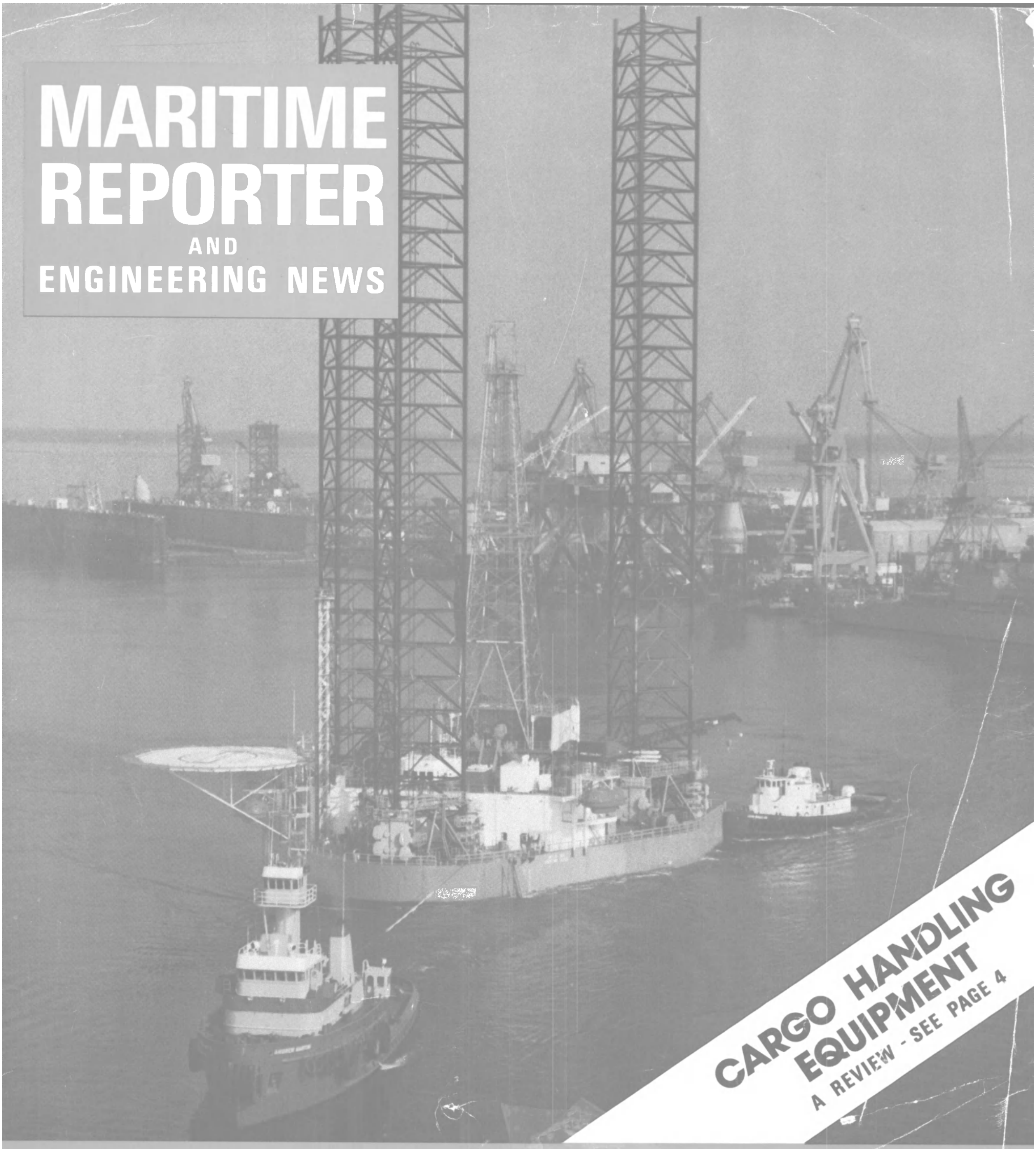
MARITIME REPORTER
AND
ENGINEERING NEWS



'Keyes 300'

Ingalls Delivers Keyes 300— First U.S.-Built L-780

(SEE PAGE 4)

CARGO HANDLING EQUIPMENT
A REVIEW - SEE PAGE 4

SEPTEMBER 1, 1981

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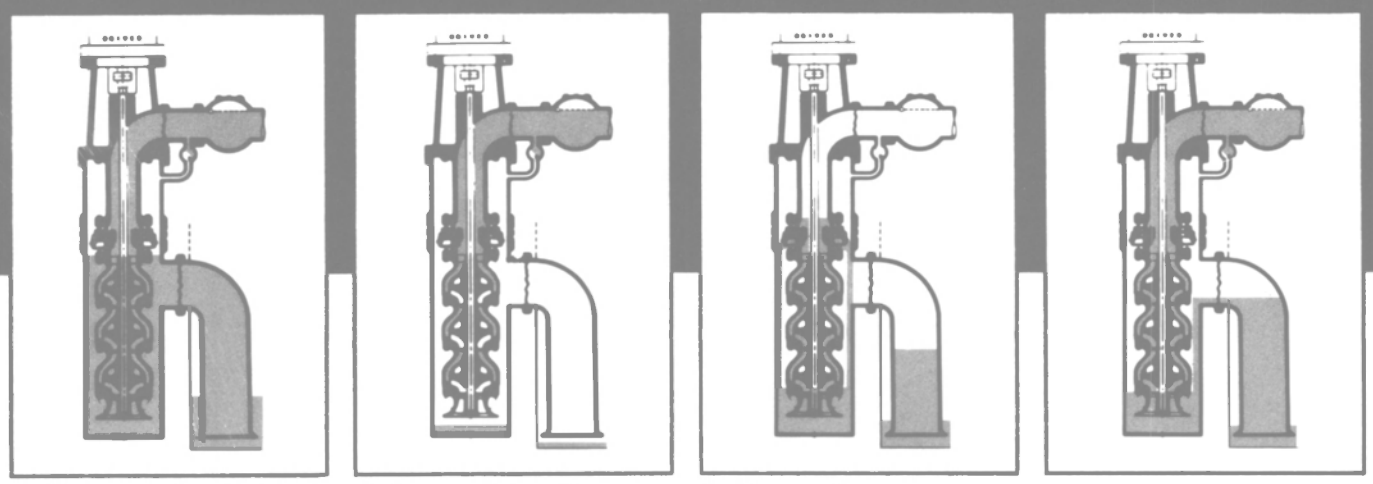

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ON THE COVER

Ingalls Delivers Keyes 300
PAGE 10

Cargo Handling Equipment
A Review
PAGE 24

New Mississippi Barge Terminal To Be Built In Jo Daviess County

The Army Corps of Engineers recently issued permits to the Dubuque Sand & Gravel Company of East Dubuque, Ill., for the immediate start of construction of a barge terminal in Jo Daviess County, at approximate Mississippi River mile 574.6.

The 24-acre harbor will be 2,200 feet long and 450-500 feet wide. A 1,308-foot by 200-foot-wide channel will be constructed from the Mississippi River to the harbor. Depth of the channel and harbor will be approximately 20 feet. The terminal is designed for storage or intermodal transfer of commodities. Approximately 75 acres adjacent to the harbor will be available for storage or further development.

The site is adjacent to U.S. Highway 20 and is served by the Illinois Central Gulf Railroad. It is approximately three highway miles southeast of the Julien Dubuque Bridge linking Iowa and Illinois.

New MarAd Reports On Ship Structure Collapse

The Maritime Administration has released two related reports, "Formulas and Procedures for Estimating the Collapse Loads of Ship Structural Members," and "Structural Analysis of the Collapsing Bow of A Striking Ship." Both reports were prepared for MarAd by Hydronautics, Inc.

The reports are available from the National Technical Information Service, 5285 Port Royal Road, Springfield, Va. 22161. Their respective order numbers and prices are PB81-221855, $8; and PB81-111838, $12.50.

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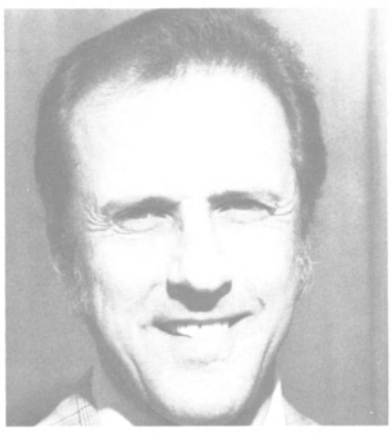
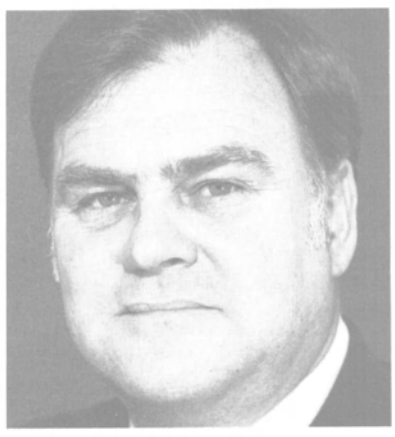
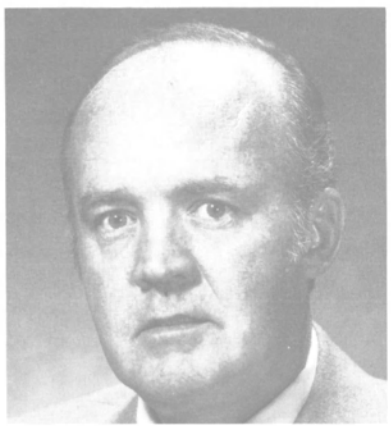


Milt Leubecker,
Gen. Mgr.,
Baltimore Yard



Dick Blackinton,
Gen. Mgr.,
Hoboken Yard



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New Radiotelephone Made By Texas Instruments —Brochure Available

The production of the TI3000 HF SSB Radiotelephone, a fully synthesized worldwide radiotelephone, was announced recently by Texas Instruments Incorporated, Dallas, Texas. Offering continuous coverage from 1.605 to 25.1 megahertz, the TI3000 has a unique design which combines the final amplifier and a fully automatic antenna coupler in a single unit to deliver all of the transmitter power — a full 125 watts PEP — to the antenna. This advanced design results in substantially improved performance over conventional designs in which the amplifier feeds the antenna coupler through a long cable.

A four-color brochure describing and illustrating the full range and capabilities of the radiotelephone is available from the company.

The TI3000 is a compact, two-unit system consisting of a receiver/exciter/control unit and a power amplifier/antenna coupler unit. Up to 125 feet of readily available, low-cost RG 58 cable can be used to connect the amplifier to the user's antenna without output power loss.

The system features an easy-to-use 12-button keyboard on the receiver/exciter/control unit which allows the user to select any of 243,951 individual frequencies with just a few key presses. Functions such as channel selection, transmit mode, and tuning are also easily controlled from the keyboard. Since the TI3000 is fully synthesized, the user can change channel frequency assignments from the keyboard, instead of manually changing crystals.

For a free copy of the Texas Instruments brochure on the TI3000,

Write 62 on Reader Service Card

$9-Million Sonobuoy Navy Contract Awarded To Sparton Electronics

Sparton Electronics Division of Sparton Corporation, Jackson, Mich., has been awarded a $9,202,000 firm fixed price contract to furnish 6,080 each AN/SSQ/62A Sonobuoys with packaging and associated data. Work will be performed in DeLeon Springs, Fla. The Naval Avionics Center is the contracting activity.

Ucci Named Vice President Of AMCA International

Michael J. Ucci

Michael J. Ucci has been appointed a vice president of AMCA International Corporation. Mr. **Ucci** will concentrate on selective sales and marketing activities for the newly formed Marine Division which includes the products and services of its IMODCO and Wiley Manufacturing units. He will provide similar services for the Company's Koehring product lines including particularly Clyde "Whirley" cranes.

IMODCO is a major designer and manufacturer of offshore marine terminals to transfer petroleum and slurried products from shore- and ocean-based locations. Wiley is a leading fabricator of steel tunnel tubes for underwater vehicular tunnels and also designs and builds a variety of barges, self-propelled vessels, dredges, and other floating equipment for the marine, construction, and shipbuilding industries. Koehring products for the heavy construction industry include hydraulic excavators; hydraulic boom, lattice boom and tower cranes; revolving "Whirley" cranes, and a full range of compaction equipment.

