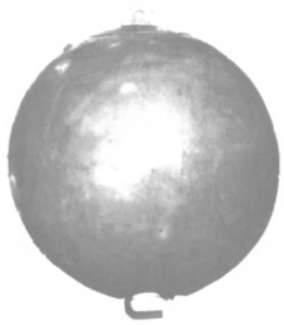
SURPLUS BERGER FAIRLEADS

2 Model 620 — for 1⅝" wire — 20" sheave. Located San Francisco, Ca.
3 Model 614 — for 1¼" wire — 14" sheave. Located Panama City, Fla.

THE BOSTON METALS COMPANY



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

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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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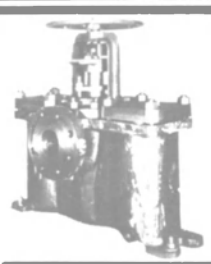

2½" DUPLEX STRAINER

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

THE BOSTON METALS COMPANY

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

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Columbia-Sentinel Engineers Western, Inc., P.O. Box 21542, Seattle, WA 98111
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Crane Consultants Inc., 15301 1st Ave., So. Seattle, Washington 98148

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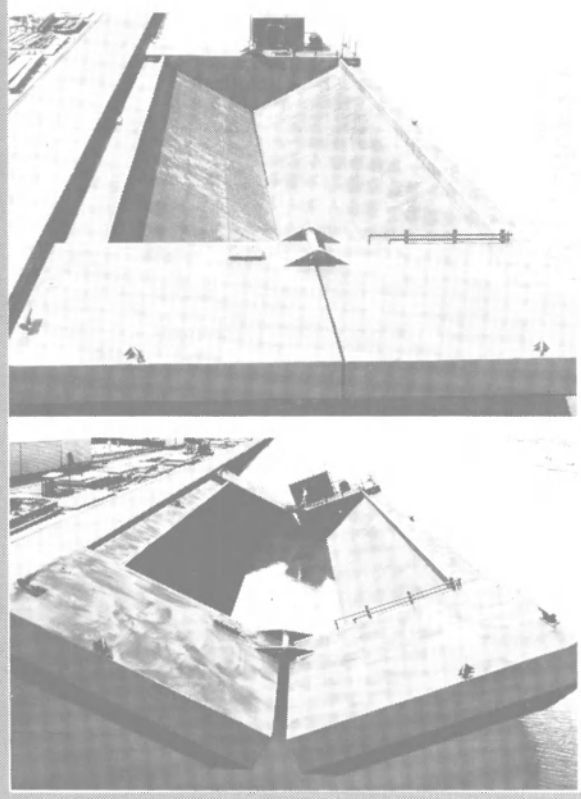
Split Type Self Dumping Scows



Built 1979. For sale, long or short term charters

SPECIFICATIONS

ABS loadlined for USCG-approved offport dumping

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

American Crane Barge

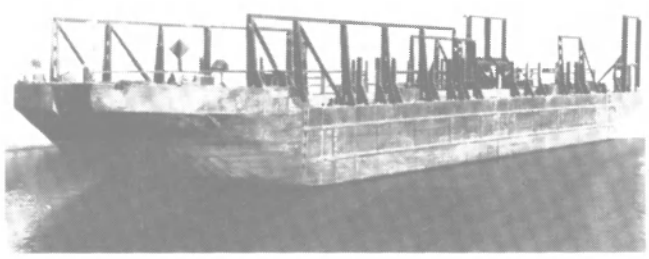
BARGE DATA

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

CRANE DATA

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

Bulk Petroleum Barges



ZBO-260

Type: • Ocean unmanned service • Grade "B" bulk cargo • Dunnaged deck for general cargo

USCG: • Documented with "Certificate of Registry" • Operating "oceans" • Official No.: 280390 • Net: 2045 • Gross: 2045 • Length: 260.0' Breadth: 52.1' • Depth: 18.3'

ABS: International Load Line (valid until 25 May 1983) Cert. No. 61-13,337-5.

Aux. Machinery & Pumps: (1) Cornell deep well pump (6") starboard unit driven by one 6-71 G.M. diesel. (1) Fairbanks deep well pump. Port unit driven by one 3-71 diesel. (1) Hydraulic pump, alternator unit driven by one 3-71 G.M. diesel.

Fill & Discharge Lines: 8" lines with 6" suction.

Capacity: Eight tanks – 29,600 bbls

Deck Cargo Dwt. at Loadline: 4000 S.T.

ZTB-601

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

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

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

Combination Deck Cargo & Tank Barge

Fully-Classed Ocean Service

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

Length O.A.	230'- 0"
Beam	60'- 0"
Depth	15'- 6"
Deadrise	6"
Number of Tanks	10
Total Tank Volume @ 95%	24,000 BBL
Cargo Pumps	Two Twin Screw, Deleval IMO GTS-268-066-CBEM
Rating	1500 GPM, 1150 RPM, 100 PSIG Disch. Press., 5000 SSU
Location	Below Deck Pumproom in Fwd. Rake
Diesel Engines	Two Detroit Model 8V-71, 230 HP @ 1800 RPM
Location	Above Deck in Fwd. Deckhouse
Fuel Capacity	1400 Gal.
Fill & Disch. Connections	8" ANSI 150# FLG P/S
Heating Coils	2" Sch. 80 Pipe For Shore Steam
Hull Plating	Deck ½", Side Shell 3/8", Bott. 3/8", Shear Strake ½"
Deck Cargo Dwt. at Loadline	3900 S.T.