Quigley Appointed Editor At Maritime Reporter

The publishers of the Maritime Reporter and Engineering News announced recently the appointment of **Edward J. Quigley** as editor of the semi-monthly magazine.

Edward J. Quigley

During his journalistic career, Mr. **Quigley** was a reporter and rewriteman for the New York Mirror and was a publications editor for the CPA firm of Deloitte, Haskins & Sells. He has served as a public relations consultant and also was director of public information and alumni relations at St. Francis College, N.Y. Prior to joining the Maritime Reporter, Mr. **Quigley** was for several years the assistant manager of the publications department and editor of Surveyor Magazine at the American Bureau of Shipping.

A native of Brooklyn, N.Y., Mr. **Quigley** is a graduate of St. Francis College, where he is vice president of the alumni association, and has a master's degree in journalism from Columbia University.

Hitachi Zosen Names New York General Mgr.

Hitachi Zosen U.S.A. Ltd., New York, recently announced the appointment of **Haruo Moriyama** as secretary and general manager of the New York office of Hitachi Zosen. He succeeds **Yoshio Miwa**, who was recently named as president of the company.

Propose Plans For $230 Million Coal Export Terminal In Virginia

Plans for the development of a $230-million, 40-million-ton per year coal export terminal in Hampton Roads, Va., are being formulated by Parsons Brinckerhoff Development Corporation, a subsidiary of Parsons Brinckerhoff, Inc., a New York-based holding company with interests in consulting engineering and the development of real estate and energy projects.

The terminal would be constructed on the south side of Hampton Roads near the border between the cities of Suffolk and Portsmouth, on a 600-acre parcel of land recently optioned by Parsons Brinckerhoff from the Chicago Bridge & Iron Company. A planned long conveyor belt from the site to deep water south of Newport News would be able to load ships at a rate of 10,000 tons per hour.

A feasibility study of a new coal export terminal on the south side of Hampton Roads is currently being undertaken by the Virginia Port Authority, a state agency. The study is comparing three possible locations for a new terminal in the cities of Portsmouth, Suffolk and Chesapeake. The Virginia Port Authority has proposed itself to develop and operate a terminal on the Portsmouth location being considered in the feasibility study it is undertaking.

Dr. **Richard McGinity** of Parsons Brinckerhoff, project manager for development of the terminal, believes that the site in Suffolk stands a good chance of being developed. "Potential environmental problems in Portsmouth have stimulated considerable local opposition," he noted. "Our Suffolk proposal, however, has received strong support from the City of Suffolk, which has adopted a resolution favoring development of a coal export terminal within the city limits. State officials have also encouraged us to proceed, saying that the Commonwealth of Virginia is not necessarily commited to owning and operating a new coal terminal itself."

Swiftships Completes 120-Foot Aluminum Tender For Dome

Swiftships, Inc., Morgan City, La., announced the recent completion of a 120-foot, all-aluminum high-speed tender named Can-Mar Tingneak (shown above). The boat is the first vessel Swiftships has built for Dome Petroleum Ltd., Alberta, Canada.

The Can-Mar Tingneak was designed to Dome's specifications for use in its offshore oil operations.

Approved by the Canadian Coast Guard, the Can-Mar Tingneak has a propulsion system that combines three MTU 12V-396TB83 engines with ZF 2:1 reduction gears. The 50-kw International Electric generators are driven by a Detroit Diesel engine. Engine controls are by Wabco. The Can-Mar Tingneak's hydraulic steering system is by Pico. The vessel has an above deck cargo capacity of 40 long tons. It carries 5,000 gallons of fuel, 1,000 gallons of potable water, and a crew of seven.

The Can-Mar Tingneak's beam is 25 feet and its depth is 11 feet. Its 42-inch by 44-inch four-blade Nibral propellers were supplied by Columbian. And its 4-inch shaft was fabricated by Swiftships. BJ Bearing supplied both cutlass bearings.

The electronics, by Bibbins & Rice, include two Decca RM914C radars, an SSB Marconi CH15 radiotelephone, a Raytheon Ray 55 VHF, an Internave Model 360 loran, an Elac LAZ51 depth sounder, a Sperry Gyro MK37 compass, and a Furuno FD171 ADF.

The high-speed craft is outfitted with full fire-fighting equipment, life saving gear by Beaufort, a Sarex oil/water separator, Perko navigation lights, a Carlisle-Finch searchlight, a Buell 1061C horn—and two five-ton air-conditioning and heating units by Trane.

New Offshore Service Company Founded In Eire

Stewart Offshore Services, a part of the Stewart Group, has formed a new joint venture company with O'Herlihy Operations Limited, Cork, Ireland.

The joint venture company, registered in Ireland and named Stewart O'Herlihy Services Limited, will operate from Cork in support of operations offshore Ireland, providing chartering services for supply vessels, tugs, diving support ships, and other specialized offshore tonnage, as well as operating the base facilities in Cork currently provided by O'Herlihy Operations.

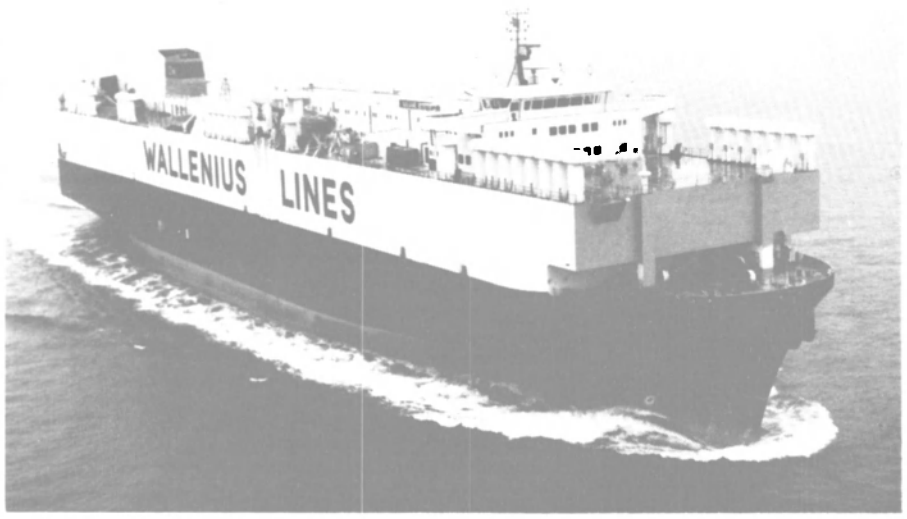
The O'Herlihy base is currently supporting a two-vessel operation for Cities Services exploration program in Irish waters with the semisubmersible rig West Venture.

Directors of the new company have been named as **Colin Sanders** of the Stewart Group, **Tony Russell** of White-Stewart Group, and **Tom O'Herlihy** of the O'Herlihy Operations.

Common Bros. Acquires Interest In Drillship And LPG Carrier

Common Brothers Limited (CB) U.K. recently announced the completion of a transaction with Norex Corporation Limited under which CB acquired an 80 percent interest in the drillship IRO Frigg, and a 35 percent interest in the liquefied petroleum gas carrier Ribagorsa.

The drillship recently commenced a two-year contract with Phillips Petroleum Company operating off the Ivory Coast, and the liquefied petroleum gas carrier will shortly commence a five-year charter with Naftomar Shipping and Trading Company.



A Burmeister and Wain direct-reversing diesel engine powers the Wallenius Lines' newest vessel "Madame Butterfly" on her sea trials.

Kockums Delivers The 'Madame Butterfly' —First Of Four For Wallenius Lines

The Madame Butterfly, first in a series of four pure car/truck carriers (PC/TC), was delivered recently by Kockums, A.B., Malmo, Sweden, to Wallenius Lines, Stockholm. A second vessel, Figaro, will be delivered later this year, and two more vessels are scheduled for delivery in 1982 to the same owner.

The 13-deck, 17,000-dwt Madame Butterfly is the first major ship of this type to be built outside Japan. She can transport 6,120 passenger cars or a combination of 2,900 cars and 520 commercial vehicles.

Designed for a service speed of 20.3 knots, the ship has an overall length of 198.12 m, a moulded breadth of 32.25 m, a height to the sixth deck of 13.64 m (13.69 m aft) and a scantling draft of 11.5 m (about 650 feet, 105.8 feet, 44.8/44.9 feet and 37.7 feet).

Built to Lloyd's Register of Shipping 200A1 classification, the vessel's propulsion is supplied by a Burmeister and Wain type 7 L80GFCA direct-reversing diesel engine which is derated to 18,400 bhp at 106 rpm for fuel economy. It drives a solid propeller and is remotely controlled from the bridge or from the engine control room.

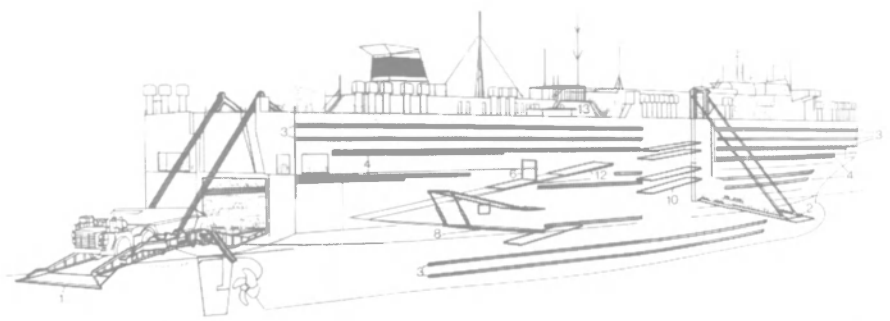
The electrical supply is from three diesel engine-driven 2,000 kva, 1,600-kw, 440-volt alternators, each engine being a Wartsila-Vasa 4-stroke unit running at 720 rpm.

To conserve on fuel, the autopilot is designed to reduce unnecessary course corrections. Each ship of this series has a 1,500-hp bow thruster.

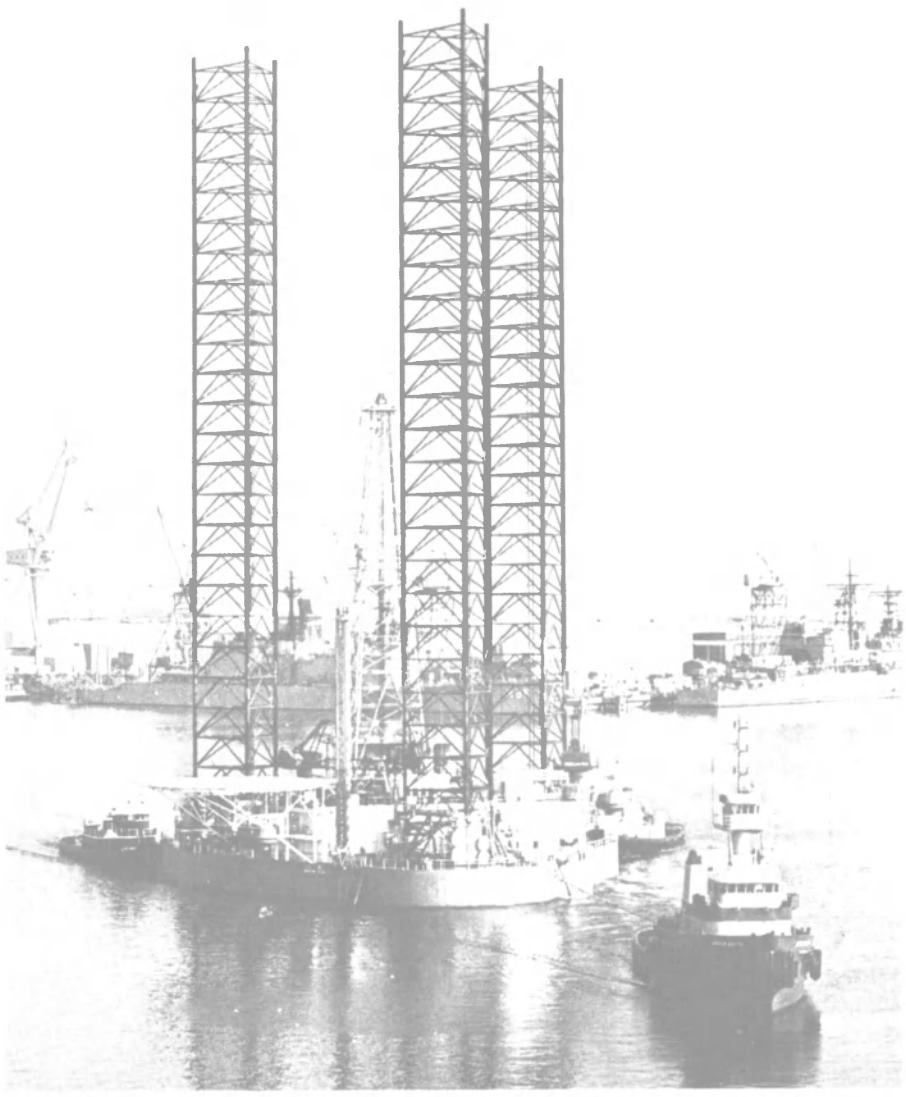
MacGregor Scandinavia of Gothenburg was consulted by Kockums on the logistics involved in moving 6,120 cars on or off a vessel having 52,000 internal meters (about 170,612 feet) of roll.