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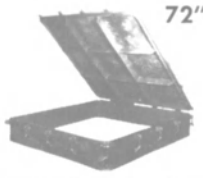
24" X 24" X 10"
4-DOG



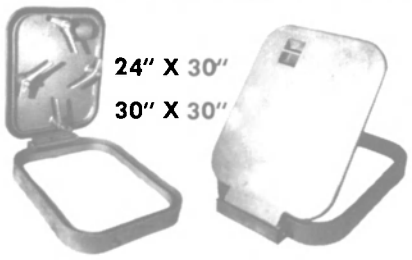
72" X 72" X 12"
16-DOG

36" X 36" X 24"
WITH 19"
CIRCULAR
STEEL
MANHOLE
IN
COVER

NEW UNUSED FLUSH HATCHES

54" X 66"
54' X 77"

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



24" X 30"
30" X 30"

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

18" DIAM X 10"
SCUTTLE

60" X 42" X 12"
10-DOG

20" DIAM X 4"
SPRING
LOADED
4-DOG

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

24" X 24"
ROUND
QUICK-
ACTING
4-DOG
SCUTTLE

36" X 26" 7-DOG
TANKER EXPANSION
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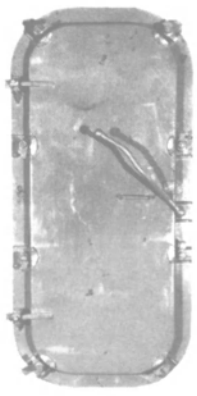

QUICK-ACTING LEVER OPERATED WATERTITE DOORS

26" X 66"
8-DOG
Rights & Lefts

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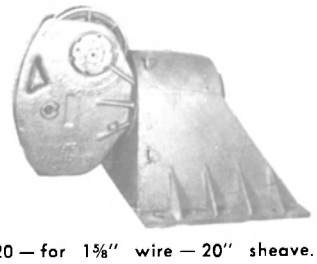
SURPLUS BERGER FAIRLEADS



2 Model 620 — for 1⅝" wire — 20" sheave. Located San Francisco, Ca.
3 Model 614 — for 1¼" wire — 14" sheave. Located Panama City, Fla.

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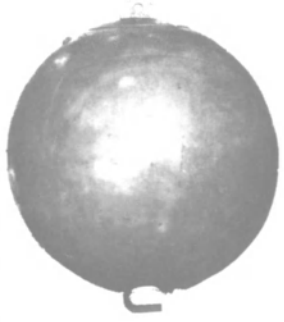

NEW — UNUSED SPHERICAL MOORING BUOYS

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

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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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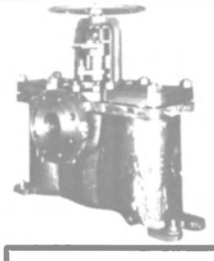

2½" DUPLEX STRAINER

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

THE BOSTON METALS COMPANY

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Marine Warehouse (301) 752-1077

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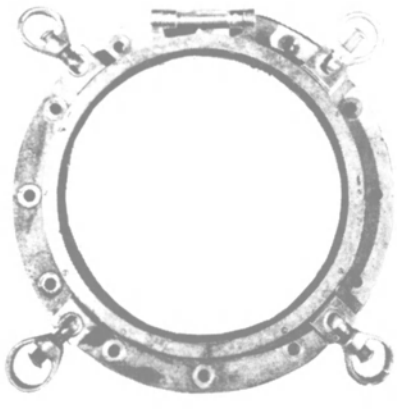
15½" & 16" CLEAN BRASS 4-DOG MARINE PORTLIGHTS

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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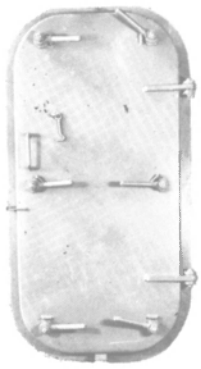
Marine Warehouse (301) 752-1077

FOR SALE

NEW WATERTIGHT DOORS

Steel Dogs



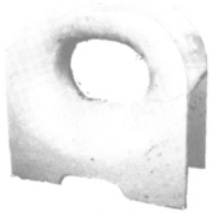
6-Dog right and left hand hinged doors with frames. Constructed of 1/4" steel plate and meet Coast Guard regulations for above deck as well as below deck use. All dogs are bronze bushed.

SIZE

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

EACH DOOR

IMMEDIATE DELIVERY



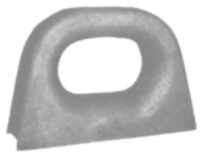
NEW 7" RADIUS PANAMA CHOCKS

(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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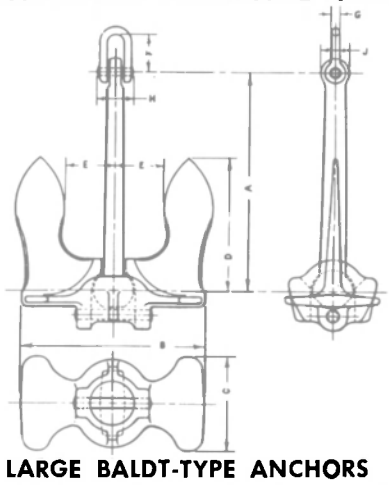
ANCHORS — CHAIN

DETACHABLE LINKS

PEAR-SHAPED DETACHABLE LINKS



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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

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

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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.