MacGregor claims operating costs have been minimized because the ship design obtains the maximum deadweight within parameters of seaworthy integrity and because of the reduction of cargo handling time in port.

MacGregor has contributed 13 separate items to the Madame Butterfly. These include the stern and side entry ramps, the six internal ramps, five deck covers and eight doors, and the fixed and hoistable car decks.



Among the MacGregor ro/ro equipment installed on "Madame Butterfly" are: (1) A 200-ton stern quarter ramp/door that is 43 m long by 7 m wide by 12 m wide (about 141 by 23 by 39.4 feet); (2) One starboard-side 34-ton ramp/door that is 25 m long by 4.6 m wide (about 82 by 15.1 feet). The vertically adjustable ramp permits entry to decks 6 and 7; (3) The fixed car decking on decks 2, 3, 11, 12, 13 and the half of deck 8 located forward of the midship bulkhead; (4) The hoistable car decking that forms decks 5, 7, 10, and the half of deck 8 aft of the midship bulkhead; (6) One gas-tight door in fixed ramp to deck 9; (8) One ramp to car deck 5 in the fixed ramp to deck 4; (10) Two ramps in car decks 8 and 11, each hoistable with cars mounted; (12) One gas-tight cover over fixed ramp, deck 6; (13) Two ventilation covers. MacGregor supplied all operational and control hydraulics for the above equipment.



Ingalls Delivers First U.S.-Built L-780 To Keys Offshore

"Keyes 300," the first of four L-780 self-elevating offshore drilling rigs being built for Keyes Offshore Inc. by Ingalls Shipbuilding, Pascagoula, Miss., left the Ingalls yard recently on its way to drilling for Shell Oil Co. in the Gulf of Mexico off the Louisiana coast. The second jackup rig, Keyes 301, has been launched and is in final outfitting for delivery. Designed by Friede & Goldman, Keyes 300 is the first L-780 to be built in North America. Ingalls has 12 additional jackups under contract, as well as three submersibles. The L-780s are designed to drill to 25,000 feet in 300 feet of water.

KEYES 300

Basic Data

Length Overall	180′-0″
Breadth Overall	175′-0″
Depth of Hull	25′-0″
Length of Legs Maximum	339′-0″
Depth of Spud Cans	15′-0″
Diameter of Spud Cans	39′-8″
Projection of Leg Below Hulls in Tow	4′-3″
Center of Forward Leg of Centerline of Aft Legs	115′-0″
Center to Center of Aft Legs	120′-0″

Operating Conditions

Water Depth	250 ft.	200 ft.
Maximum Wave Height	38 ft.	42 ft.
Corresponding Wave Period	9 to 13.5 sec.	9 to 13.5 sec.
Maximum Wind Velocity— (1 minute average)	100 knots	100 knots
Air Gap	30 ft.	30 ft.
Penetration	10 ft.	10 ft.

Rig Equipment

Cranes: Two Link-Belt Model 218A, with 100-foot boom

Jacking System: National Supply marine jacks and racks

Rack Chock: Friede & Goldman

Crew Quarters: Air-Conditioned crew quarters for 50 men.

Life Boats: Two Whittaker 50-man marine capsules

Mooring Equipment: Marathon LeTourneau single drum anchor winches for 2,600 ft. of 1.5 inch dia.

Drill Equipment

Drawworks: Continental EMSCO C-2, 1⅜″ drill line driven by two GE-752AR Electric Motors, 2,000 hp.

Derrick & Substructure: Continental EMSCO 20-RD, beam leg 147′ high, 30′ square base, 8′ x 8′ top, static hook load capacity 1,400,000 lbs. with 12 lines, designed for 100 mph wind load with pipe rack in derrick.

Rotary & Traveling Equipment:

- Continental EMSCO—Rotary Table, with 37½″ table opening.
- Continental EMSCO RD52-7 Crown block, 7-52″ sheaves hook combination. Rated 500 tons hookload.
- Continental EMSCO LB-500 swivel. Rated 500 tons.
- Continental EMSCO RA-52 Truelling Block, Rated 500 tons.

Mud Pumps: Two Continental EMSCO FB-1600, 7¼″ x 12″ triple pumps 1,600 hp each driven by two GE-752AR motors.

Power:

- Three EMD MD-12 Diesel Engines
- Three EMD Generators, 3 phase, 1,050 kw, 600 volt.
- Ross Hill SCR System power conversion from ac to dc current.
- Emergency Generator set, CAT 3412 diesel engine driving a brushless SR generator, 3 phase, 320 kw, 480 volts, 1,200 rpm.

Blowout Preventers:

- One Cameron Type "U" double units 10,000 psi. W.P. HZS Trim, W/4-1/16″ flanged 10,000 psi W.P. side outlets.
- One Cameron Type "A" 13⅝″ 5,000 psi W.P. annular Blowout Preventer w/10,000 psi W.P. flanged button and stubbed top (screwed). One Schaffer MSP 21¼″ 2,000 psi W.P. annular Blowout Preventer.

Choke Manifold:

- 10,000 lb. Vetco Blowout Preventer, choke & kill manifold. 10,000 lb. derrick floor with SWACO hydraulic choke. Ross Hill Blowout Preventer Accumulator unit Model C-180-ZE25-2AG with 3,000 psi W.P.

Mud Mixing:

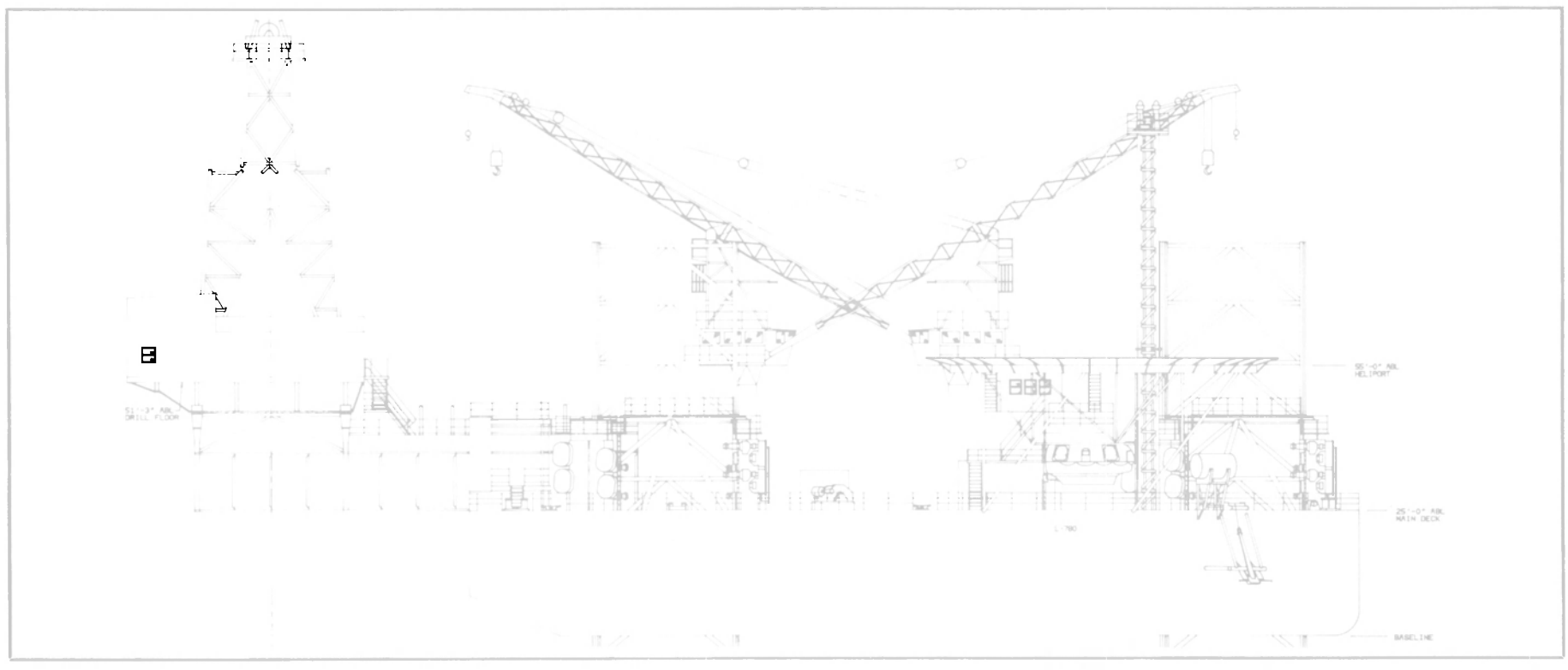
- Brandt MA 20
- Desander/Mud Cleaner:
- Brandt SR8-6
- Shale Shaker:
- Brandt Dual Tandem

Air Compressors:

- Two Airdyne Rig Air Compressor Rotary Screw type.
- One Airdyne Compressor Sequence Control Panel Model SQ-2.
- One Airdyne Multiple Air Reduction System.
- One Airdyne Cold Start Compressor.

Cementing Unit:

- B.J. Hughes Cementing Skid with high pressure Triplex pumps driven by two diesel engines.



Ed Miske, Barry Hall, Standing: Fred West, Dick Steiner, Duane Cozard, Bernie Logan, Fred Ramsden

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Brochure Available On Philadelphia Resins' Maintenance Products

Twelve products for diversified marine applications — including repair compounds, non-skid deck coatings, propeller-shaft coatings, constant-tension mooring lines, epoxy-fiberglass laminating systems, and electrically-transparent mast stays — are featured in a new, illustrated brochure produced by Philadelphia Resins Corporation, Montgomeryville, Pa.

This brochure combines concise general information with recommendations for specific uses. Also included are temperature and pressure limitations, applied-thickness restrictions, and other data.

For a free copy of the brochure,

Write 63 on Reader Service Card

Pres. Reagan Nominates Three To Mississippi River Commission

Three generals from the U.S. Army Corps of Engineers have been nominated by President Reagan to serve on the Mississippi River Commission (MRC). The nominations are subject to confirmation by the U.S. Senate.

Designated to be president of the MRC is Maj. Gen. **William E. Read**, Vicksburg, Miss., Commander and Division Engineer, U.S. Army Engineer Division, Lower Mississippi Valley.

The other nominees are: Maj. Gen. **Hugh G. Robinson**, Dallas, Texas, Commander and Division Engineer of the U.S. Army Engineer Division, Southwestern; and Brig. Gen. **Richard S. Kem**, Cincinnati, Ohio, Commander and Division Engineer, U.S. Army Engineer Division, Ohio River. Service on the MRC is an additional duty for these officers.

The MRC, created by Congress in 1879, is responsible for overseeing the comprehensive flood control and navigation project along the Mississippi River and surrounding river basins between Cape Giradeau, Mo., and the Gulf of Mexico. By law, members of the MRC are three Corps of Engineers officers, the director of the National Ocean Survey, and three civilians. Civilian members are **Roy T. Sessums**, Metairie, La., and **Sam Angel**, Lake Village, Ark. There is one civilian vacancy.

Kistenmacher Joins Marinette Marine As Chief Estimator

Richard Kistenmacher has joined Marinette Marine Corporation, Marinette, Wis., as chief estimator. His responsibilities include estimating of labor and material costs for all new construction, proposal work, and customer modifications.

Mr. **Kistenmacher** has more than 20 years' estimating experience and was most recently director of estimating for Equitable Shipyards Inc., New Orleans, La. Prior to Equitable he was chief estimator for Wiley Manufacturing in Maryland.