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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
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- 2 Kahlenberg air horns — model D2
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- 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"

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

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

250KW DIESEL GENS.

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

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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

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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
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EPSCO, Inc., 411 Providence Highway, Westwood, Mass. 02090
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Griffith Marine Navigation, Inc., 134 North Avenue, New Rochelle, NY 10801
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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
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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
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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
Sigma Treatment Systems, 603 Dean St., Brooklyn, NY 11238

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. 03817
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 02031
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, Valpariso, 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
Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501
Pearlson Engineering Co., P.O. Box 8, Kendall Branch, Miami, Fla. 33156
Perth Amboy Dry Dock Co., Perth Amboy, N.J. 08862
Port Allen Marine Service, Inc., P.O. Box 108, Port Allen, LA 70767
Port Houston Marine, Inc., 7220 J.W. Peavy Drive, Houston, TX 77012
Port of Portland, P.O. Box 3529, Portland, OR 97208
Promet (PTE) Ltd., 27 Pandam Rd., Jurong Industrial Estate, Singapore 22
S.E.B.N., Societa 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

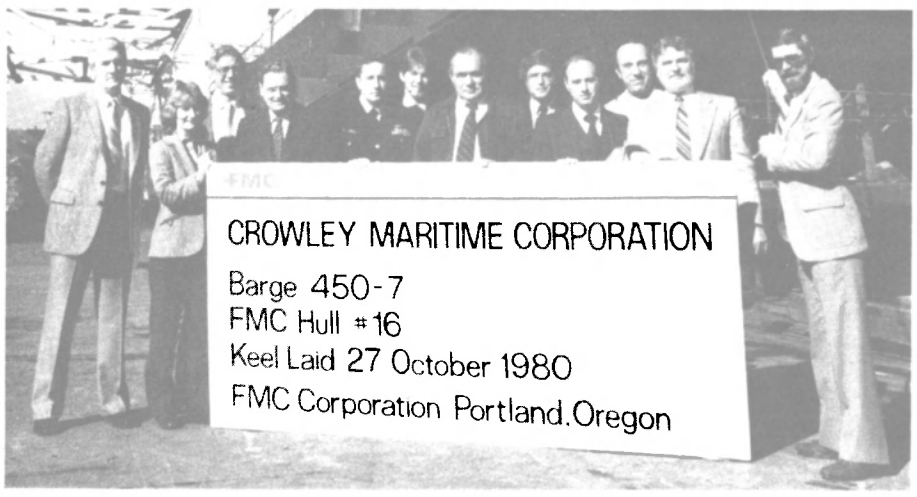
WINDOWS
Kearfott Marine Products, A Singer Co., 550 South Fulton Avenue, Mt. Vernon, N.Y. 10550

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.



Present at FMC keel-laying of second of two 400-foot tank barges were, from left: marine operations manager **Walter J. MacDonald; Nancy Marshall;** chief engineer **Terry Halpin;** division sales vice president **William R. Galbraith;** USCG Comdr. **Thomas J. McKerr; Don Kiive;** ABS surveyor **Doug Hendrix;** FMC division president **John E. Carroll Jr.;** FMC manufacturing manager **Lee D. Parr;** USCG Capt. **G. Kirk Greiner Jr.;** contract administration manager **Daniel R. Rogers;** and **Kenneth C. Faris,** Crowley Maritime Corporation.

FMC Lays Keel For 400-Foot Crowley Maritime Tank Barge

FMC Corporation recently laid the keel that began construction of an oceangoing tank barge at the Marine and Rail Equipment Division in Portland, Ore. This is the second of two sister barges being built by FMC for Crowley Maritime Corporation.

The barges, each measuring 400 feet long by 99 feet 6 inches wide by 25 feet deep, are designed to carry a variety of petroleum products. The first barge is currently under construction, with delivery scheduled for this month. Delivery of the second barge will be February 1981.

Officials present at the keel-laying were: **John E. Carroll Jr.,** FMC division president; **William R. Galbraith,** division vice president-sales; **Kenneth C. Faris,** operations manager, Columbia Marine Lines (a Crowley Company); Capt. **Kirk Greiner,** U.S. Coast Guard; and **Doug Hendrix,** principal surveyor, American Bureau of Shipping.

Based in San Francisco, Crowley is a major international marine transportation firm. In recent years, FMC has built several barges for Crowley, including large oil barges and deck cargo barges.

FMC Corporation, headquartered in Chicago, is a major international producer of machinery and chemicals for industry, agriculture and government, with 1979 sales of $3.31 billion.

Communication Products Technical Advisor Joins ITT Decca Marine

Antero Borges

Antero Borges joins ITT Decca Marine, Inc. as technical advisor for Communication Products.

In announcing the appointment, **George B. Woods,** director of engineering services for ITT Decca Marine, said: "Mr. **Borges's** primary function will be to provide technical and sales support for the Sailor Products, the company's newest product line."

Mr. **Borges** joins ITT Decca Marine with 20 years' experience in service, sales and management of marine and industrial electronics. Mr. **Borges** comes to ITT Decca Marine from Jacksonville Marine Radio where he was president.

MarAd Approves Title XI For Two Tankers Costing $129 Million

Assistant Secretary of Commerce for Maritime Affairs, Maritime Administration, **Samuel B. Nemirow** has approved in principle an application by Ogden Shamrock Transport, Inc., and Ogden Hudson Transport, Inc., two wholly owned subsidiaries of Ogden Bulk Transport, Inc., 280 Park Avenue, New York, N.Y., for Title XI guarantees to aid in financing the construction of two diesel-powered product tankers.

Avondale Shipyards, Inc., New Orleans, La., is the proposed builder for both 50,624-dwt vessels. Avondale expects to deliver the first of the tankers to Ogden Shamrock next March, and the second to Ogden Hudson in June.

Both vessels are suited to carrying chemical, petrochemical, and petroleum products. They also may be used to carry grain to countries receiving U.S. aid, and possibly compete against foreign-flag tankers in the Caribbean trade.

The Title XI guarantee will cover 87½ percent of the vessels' estimated actual cost: $56,049,000 of the Ogden Shamrock tanker's $64,056,220 estimated actual cost, and $57,047,000 of the Ogden Hudson tanker's $65,197,224 estimated actual cost.

Patti Industries Has Contract To Build Two 65' Tugs For Cheramie

Patti Industries of Pensacola, Fla., has announced the signing of an agreement with Huey L. Cheramie Inc. of Galliano, La., for the construction of two 65- by 24- by 9-foot, 1,000-hp Model Bow Tugboats. One vessel will be named the M/V Katie Cheramie, after **Huey L. Cheramie's** granddaughter, and the second vessel will be named M/V Jule Plaisanc, after operations manager **Phillip Plaisanc's** daughter. Both vessels are scheduled to be delivered in the spring of 1981.

Huey L. Cheramie Inc. currently owns seven vessels and manages an additional seven vessels operating from Carabelle, Fla., to Brownsville, Texas. Delivery of the M/V Katie Cheramie and the M/V Jule Plaisanc will bring the total to 16 vessels flying the Cheramie flag.

Patti Industries Inc. produces steel vessels from 60 feet to 130 feet and is qualified to build any type towboat, tugboat or utility vessel.

Patti's 65-foot tugboats feature transverse and longitudinal framing which produces a smooth deck, side shell, smooth bottom plate and adds longevity to the hull.

For additional information on Patti Industries vessels,
Write 35 on Reader Service Card

Hannah Marine Moves Headquarters Offices

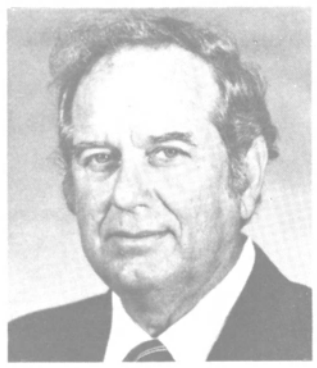
Hannah Marine Corporation has moved its corporate offices to 361 Frontage Road, Burr Ridge, Ill. 60521.

The company's new offices occupy 5,400 square feet and will soon utilize another 1,350 square feet. The new facilities are occupied by the corporate executive officers, Sales, Accounting, Traffic and Safety. The additional 1,350 square feet will accommodate Engineering Design and Vessel Operations.

Hannah's Lemont facility will continue to house their Purchasing Department and Shipyard. The company also has offices in Detroit, Mich., and has opened a sales office in Houston, Texas.

J.W. Steadman Named VP-Production For Halter Marine

James W. Steadman has been appointed vice president, production of Halter Marine, Inc., with responsibility for the production activities of all Halter shipyards and production centers. The announcement was made by **Harold P. Halter,** president and chairman of the New Orleans-based shipbuilding group.