Wickert Named Asst. Dir. Of Naval Architecture At Designers & Planners

Thomas S. Wickert has joined Designers & Planners, Inc., a firm of naval architects and marine engineers with offices in Washington, Philadelphia, Galveston, and San Diego, **Ferd Serim**, president of the company, recently announced that Mr. **Wickert** will serve as assistant director of naval architecture reporting to **Carlos A. Tomassoni**. In this capacity, Mr. **Wickert** will be responsible for early stage ship design studies for both naval and commercial ships.

Mr. **Wickert**, a native Washingtonian, is a graduate of Catholic University and has been employed as a naval architect for the past 30 years with the Naval Sea Systems Command and its predecessor organizations, NAVSEC and BUSHIPS. His most recent assignment was as head of the Auxiliary, Amphibious, and Mine Warfare Ship Design Branch of the Advanced Design Division.

Bayou Black Shipyard Delivers Crewboat To Sundance Marine

Bayou Black Shipyard of Gibson, La., recently delivered the 42-foot aluminum crewboat "Sundance Horizon" (shown above) to Sundance Marine of Houston. The vessel has a length of 42 feet, a beam of 13 feet, and a depth midship of 6.5 feet.

The main propulsion is supplied by two GM Detroit Diesel Allison 6-71 engines, each rated at 174 bhp at 1,800 rpm, driving a three-bladed Columbian 28 by 30-inch bronze propeller via a 2-inch stainless steel shaft. Fuel is carried in an independent 300-gallon tank located in the lazarette. The engines are electric start with power provided by two 12-volt dc batteries.

Electronic equipment in the Sundance Horizon consists of a Standard Horizon VHF-FM radio, and a Model No. 240, Mark II Furuno Radar. Main engine controls are Morse Model MT type; steering system is a self-contained hydraulic type.

The vessel is USCG certified to carry 16 passengers and a crew of two.

Fendrick Named President Of Selby, Battersby

Selby, Battersby & Co. of Philadelphia, Pa., recently appointed **Ronald P. Fendrick** as president and chief executive officer.

Mr. **Fendrick** is a graduate of the Wharton School of the University of Pennsylvania and attended graduate school there. He has an extensive background in purchasing at the Rohm and Haas Company, and at Quaker Chemical Corporation, where he served as director of purchasing prior to joining Selby, Battersby & Co. in 1980.

He is a member and past president of The Chemical Club of Philadelphia; is vice president of the Oil Trade Association of Philadelphia; a member of The Society of Naval Architects and Marine Engineers, the National Association of Purchasing Managers, and the American Society of Naval Engineers.

Selby, Battersby & Co. has been a leading manufacturer of flooring systems for industrial, commercial and institutional buildings, and a marine decking material supplier and deck covering contractor for more than 55 years.

American Ship Building Receives $73-Million Conversion Contract

The American Ship Building Company, Tampa, Fla., was recently awarded a $73-million contract by the Moore McCormack Lines, subsidiary of Moore McCormack Resources, Inc., to convert four C-4 cargo liner vessels.

The conversion involves lengthening each vessel by addition of a new 115-foot-long midbody section which will substantially increase the containerized cargo capacity of each ship. Increased crane capacity will be added to the ships as well as other modifications.

The conversion will increase each of the four ships from 550 to 665 feet in length and from 199 to 628 twenty-foot equivalents of container capacity. The work will be performed at several yards of The American Ship Building Company, with deliveries expected in 1982 and 1983.

Moore McCormack is converting the vessels to serve the increased containerization in U.S. ocean trade with South America. The line's fleet currently consists of 13 ships totaling 173,000 dwt.

AMCA Acquires Koehring; Name New Officers At Crane Manufacturer

AMCA International, formerly known as Dominion Bridge Co., Ltd., recently announced a major reorganization of the recently acquired Koehring Company. The move concentrates all of AMCA's construction equipment businesses under the Koehring name, making the company one of the largest crane manufacturers in North America.

As part of the expansion program two executive vice presidents have been appointed: **Karl H. Schwamborn,** founder of the company's BOMAG unit, an international manufacturer of compaction equipment, will be responsible for worldwide operations of both BOMAG and Menck, a West German producer of pile driving hammers.

Vincent L. Martin was formerly head of AMCA's crane manufacturing operations at Clyde Iron, Morgan Engineering and Provincial Crane. Mr. **Martin** will be responsible for all product lines in the new Koehring organization including: Bantam and Lorain cranes, Clyde Whirley cranes, Bantam and Koehring hydraulic excavators, Koehring specialty construction equipment, Benton Harbor hydraulic cylinders, HUSCO hydraulic control valves, Pegasus servo valves and load simulators, and specialized woodlands hydraulic harvesting equipment and paper mill machinery.

In addition, a new division has been created which adds new products to the Koehring line. It, too, is Mr. **Martin's** responsibility. The new products are: Morgan industrial cranes and oil field pumping units; Provincial industrial cranes; and Speedstar oil, gas, mineral and water well drilling equipment. Heading the new division as its president is **Joseph R. Stadelman,** who has been and continues to be general manager of Morgan.

Richard T. Lindgren, president of Koehring, will focus his efforts on planning the worldwide growth of the new group, expanding product lines, and building an even stronger distributor network.

Piazza Named Sales And Marketing Vice President At Bergeron Industries

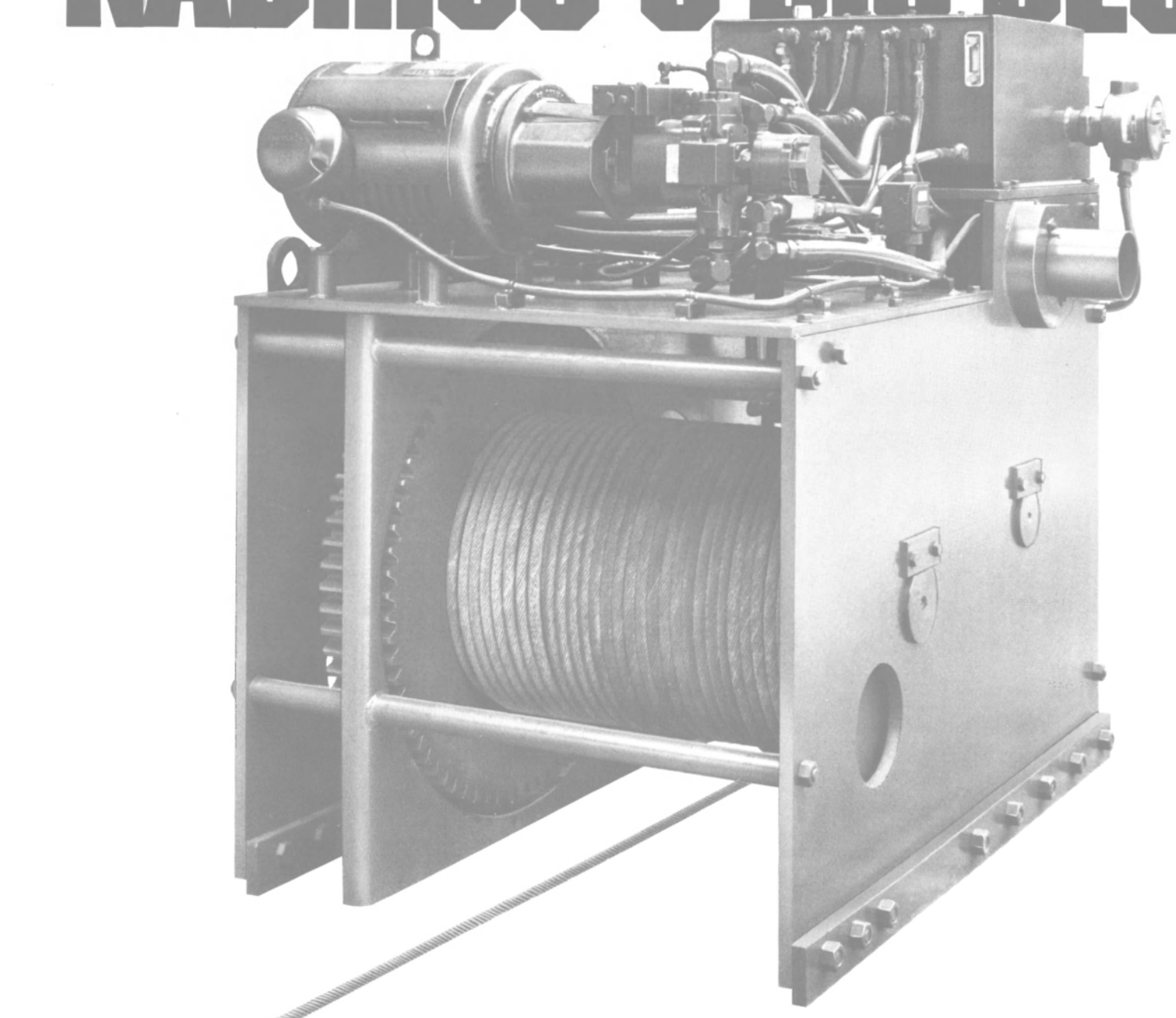
William T. Bergeron, president of Bergeron Industries, Inc., has announced the appointment of **Alfred F. Piazza** to a new company position as vice president of international sales and marketing.

Alfred F. Piazza

Mr. **Piazza,** who has an extensive background in the shipping industry and development of foreign commerce, will manage Bergeron's newly created international division, headquartered in New Orleans, La. The new Bergeron unit, through a network of agents in Mexico, Central and South America, will be the purchasing arm in the U.S. for foreign clients seeking to purchase steel products, materials-handling equipment, welding machinery, industrial equipment, and general mill supplies. Mr. **Piazza** also will participate in the worldwide sales and marketing of Bergeron's line of marine vessels.

Bergeron Industries produces a wide range of deck, tank, chemical, and derrick barges, drilling barge hulls, and other specialized equipment.

NABRICO'S BIG BLUE



WE'VE GOT A LOT OF PULL!

NABRICO's newest and biggest barge moving winch, Big Blue provides 16,000 lbs. of continuous line pull at three speeds in both directions. That's a big time saver when loading or unloading. ❁ Big Blue has a big drum capacity too. From 630' to 1047' depending on cable size. And Big Blue is compact, so you can put the power where you need it. ❁ The self-contained, electric hydraulic package has standard components. That means economical service and maintenance. And installation is as simple as running an electric wire to a power source. ❁ Big Blue is designed and built to put safe, dependable positioning power to work for you where you need it. (Left unit shown. Barge moving system requires two winch units.) ❁ For a brochure and information write or call:

NASHVILLE BRIDGE COMPANY
P.O. Box 239 Nashville, TN 37202 615/244-2050
A subsidiary of The American Ship Building Company

John E. Lawson Named By National Supply

National Supply Company, a major manufacturer of oilfield machinery and equipment, has promoted **John E. Lawson** to North Sea area manager-engineering for well control equipment.

In the position, he heads a specialized subsea engineering group that he established in the U.K. in 1978. Mr. **Lawson** previously held the title of manager-technical services. The change reflects increased size and responsibilities of the engineering group, particularly in primary design and engineering of subsea wellheads and production systems.

The group also provides technical guidance to National Supply factories in Stockport, England, and Maydown, Northern Ireland, on manufacturing of well control equipment. The well control engineering group is located at 11/12 Pall Mall, London SW1Y 5LU.

Mr. **Lawson** has over 13 years' experience with National Supply well control engineering, specializing in subsea drilling and production systems. He holds a bachelor's degree in mechanical engineering from the University of Houston.

The company offers a complete line of well control products for land and subsea applications covering drilling, testing, capping, reentry and production from fixed or floating platforms.

National Supply pioneered the technology in the North Sea for production from converted drilling platforms that enabled early production from the Ekofisk and Argyll fields.

In addition to well control engineering and manufacturing activities in the U.K., National Supply also operates a wellhead center in Aberdeen, Scotland, for assembly, service and repair of wellhead equipment.

Kenneth F. Murchison Retires From Texaco

Texaco, Inc. has announced that **Kenneth F. Murchison,** general manager of the company's International Marine Sales Department, has retired, effective September 1, after a long and successful career in the commercial marine industry.