James W. Steadman

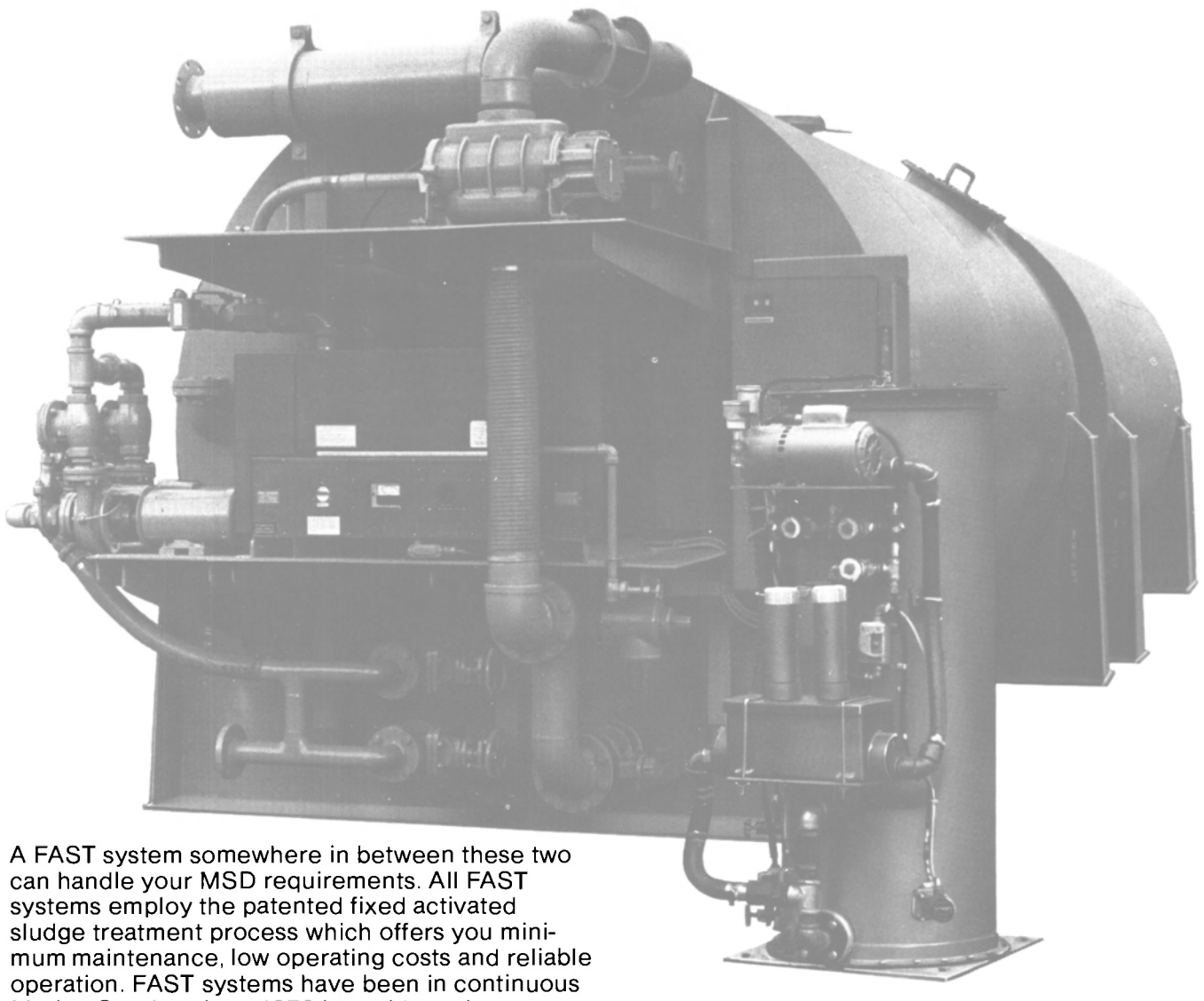
Mr. **Steadman** joined Halter in July 1980 as vice president, special assignments, with overall responsibility for the Halter CAT-UG project at Chickasaw, Ala. Halter is building six of the giant propulsion units for an integrated tug/barge program under subcontract with Bethlehem Shipbuilding, and an additional tug for California and Hawaiian Sugar Company. He will continue to maintain management of all CA-TUG production while assuming additional production responsibilities.

Prior to joining Halter, Mr. **Steadman** had been associated with the Ingalls Shipbuilding division of Litton Industries for 26 years. His most recent position there was vice president of operations. Prior to that, he held various managerial positions at Ingalls including director of quality assurance, chief of project engineering, director of program engineering, chief design engineer, and he has been responsible for a production center employing approximately 17,000 people.

Halter Marine, Inc. owns and operates 10 shipyards in the Southeastern United States, and is the world's largest builder of supply vessels for the offshore oil and gas industry.

☐ Towboat ☐ Accommodations Barge ☐ Freighter ☐ Drill Rig ☐ Fishboat ☐ Tanker
☐ Tugboat ☐ Cruise Ship ☐ Ore Boat ☐ Ferry ☐ Container Ship ☐ Any Size Vessel

There's a FAST Marine Sewage System built to service anything that floats.



A FAST system somewhere in between these two can handle your MSD requirements. All FAST systems employ the patented fixed activated sludge treatment process which offers you minimum maintenance, low operating costs and reliable operation. FAST systems have been in continuous Marine Service since 1970 in a wide variety of applications.

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Shown above are (L) a FAST Model 1680-R-UV, rated for 600 persons and (R) a FAST Model LS-1, rated for 2 to 5 persons.

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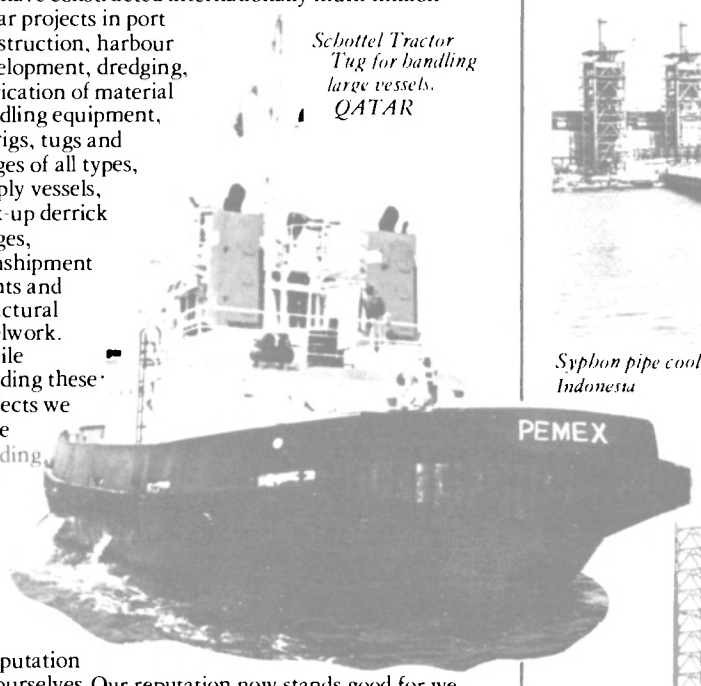
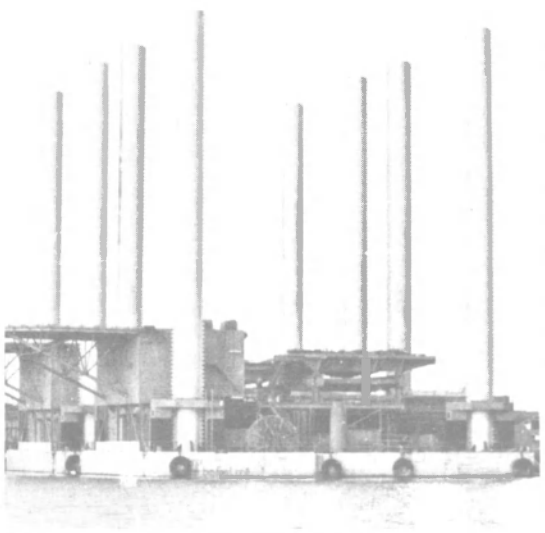
We have constructed internationally multi-million dollar projects in port construction, harbour development, dredging, fabrication of material handling equipment, oil rigs, tugs and barges of all types, supply vessels, jack-up derrick barges, transhipment plants and structural steelwork. While building these projects we were building a reputation for ourselves. Our reputation now stands good for we have been able to consistently deliver top quality products at lower prices and at many a time well ahead of schedule.

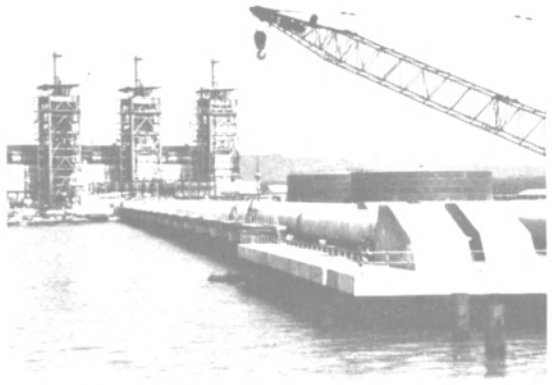


Schottel Tractor Tug for handling large vessels. QATAR

Jumbo 747 Hangar, Hong Kong



Shallow water jack-up drilling rig, Gulf of Mexico



Syphon pipe cooling system for the Krakatau power station, Indonesia

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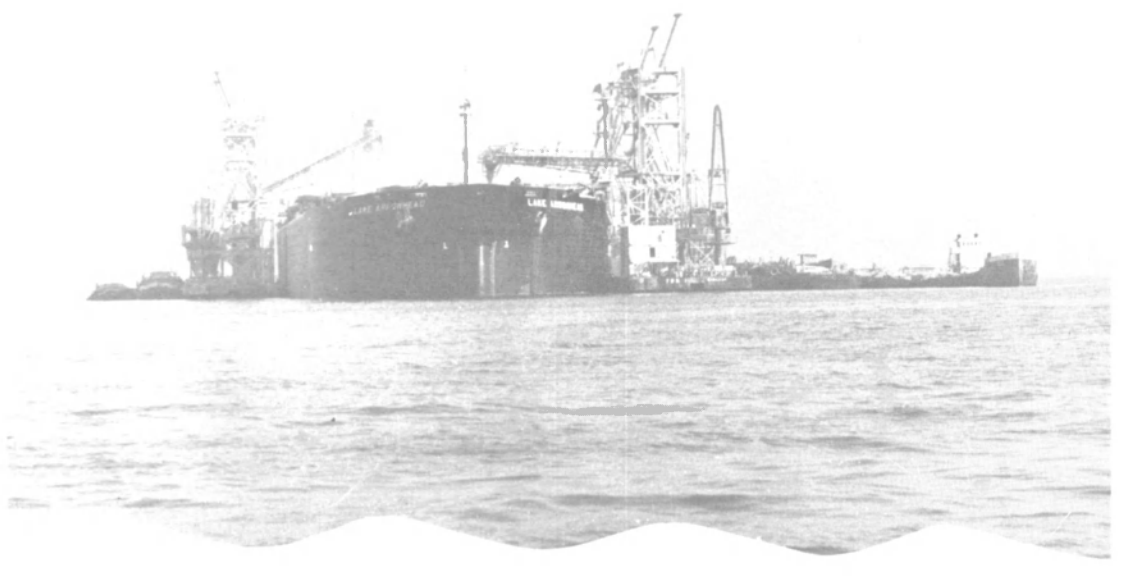