Kenneth F. Murchison

Born in Glen Cove, N.Y., on April 19, 1922, he was graduated from the New York State Maritime College in 1942. Subsequently, Mr. **Murchison** served in various capacities as an officer at sea. He holds a chief engineer's license and was commissioned in the U.S. Naval Reserve. Mr. **Murchison** was at one time the youngest chief engineer in the American Merchant Marine. He also held various executive positions in the steamship industry from 1946 to 1949, when he became president of the Circle Shipping Company Inc., an affiliate of the Paragon Oil Company, which operated the tanker fleet for Paragon.

After Texaco's acquisition of Paragon in 1959, Mr. **Murchison** was appointed assistant sales manager in the Marine Sales and Bunkering Services Division in Texaco's United States organization. He was named manager of the division in 1960.

Mr. **Murchison** was appointed director of the International Marine Sales Department in 1967. He was named to his present position in 1971.

He plans to divide his time and will reside both at his home in Long Island, N.Y., and in Pompano Beach, Fla.

Mr. **Murchison** is a member of numerous maritime organizations, including The Society of Naval Architects and Marine Engineers, and the Society of Marine Port Engineers.

FMC Building 400-Foot Oceangoing Barge For Zidell Explorations

Construction started recently at FMC Corporation's Marine and Rail Equipment Division, Portland, Ore., on a 400-foot-long deck cargo barge for Zidell Explorations, Inc. Delivery of the barge is scheduled for December. The largest new barge ever built for Zidell, it will be certified for ocean service and named "Z Big 1" by its owners.

Emery Zidell, president of Zidell Explorations, Inc., said, "We perceive this barge to be the first of a series of larger units we plan to acquire for our lease fleet worldwide."

William R. Galbraith, division vice president, sales at FMC, said, "The 'Z Big 1' exemplifies the big barge construction capability provided by our 650-foot-long side-launch ways."

Although the barge is being built as a deck cargo vessel, it will be fitted with piping for easy conversion to a petroleum tank barge with a capacity of 150,000 barrels, and ocean certification. The principal particulars are: length, overall — 400 feet; beam, molded — 99 feet 6 inches; depth, molded — 25 feet; draft, loaded — 19 feet 4 inches; and deck cargo capacity—18,500 long tons.

Fuel Catalyst Described To Ship Operators— Literature Available

A fuel catalyst, Clean Power, was the recent focus of discussion at the Whitehall Club in New York. Company executives and engineers from 11 shipping companies convened to learn more about the product. The fuel catalyst is currently being used by several Scandinavian ship lines, who are reporting definitive fuel savings and lengthened maintenance intervals through cleaner engines.

Guest speaker at the conference was **Nils Erik Flink,** superintendent of engineering for Tor Lines, Gothenberg, Sweden. Mr. **Flink** reports, "The Tor Lines have been using Clean Power for about 2¼ years, and we have retrofitted most of our ships for use of the product." He presented to the group a maintenance cost savings chart that reflected figures before and after use of the catalyst. "We have experienced extremely satisfying results with Clean Power. Exhaust valve life has been extended from 2,500 hours to 4,000 hours. Rings, injectors, pistons, and turbine maintenance schedules have been virtually rewritten." Mr. **Flink** added that the engine cleanliness has resulted in a marked decrease in lubrication oil consumption.

For further information and free literature,

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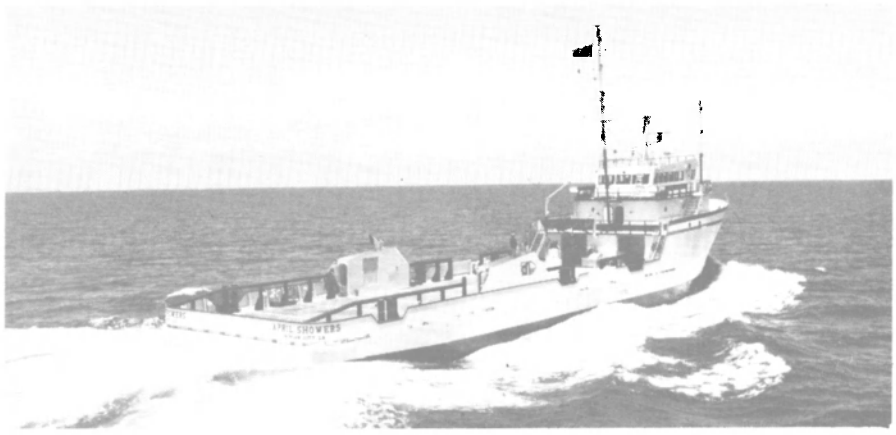
Halter Marine Delivers Three Supply Boats To D.F. Levy Marine Ltd. I



EMD engines developing 2,520 hp power the April Showers, and sister ships Spring Mist and September Morn, delivered recently by Halter Marine to D.F. Levy Marine Ltd. I of Morgan City, La. The tug/supply boats are the third, fourth, and fifth boats of a six-vessel contract.

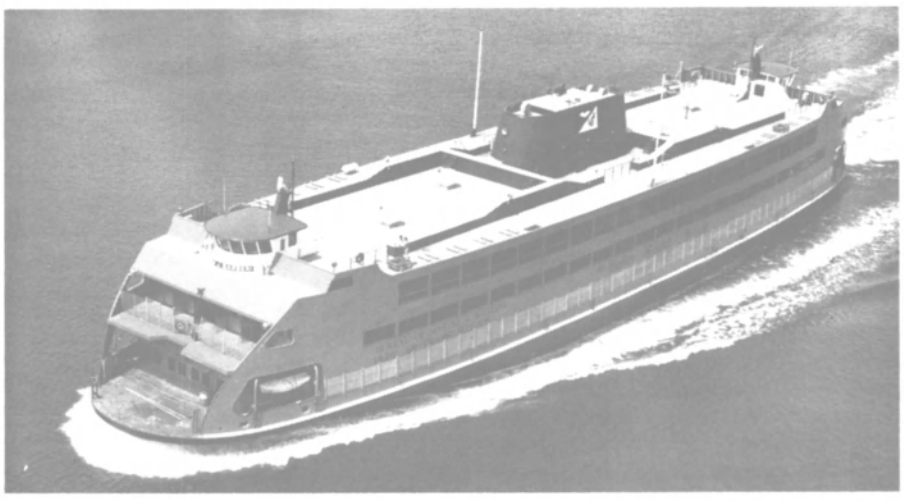
Halter Marine, Inc., New Orleans, La. has delivered three new tug/supply boats to D.F. Levy Marine Limited I of Morgan City, La.

The new vessels, April Showers, Spring Mist and September Morn are the third, fourth, and fifth in a six-boat contract. The vessels are now working for major oil companies in the Gulf of Mexico.

Each is 180 feet in length with a 40-foot beam and 14-foot depth. Each boat is powered by two EMD 12-567BC diesel engines developing 1,260 hp each at 810 rpm. Falk LST reduction gears with a ratio of 2.98:1 turn their two stainless-steel 90-inch-diameter four-bladed propellers. Engine controls were provided by Westinghouse, and a 300-hp Bird-Johnson bowthruster driven by a GM8V71 diesel engine improves maneuverability and station keeping of the boats.

The vessels can carry 4,000 cubic feet of dry bulk mud and 1,660 barrels of liquid mud. Each new boat also has a cargo capacity of 525 long tons with 3,177 square feet of cargo space on the aft deck which is fitted with an HBL anchor windlass.

Two Delco 99-kw generators powered by GM8V71 diesel engines provide electric service while two Quincy D325 compressors supply air service. Ballast, bilge and fuel transfer pumps were provided by Aurora. The vessels were built to American Bureau of Shipping classification at Halter Marine's Moss Point Yard, Miss., one of a group of shipyards owned and operated by Halter in the Southeastern United States. Halter is the world's largest builder of supply vessels for the offshore oil and gas industry.



Voith-Schneider equipped Andrew J. Barberi shown on sea trials.

First U.S. Ferry Equipped With Cycloidal Propellers Set For Service Debut

Some of New York City's harried mass transit users will have something to look forward to this month. The first of two new ferries, the Andrew J. Barberi, is scheduled to enter service between St. George, Staten Island, and the Battery, on the tip of Manhattan.

To the maritime community, the most interesting aspect will be the results of the first use by a ferry in the U.S. of a cycloidal propeller system. Cycloidal propellers were chosen, explained officials of the city's Bureau of Marine and Aviation, because they want to reduce maintenance costs for the racks at both terminals.

The 5.2-mile ferry route from Staten Island crosses the main ship channel of New York Harbor. When approaching Manhattan, the ferries round Governor's Island at the south end of the East River and steer toward the slip. Under unfavorable tide or wind conditions the approach may be made at an angle of almost 45 degrees. At present, after touching the pilings at this angle, power is applied and the vessel drags along the racks until it reaches a position suitable for mooring. The racks, systems of interconnected wooden pilings bracketing the ferry slips, suffer a great deal of impact and rubbing from the docking of the currently used ferries. Powerful tidal currents from the confluence of the East River and Hudson River, and from the Narrows, or adverse winds, can shove a ferry sideways into the racks, resulting in annual rack maintenance costs of approximately one million dollars.

The superior low-speed maneuverability of the cycloidal system should reduce the cost, officials state.

The 5,900-dwt double-ended Barberi was built at Equitable Shipyards Inc., New Orleans, La. The vessel is provided with two 3,500-horsepower cycloidal propellers from J.M. Voith GmbH, Germany.

A second ferry, with the same propulsion, is being completed at Equitable.

The Barberi is 310 feet long, is 65 feet wide at the waterline, and has a draft of approximately 12 feet 6 inches. The increase in freeboard over existing ferries indicated a potential for delays at the Staten Island terminal during extreme flood tides. This necessitated that the new vessels be provided with a ballasting system capable of transferring 35 tons of ballast water between the trim tanks in 25 minutes.

The basic design was developed by George G. Sharp, Inc. However, city officials added an alternate incorporating Voith-Schneider cycloidal propellers. The vessels' lines were developed by the propeller manufacturer to meet the requirements for their use, which necessitated that the midship section have a high deadrise and bilge radius, while forward and aft the bottom flattens. The hull is symmetrical about midships. Skegs are fitted forward and aft to provide directional stability, to protect the propellers from floating debris, and to facilitate docking.

Four GM 16-645E diesel engines provide the main propulsion, each delivering 1,750 bhp at 800 rpm. Engine power is delivered through a turbo coupling and a lineshaft system inclined at 4.2 degrees from the engine room to the fore and aft propeller units. The couplings and lineshafts turn at engine crankshaft speed. The propeller has a built-in double input reduction gear with a 13.7:1 ratio, consisting of pinion gears on each side of the propeller which drive a ring gear through a bevel gear and give a rotor speed of about 57 rpm. The blade orbit diameter is 4 meters and each rotor is fitted with five blades each 2.4 meters long. The blades are hammer forged from chrome nickel stainless steel, milled to the final shape from a model blade, and subsequently ground to final finish.

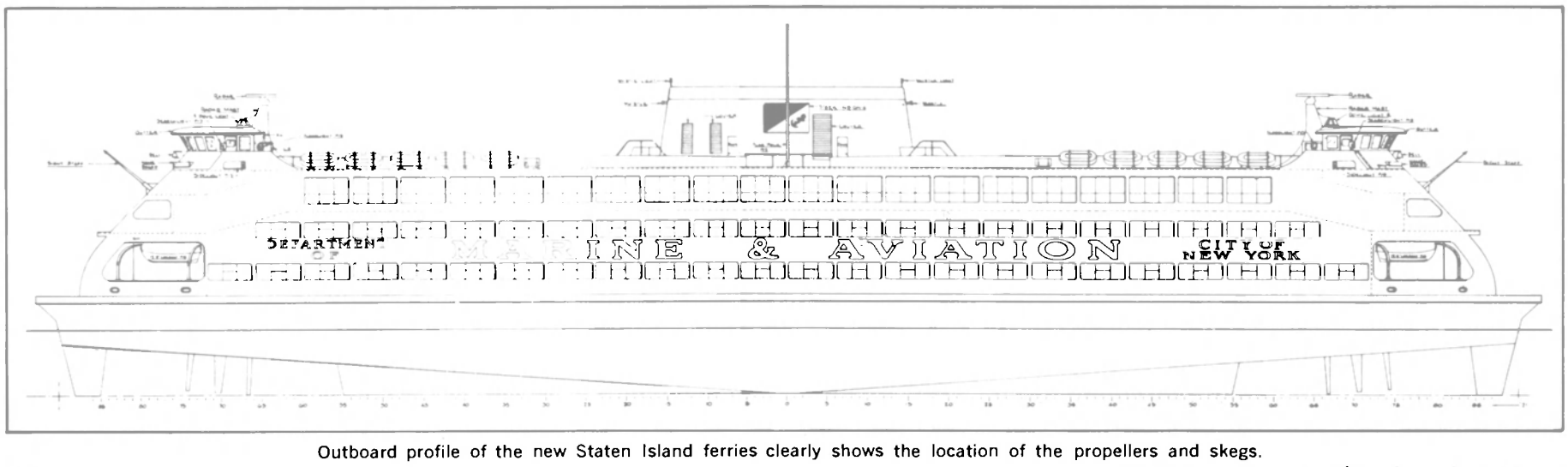
A conventional propeller produces thrust perpendicular to the plane of rotation of the blades. The propeller rotates in a vertical plane while the thrust is horizontal; this thrust is deflected by a rudder to steer the vessel. A cycloidal propeller rotates in the horizontal plane; that is, parallel to the vessel keel, and still produces horizontal thrust, a force which can be directed through 360 degrees by adjustments to the pitch of its vertical blades. This adjustment is accomplished through a mechanism in the propeller housing, eliminating the need for a rudder. This results in the ability to provide intricate low-speed maneuvering, a prime consideration for use in the New York ferry terminals.

Each ferry is equipped with two interconnected pilothouses and control can be directed from either, but not from both simultaneously. The switchover from one pilothouse to the other is through a direction indicator above the main engine room control console. This console is housed in a control room located in the engine room. The control room is soundproofed and air-conditioned, and has windows that provide the engineer with an overall view of the engine room.

There are three control modes for the propellers. Normal operation is by remote electric control from either pilothouse. This is backed up by control from the engine room via an electrical propulsion and steering order transmitter to a manual/hydraulic remote override of the servo valves on the propellers. There is also the option of using an emergency manual control on the propeller units, the crew being guided by telephone from the pilothouse.

Each pilothouse has two steering wheels; each controls the transverse pitch on one propeller. Under free route conditions steering is by conventional use of the stern propeller. During maneuvering for docking, the helmsman can control bow and stern propellers independently. Each wheel has an order indicator and an answer-back indicator. The ahead/astern speed is regulated by a pair of levers which control the amount of ahead or astern pitch on the bow and stern propellers. These adjacent levers permit the operator to use one hand to control both propellers simultaneously.

The $15-million Barberi, named in memory of a former football coach in Curtis High School on Staten Island, N.Y., was fitted with a protective false bow and stern for its ocean voyage from Equitable to New York. She arrived on August 7 and entered drydock for inspection, testing, and training of the crew in the



Outboard profile of the new Staten Island ferries clearly shows the location of the propellers and skegs.

use of the cycloidal system before acceptance by the city.

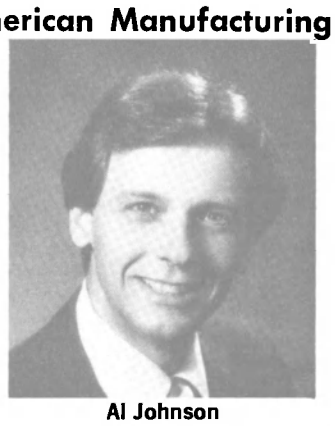
The diesel-powered Barberi and her sister ship, the Samuel I. Newhouse, will replace three 33-year-old steam-fired ferries. The timetable allows for a 30-minute crossing, which includes loading, unloading, the voyage, and intricate docking at the ferry slips. About 50,000 commuters use the ferry system daily. The new ferries are exclusively for passengers and can transport 6,000 people, with seating for more than 3,700.

The Andrew J. Barberi achieved a sea trial speed of three to four knots faster than the design and the model test speed, at the same horsepower and at full design load. Consequently, she is expected to travel regularly at a reduced rpm.

Spearman Named To New Marine Transportation Post At Marathon Oil

Ralph L. Spearman has been appointed by Marathon Oil Company, Findlay, Ohio, to the newly created position of supervisor, commercial activities at Garyville, La. Mr. **Spearman** will be responsible for chartering and scheduling of barges used to transport crude oil and bunkers. He served previously as a crude oil acquisition representative at Houston.

Al Johnson Named At American Manufacturing



Al Johnson

American Manufacturing Company, Inc. of Honesdale, Pa., has announced the addition of **Al Johnson** to their sales team. His territory will include New England and part of New York State.

Mr. **Johnson** has been in sales/sales management since 1969, when he joined the American Thread Company of Stanford, Conn., in their Consumer Product Sales Division. Between 1969 and 1979, he was assigned to New England, and also served in several Midwest territories, including Indiana and Kentucky.

New England SNAME Meets Onboard M/V Bay Queen

One hundred seventy members and guests attended the spring meeting and social affair of the New England Section of The Society of Naval Architects and Marine Engineers at Blount Marine Corporation, Warren, R.I.

Following a tour of the shipyard, members and their guests boarded the new 130-foot motor vessel Bay Queen for an afternoon cruise on Narragansett Bay. Now operating as a day excursion vessel, the Bay Queen, provided courtesy of owners Blount Marine, made a brief stopover at Prudence Island, after which a steamship buffet was catered onboard.

The afternoon aboard the vessel concluded with a presentation entitled "An Overview of Commercial Fishing in New England," delivered by **Clifford A. Goudey**, a fisheries engineer with the M.I.T. Sea Grant Marine Advisory Service. Slides and videotape, including underwater shots of fishing gear in operation, illustrated Mr. **Goudey's** presentation. The talk was based upon Mr. **Goudey's** technical paper "The Development of Efficient Trawl Boards Using Hydrodynamic Model Tests," in which Mr. **Goudey** contends that the poor hydrodynamic qualities of trawl boards used by U.S. fishermen is a major source of trawl system inefficiency. Improved trawl door design, in particular the use of a low drag trawl door, can significantly impact the economics and productivity of trawling operations. Studies performed indicate the favorable results that could be achieved are potential fuel savings of up to 20 percent, and an increase in catch size of up to 34 percent.

AMCA Forms Marine Unit; Names Gwyn President

AMCA International Corporation recently announced the formation of a new Marine Division to serve the offshore construction industry.

Appointed president of the Marine Division is **Peter J. Gwyn** who has had extensive experience in marine construction. He joined AMCA, formerly known as Dominion Bridge Co., Ltd., to head the company's I-95 tunnel tube project at the Wiley Manufacturing unit in Maryland. Prior to joining AMCA, Mr. **Gwyn** held senior management positions with General Dynamics and Davie Shipbuilding, Ltd.

Included in the Marine Division are two of AMCA's operating units which are devoted to the manufacture of products for offshore applications. One of the units, IMODCO, is a major designer and manufacturer of offshore marine terminals used in international waters primarily to transfer petroleum and slurried products from shore- and ocean-based locations. The other unit, Wiley Manufacturing, is a leading fabricator of steel tunnel tubes for underwater vehicular tunnels and is currently producing the tubes for the I-95 Ft. McHenry vehicular tunnel under Baltimore Harbor. Wiley also designs and builds barges, self-propelled vessels, dredges, and other floating equipment for the marine, construction, and shipbuilding industries.

Peter J. Gwyn

In announcing AMCA's Marine Division, **K.S. Barclay**, chairman and chief executive officer, noted: "Formation of a Marine Division is a logical extension of the company's past experience in fabricating products for use in offshore projects. And, we recently established a joint venture named DB/McDermott which will provide design and construction services for the oil and gas industry in Canadian waters."

David Cowles Named Manager Supply And Distribution At Inland

David Cowles was recently named manager-supply and distribution for Inland Oil & Transport Co., St. Louis, Mo.

Mr. **Cowles** was previously in a similar capacity with Good Hope Refineries, Inc., New Orleans, La. His responsibilities at Inland, which operates liquid tank barges, towboats, and gasoline terminals, will include general supervision over all facets of the company's operations, including three Missouri gasoline wholesale terminals, barge line, pipeline movements, trucking and retail station operations affiliated with Inland.

Brochure On Oil And Filter Change Intervals Available From Caterpillar

A new four-color brochure that discusses Caterpillar Tractor Company views about extended oil and filter change intervals is now available. It states why these intervals are being extended, and why it is not a good idea.

The high performance required from today's engines cannot be obtained with ordinary oils. Additives that improve the quality and assure the life of lubricating oils at higher temperature loads have become a necessity. Oil filters have been redesigned to provide better filtration. It is partly these advances that have brought about the practice of extended oil and filter change intervals — a practice that is not worth the risk.

To obtain a copy of "Extended Oil and Filter Change Intervals: Not Worth the Risk,"

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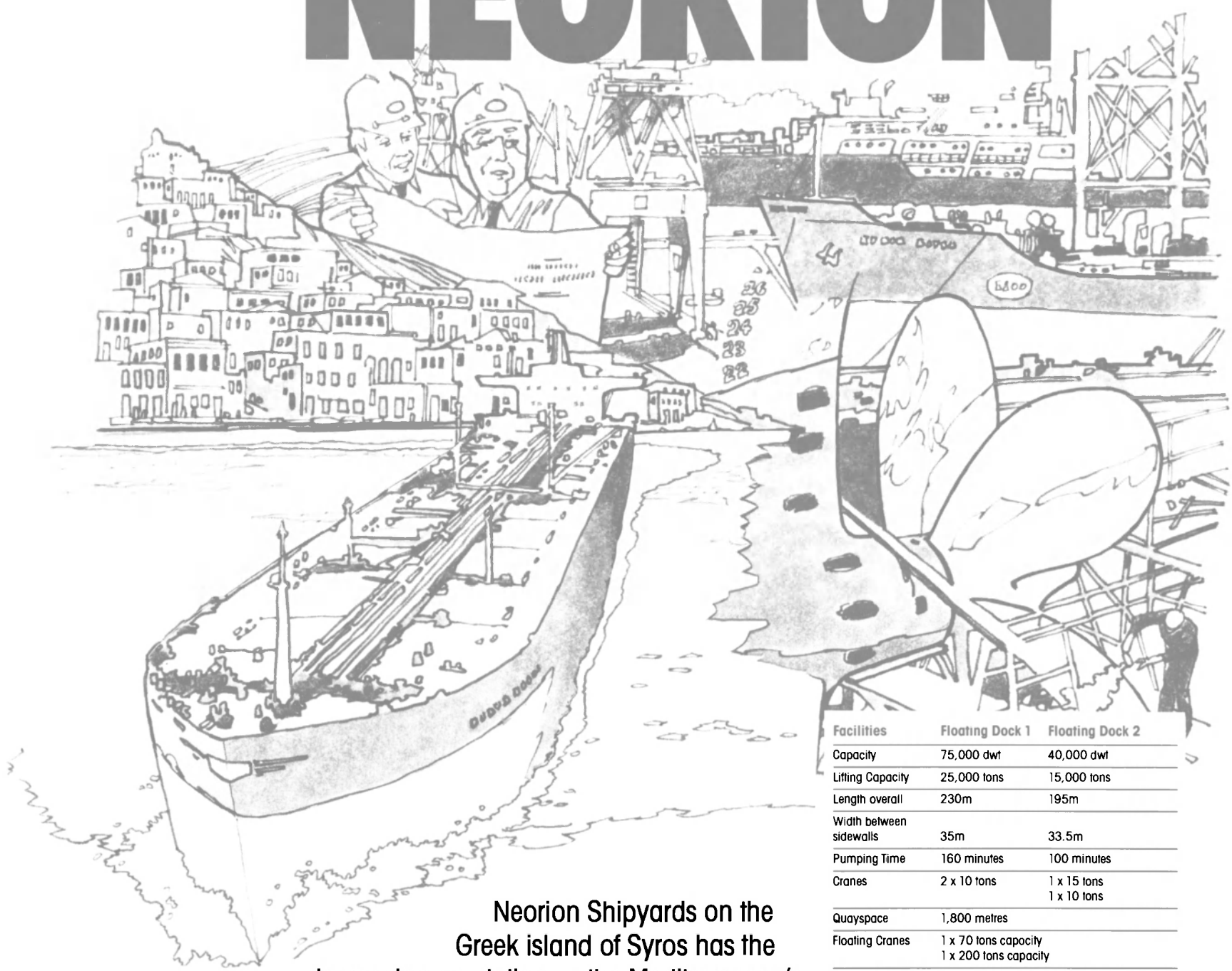

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Cranes	2 x 10 tons	1 x 15 tons 1 x 10 tons
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Tank cleaning station with storage capacity of 7,000 tons and separator capacity of 3,000 tons of dirty ballast and slops per hour.		
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IMODCO Names Blair Kerr VP-Special Projects

Blair M. Kerr has been appointed vice president-special projects for IMODCO, Los Angeles, Calif., the pioneer offshore marine terminal company, president **Bernard Frankel** announced recently.