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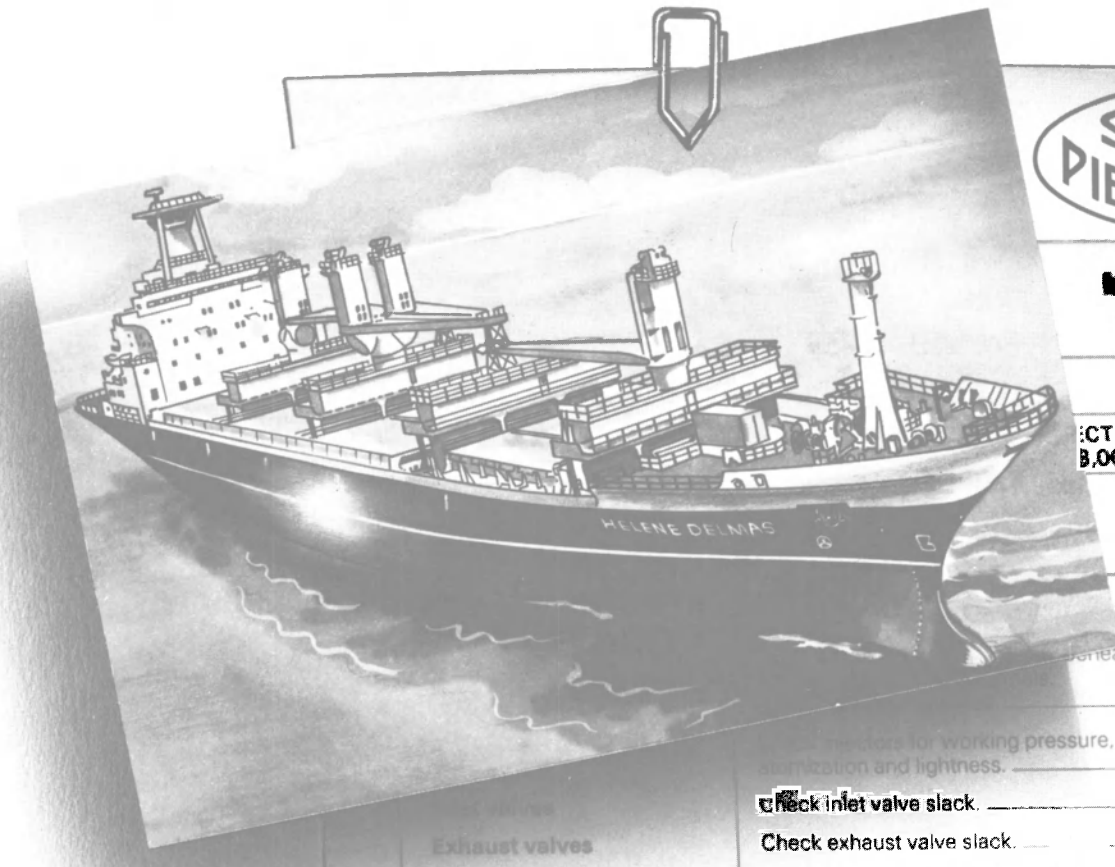


S.E.M.T. PIELSTICK

MAINTENANCE CARD PC4

CHECKS	Every 1,500 hours	Every 3,000 hours
CTION 'U2' 3,000 hours		
ing.	X	
beneath		X
...ctors for working pressure, ...rization and lightness.		
Check inlet valve slack.		X
Check exhaust valve slack.		
Inspect cams, rollers and cam follower guides without dismantling.		X
Check oil level in the bottles		
Test for correct functioning.		
Drain the oil in the governor, rinse and top up with new oil.		

Exhaust valves

Camsha**ft housing**

Reversing gear

Overspeed tripping switch

Spee**d** **overnor**

Test results, confirmed in operation

n and power according to RPM and BMEP ven pumps).

Toleran..... + 2 %

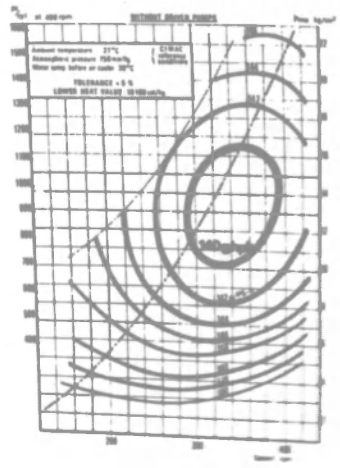
Lo...alorific value (10.10**0** kcal/kg) . . 42,280 kJ/kg

finition

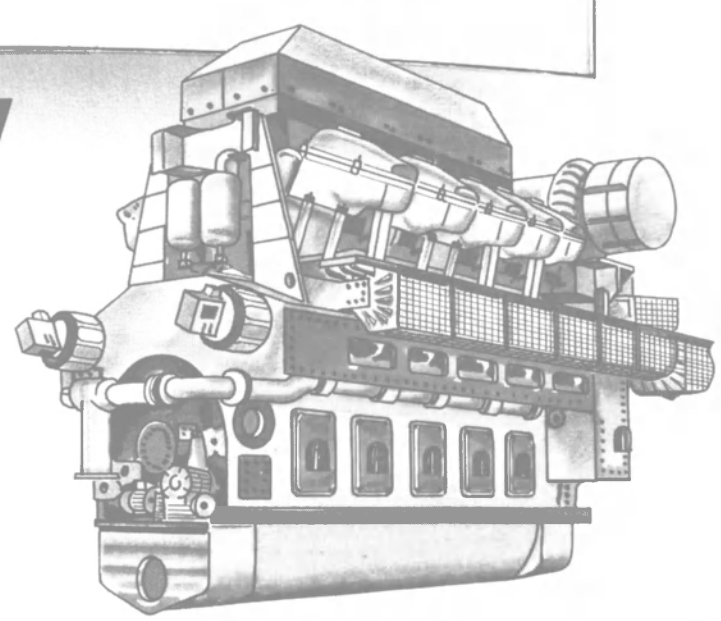
a...pi...re ..... 27 °C

a...os...he...re ● . (750 mm Hg) 100 kPa

Air cooler inlet water temperature ..... 30 °C



economy, reliability



Economy and reliability. Two main features verified on test bench and checked, afterwards, in operation.
Economy due to low consumption : 135 g/hph.
Consumption is decreasing, but power remains.
Reliability confirmed during maintenance checks : low wear and excellent pistons surface smoothness.
Economy and reliability of PC4-2 means a reduction of operation cost !