Mr. **Kerr** most recently served as vice president-business development.

In his new position, Mr. **Frankel** says, Mr. **Kerr** has the responsibility for company activities in three primary areas: (1) general marine engineering and naval architecture relating to marine design, engineering and technical services other than in the Single Point Mooring field IMODCO has been engaged in since 1958; (2) offshore floating plants, including early production/storage systems, process plant and power generation vessels; (3) special projects in selected activities such as offshore loading of cold-temperature liquids, offshore slurry loading and transportation, port development and specialized marine transportation requirements.

Mr. **Kerr** joined IMODCO in 1971 as area representative for Southeast Asia, the Southwest Pacific, and Australia. He served as managing director-IMODCO Limited, and IMODCO vice president-European area, 1972-79, before being named vice president-business development.

Blair M. Kerr

He graduated from the Royal Australian Naval College and the Royal Naval Engineering College in the United Kingdom, and served with the Royal Australian Navy from 1949 through 1965, resigning with the rank of lieutenant commander (engineer).

IMODCO is a unit of AMCA International Corporation, the U.S. subsidiary of AMCA International Limited (formerly Dominion Bridge) of Montreal.

Brochure Illustrates Industrial Capabilities At Philadelphia Gear

A free 36-page full-color brochure is available from Philadelphia Gear Corporation, King of Prussia, Pa., illustrating and describing the company's unique facilities for manufacturing and testing high-capacity, high-precision gears and gear drives. It is a picture tour of one of the most unusual manufacturing plants in this country.

Included in the brochure is a description of some recent marine applications of the company's equipment such as marine gear drives totaling 60,000 hp used to power the triple screw of U.S. Coast Guard icebreakers Polar Sea and Polar Star; 9,100-hp marine gear drives used in integrated tug-barge combinations; and four 25,000-hp gear synchronizing main propulsion clutches and three 3,000-hp high-speed reducers used aboard each of 34 Spruance-class U.S. Navy destroyers.

For a free copy of the brochure,

Write 61 on Reader Service Card

Muenzen Appointed VP At Sea-Land Industries

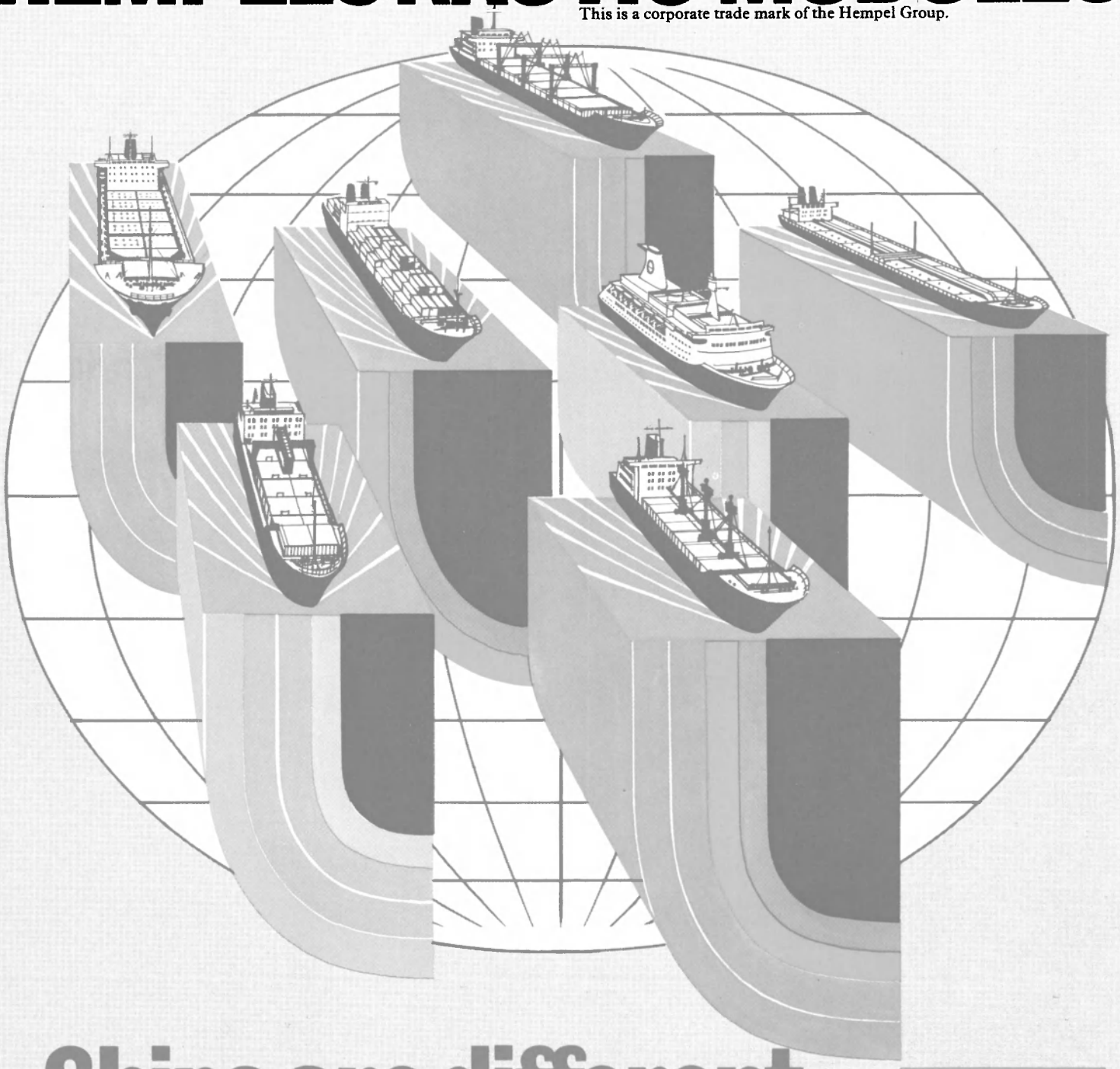
N. Gerard Muenzen has been appointed vice president of purchasing at Sea-Land Industries Inc. of Menlo Park, N.J., an affiliate of the Sea-Land Service containership operator, according to the company.

The firm's director of purchasing since 1973, Mr. **Muenzen** will take responsibility for the acquisition of goods and services needed by the Sea-Land group of firms, the transportation group of R.J. Reynolds Inc. of Winston-Salem, N.C.

Before joining Sea-Land, Mr. **Muenzen** was purchasing manager for the Continental Can Co. of New York City.

Get the Full Economical Benefits of Self-Polishing Antifoulings with HEMPEL's NAUTIC MODULES

This is a corporate trade mark of the Hempel Group.



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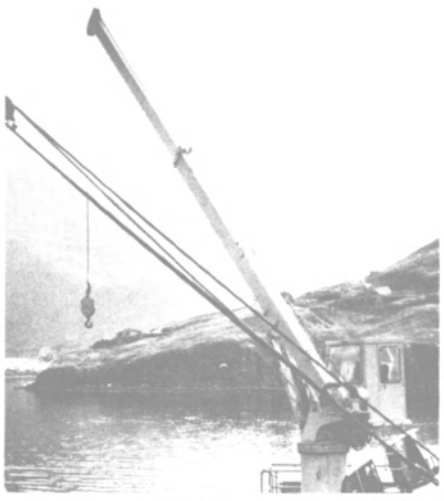
Latest offerings from the world's leading manufacturers

Time being money for owners and operators of vessels and offshore rigs, any speed-up in cargo handling produces cost savings, in many cases substantial ones. Recognizing this, manufacturers of all types of equipment used in these operations have responded with ever more sophisticated gear, from high-speed automated cranes to polymer coatings for the hoppers of bulk carriers.

We asked the major designers and manufacturers of cargo handling equipment to tell us about their latest developments as well as their proven products. The following review on cargo handling is based on the replies we had received as we went to press.

Brochures and literature describing all of the products manufactured by the companies featured in this article are available free of charge. Write in the appropriate number for the information you require on the Reader Service Card in the back of this issue of MARITIME REPORTER/Engineering News.

ALASKA MARINE



Alaska Marine Crane of Seattle designs and manufactures cranes to meet the most severe demands of the marine environment. The latest addition to its product line is the model MCS 10-50, a unit with a capacity of 10 tons at 10-foot outreach. This crane is fully hydraulic; features include 360-degree swing rotation and stainless steel hinge pins and cylinder rods. The two-piece boom has a length of 50 feet, with adjustable slide pads providing for the patent pending "NO-SLOP" telescopic section, so critical in rolling ship applications.

The crane is fully self-contained, with an electric motor as the prime mover. The operator's cab is equipped with cushioned chair, heater, air-conditioning, window wiper, radio, tape deck, and numerous ready out gauges for safe and comfortable operation.

As are all Alaska Marine cranes, the model MCS 10-50 is API 2c certified for offshore applications, and American Bureau of Shipping and U.S. Coast Guard certificates are available. The MCS 10-50 is the 11th crane to be added to the Alaska Marine product group, which ranges from 5 ton to 80 ton in capacity.

For further information and free literature on Alaska Marine Crane products,

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AMERICAN HOIST

Newest addition to the product line of American Hoist & Derrick Company's Marine Energy Division is the Sea Horse model 160 pedestal crane. Boom length ranges from 50 to 120 feet, with load ratings from 10,900 to 100,000 pounds. The Sea Horse is the latest in a long line of Amhoist cranes designed especially to meet the needs of offshore platforms, service vessels, and material-handling operations, both aboard ship and dockside.

All fabricated structural components are manufactured from mild steel. The mast is bolted to the deck and both fit around the stationary kingpost. The upper kingpost houses spherical roller bearings to resist thrust and radial loads. The deck also houses spherical roller bearings pressed into steel tires. These combine for smooth, safe load transfer from the crane to the mounting structure.

The boom is a mild steel, angle chord lattice structure that is bolted together. The standard boom point has four mainfall sheaves mounted on anti-friction roller bearings. A 3½-foot integral jib extension is standard. Three winch units—main, auxiliary, and boom—provide ample rope capacity for each crane function. Each winch is a self-contained, completely sealed unit equipped with a spring-set, hydraulic-released automatic load-holding brake.

A dual swing system insures symmetrical load transfer and an efficient drive system. Each swinger is mounted at 90 degrees from the boom center line to provide a positive swing torque, minimizing front roller loads. All controls are spring-centered and provide dead-man protection. The totally enclosed operating cab is located on the right side of the deck.

A single-gear pump with three separate sections powers all functions. A standard 6-cylinder diesel engine directly coupled to the hydraulic pumps provides a continuous 228 bhp at 2,100 rpm to all machine functions. The complete engine package is shock-mounted to reduce noise and vibration. The engine is centrally located on the machinery deck for maximum accessibility.

For more information and a free brochure on Sea Horse cranes,

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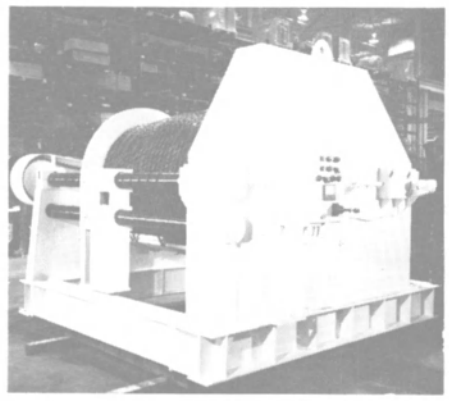
APPLETON MARINE



Appleton Machine Company of Appleton, Wis. recently delivered three identical winches for use aboard a bulk commodities processing vessel to maintain position between supply barges and the oceangoing ship being loaded. The electrohydraulic, self-contained units are capable of line pulls to 140,000 pounds at infinitely variable speeds to 30 feet per minute.