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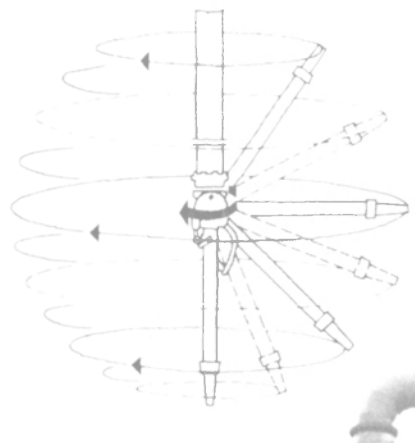
If you need COW* don't take any bull!

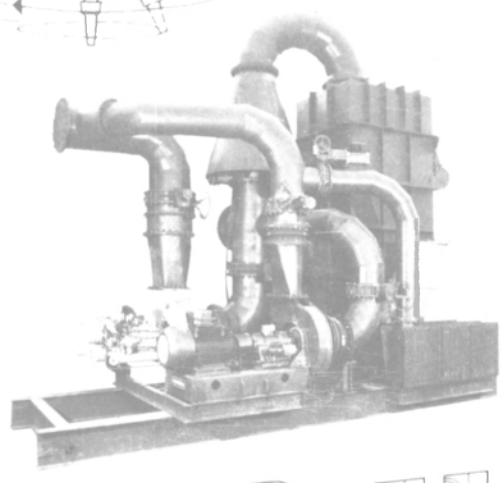
*CRUDE OIL WASHING and Inert Gas Systems require owner's consideration due to the proposal of the recent IMCO Conference on Maritime Safety & Prevention of Pollution. Whether for retrofit or new building, complete systems experience should be considered.

GUNCLEAN® CRUDE OIL WASHING

is economical and efficient

GUNCLEAN has been used for Crude Oil Washing since 1967 and these days all GUNCLEAN models, old as well as new, are used for all current Crude Oil Washing techniques. Considerable savings are realized due to increased cargo outturn. It reduces corrosion since sea water need not be introduced in ⅔rd of the tanks between dry docking. Pollution is reduced by minimizing the amount of oil-contaminated water that must be disposed of.





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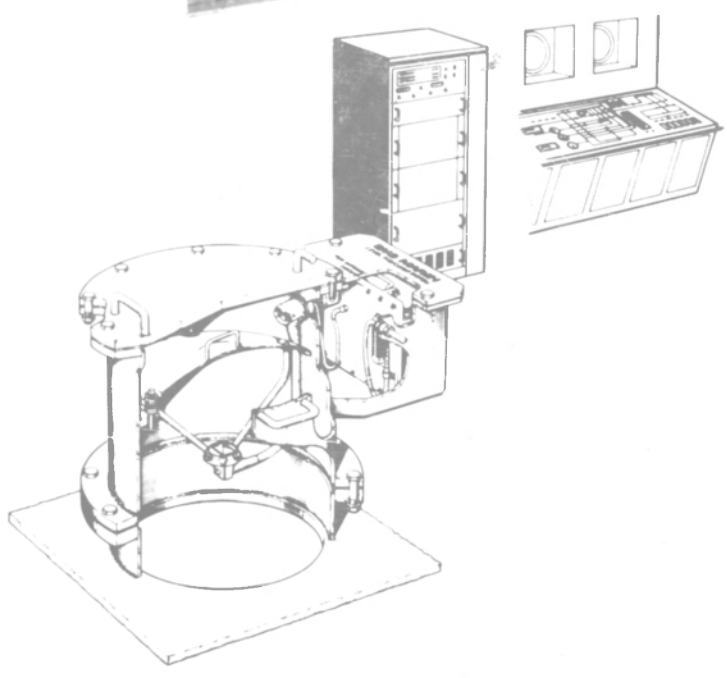
for safety and protection

Since 1962, over 300 Howden Systems have been installed. COW requires IGS to protect your crew, ship and cargo. Howden's experience is available to assume total responsibility for complete installation which includes teams of survey engineers, necessary drawings, regulatory body approval, materials, final start-up, crew instruction and worldwide service by SALWICO, U.S.A., Howden Engineering U.K. and Gadelius, Japan.

Saab SUM-21

for measuring ullage of cargoes aboard ships

SAAB SUM-21 provides dependable, accurate ullage measurements during COW. There are no moving parts and no equipment in the tank to damage. A transmitter in the tank top sends a radar beam to the surface of the tank contents. The reflected signal is converted by a receiver and relayed for processing in a central unit. Alarm levels can be preset over the entire tank range. It is intrinsically safe and accurate—for crude oil, liquid hydrocarbons or water.



Salwico Oil Pollution Monitors and Salwico Gas Sampling Systems are also available to meet the needs of a total system. For experience, safety, savings and utmost efficiency, consult SALWICO.

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