The winches can be operated as automatic constant-tension units, or switched to manual operation when desired. Both modes of operation are available locally at

(continued on page 26)

Cargo Handling Equipment — Appleton

(continued from page 24)

the winch or from a central control room. For improved flexibility, both the line pull and the line speed are infinitely variable from zero to the maximum in any combination.

Appleton designs and manufactures a wide range of marine deck equipment, including all styles of cranes and winches as well as deck fittings. Each design is governed by appropriate regulatory agencies such as the American Bureau of Shipping, U.S. Coast Guard, American Petroleum Institute, and Det norske Veritas. The division serves all sectors of the marine market, including offshore drilling units and support vessels, and oceangoing ships.

Among the major Appleton Marine products are: dual wildcat offshore mooring winch for mooring offshore drillships and semisubmersibles; swivel fairlead and chain stopper, part of a drillship mooring system; three-section, extendable-boom crane rated 1,500 pounds at 38 feet; 300-hp electrohydraulic, hose-handling crane rated 15 metric tons at a 54-foot outreach; and the aluminum Sea-Lift® crane, built to American Bureau and Coast Guard specifications, which features a 360-degree continuous slewing and boom tip braking system to prevent the load from swinging.

Other Appleton products include anchor windlasses, oceanographic winches, deck fittings, knuckleboom cranes, diving system winches, and mooring system control consoles.

For more information on Appleton Marine products,

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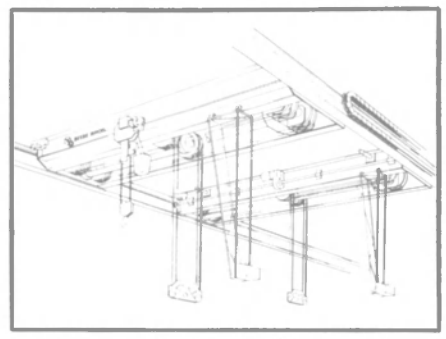
BEEBE BROS.

A new line of BOP handling systems (25-200 ton) in space-saving packages has been developed by Beebe Bros., Inc. of South Seattle, Wash. to save time and increase safety on offshore drilling rigs.



For semisubmersible or floating type rigs, the hydraulic cylinder overhead crane system (shown above) has lifting capacities up to 200 tons. Two systems are available for jackup or platform rigs — a high-capacity, air chain hoist and trolley system, and an air or hydraulic base-mounted winch and trolley system. Also available are skid systems for semisubmersible rigs and drillships.

Beebe Bros., Inc. of Seattle recently announced a major new improvement to the Beebe-65 Barge Winch, which is widely used throughout the industry, an electric brake that increases holding capacity from 60,000 to 70,000 pounds. The barge connector with the new, higher holding capacity brake continues to feature quick-release dogs with holding capacities up to 100,000 pounds. According to Beebe, the design of the electric brake not only increases braking torque and holding capacity, but reduces brake adjustment requirements and extends brake life.

Built for use with 1¼-inch-diameter and smaller lines, the unit is said to be fast and easy to operate electrically by remote control from the pilothouse, deck, or both. The Beebe-65 winch is also available with air or hydraulic motors.

For more information on Beebe products,

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BLOHM + VOSS

Blohm + Voss A.G. of Hamburg (U.S. representative is Blohm + Voss Company of Springfield, N.J.) recently delivered the heavy-duty floating derrick Tog Mor to Howard Doris Ltd. of London. With a Stuelckenmast of 900 tons capacity, the vessel is said to be a "first" for this type of cargo-handling equipment.

The Tog Mor is a thruster-as-

◄ **Write 106 on Reader Service Card**

sisted floating derrick for inshore lifting operations. The Stuelcken design has been well proven on heavy-lift vessels worldwide. It has unique capabilities for heavy lifts at substantial outreach, with corresponding high lifting capability. The Tog Mor, classed + 100 A4 Heavy Floating Derrick by Germanischer Lloyd and meeting the requirements of the U.K. Department of Trade, will normally operate in conjunction with a Voith Schneider tug of 3,000 bhp.

The main hook (fixed boom position) has a maximum lifting capacity over the stern of 900 metric tons, with lifting height of 234 feet 7 inches at corresponding maximum outreach of 118 feet. Lifting capacity is 450 metric tons at lifting height of 110 feet 11 inches and maximum outreach of 237 feet 10 inches. The auxiliary hook has a capacity of 50 metric tons at any outreach to 296 feet.

All loading operations can be performed by one man in the control cabin, which is installed nearly 33 feet above the platform deck. Additionally, a remote control allows operation from platform or main deck as well as from the top of one of the masts. Even at a list of 8 degrees of the pontoon, all operations can be carried out safely.

During a voyage the boom is lashed in a nearly upright position, leaving the entire deck area free for possible transport of very big units even over long distances. Converting the derrick from the sealashing condition to the operating mode takes only a few minutes.

For additional information and free literature,

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CHASE BAG

Chase Bag Company of Newport News, Va. now has available a reusable polypropylene bag that holds up to 3,000 pounds of most types of dry materials for bulk handling and storage, yet weighs only five pounds. The bag's rectangular design provides stability for more efficient stacking and storage of filled bags.

Woven from extremely strong polypropylene strands, the bags are said to last for 10 or 15 round trips under normal handling procedures. Four lifting loops at the top of the bag fit on the two arms of a forklift for easy filling and emptying. In destructive tests, the straps and the bag itself have held loads of more than 15,000 pounds before rupturing.

Trademarked mini BULK®, the bags are available with or without a 3½-mil polyethylene liner, or with an inner or outer 1-mil polypropylene coating. Either serves as a moisture barrier. The mini BULK bag is available in six standard sizes—26, 34, 42, 49, 73, and 85 cubic foot capacities; other special sizes can be ordered to meet customers' specific size requirements.

For additional information on Chase cargo bags,

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CLYDE IRON

Clyde Iron, a unit of AMCA International Corporation of Houston, has just released a new brochure on marine whirley cranes for offshore and other marine construction, dredging, and stevedoring applications.

The publication contains information on net hook capacities (full revolving or overstern), duty cycle gross loads, maximum operating radii, and engineering data covering models 20, 24, 28, and 32. Boom lengths range from 70 to 200 feet. When fitted with a 120-foot boom, the model 32 has an overstern lifting capacity

(continued on page 28)

Cargo Handling Equipment — Clyde

(continued from page 27)

of 290 short tons at an outreach of 40 feet.

One of Clyde's outstanding offshore crane installations in recent years is aboard the giant semi-submersible, pipelaying / derrick barge Semac I. Heavy lifts on the vessel are accommodated by a Clyde Model 42 Offshore Whirley with full electric drive, capable of lifting 500 tons overstern and 350 tons full revolving. Simple, rugged, and easy to maintain, that crane was customized and tailored to meet the huge barge's unique requirements.

Also installed aboard the Semac I are three Clyde CPS-96 Sea Whirlers™ with 75-ton main load blocks. Used for routine lifting, these full-revolving, fast-cycling, versatile pedestal cranes contribute greatly to the vessel's material-handling requirements.

Clyde's AD™ winch, engineered in graduated sizes with stall pull / bare drum ratings from 150,000 to 350,000 pounds, is offered in single or multiple drum arrangements for anchor/pulling applications. Features of the AD line include: anti-friction bearing design; alloy steel shafts, supported close to load centers; rigid, heavily braced framing and bearing housings; large-capacity steel drum; spring-loaded, air-released pawl; high-strength, multiple steel roller chain drive, splash oil bath lubricated; heavy-duty, single contracting band brake, air released; hand-operated air controls assembled in modular console within easy reach of the operator; and air compressor and receiver.

Clyde also offers a constant tension hydraulic tugger, the CTH Models, with running pull/bare drum ranging from 10,000 to 54,000 pounds. The CTH tugger hydraulic pump and motor combination can be driven by either a TEFC continuous rated squirrel cage electric motor or diesel engine.

For a free copy of the new Clyde brochure,

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CROSBY GROUP

A 180-page, full-color catalog is available from The Crosby Group, a Division of Amhoist, which is comprised of Laughlin®, Lebus®, McKissick, National, and Western. Together they manufacture every conceivable kind of fittings and accessories for cargo handling and other applications, including forged fittings, hooks, blocks, sheaves, pulleys, load binders, chain, etc. The catalog describes all of the products of all divisions in full detail with photos, detailed drawings, all measurements, and full specification charts.

One of Crosby's newest products is Spectrum Chain, said to be the first color coded chain line. Available in working load limits of 850 through 39,900 pounds and sizes of ¼ to ⅞ inches, Spectrum provides instant chain grade recognition and excellent anti-corrosive properties. It is available in four different grades — Spectrum 3, 4, 7, and 8 — each color coded for easy identification.

A specially developed polyester powder is bonded to the chain surface by the use of electrostatic equipment, then heat treated to produce a tough, corrosion-resistant surface. The coating will not peel; clean handling and longer storage life results.

Crosby links and rings are manufactured in a complete line of sizes and types for almost any application, with working load

limits from 1,600 to 232,500 pounds. Important construction features include: forged from special quality bar or alloy steels and weldless through 81,400 pounds working load rating; minimum ultimate strength six times working load limit; and quenched and tempered.

Lebus products include lever and ratchet type load binders, grab hooks and tail chains, snatch blocks, and hook latch kits. McKissick specializes in custom designed blocks to any specifications, oil field blocks, crane and hook blocks, overhaul balls, swivel hooks, and snatch blocks, as well as many other products. Western manufactures sheaves and sleeves, wood and steel blocks, and cargo blocks and fittings, just part of its extensive product line. National's product line includes steel swaging sleeves, duplex sleeves, swage buttons and furrules, as well as swaging presses in capacities from 500 to 3,000 tons.

For a free color catalog on the entire Crosby Group product line,

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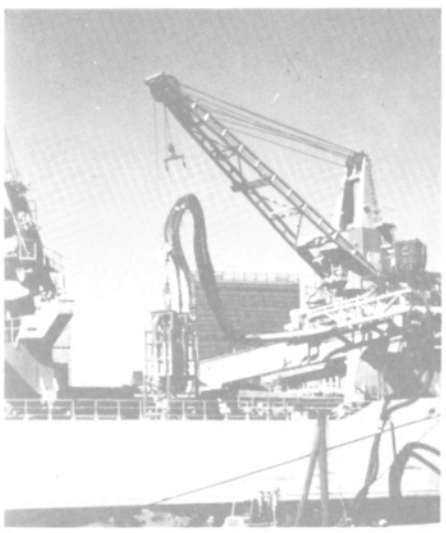
CYCLONAIRE



Cyclonaire Corporation of Henderson, Neb. recently completed an evaluation run of its portable Docksider II ship and barge unloading system at the Norcem Cement Terminal in New York. The system was installed in a 25,000-dwt ship utilizing a deck crane to provide a totally self-contained, pneumatic unloading capability for a wide range of dry bulk solids including cement.

In addition to onboard installation for use with the ship's gear for handling in the holds, the versatile Docksider II is equally suited to terminal operations utilizing existing dockside cranes.

Two basic models are currently available, both of which operate on a closed system principle to provide dust-free materials transfer. The Docksider II-V features a patented, venturi-induced vacuum principle to dramatically reduce maintenance compared with alternative unloading systems. The Docksider II-P utilizes a vacuum pump to provide continuous conveying, with resultant higher transfer capacities.

For additional information on Cyclonaire ship unloaders,

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DRAVO

One of the hottest topics in cargo handling today is export coal, with work under way in many port areas to improve U.S. ability to deliver more of this commodity to the world market. At the heart of many of these improvements are bulk materials handling systems and equipment from Dravo Corporation of Pittsburgh.

On the East Coast, for example, the Massey Coal Terminal presently under construction at Newport News, Va., represents one of the first tangible responses to the problems of harbor congestion and loading delays—problems that have plagued East Coast ports since the surge in world demand for U.S. steam coal several years ago. From engineering studies to construction management, the Massey facility is all Dravo.

The Massey project involves taking a terminal built in the 1940s to handle imported iron ore and converting it into an ultra-modern coal export terminal capable of moving 10-15 million tons per year. The project involves rail car dumpers designed to unload

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Cargo Handling Equipment — Dravo

(continued from page 29)

trains of random coal cars at the rate of 5,000 tons per hour; ground storage for one million tons of coal; and a unique gravity reclaim tunnel and conveyor belt combination that will enable the facility to blend as many as eight different types of product as the coal moves into the terminal's 8,000 tons per hour traveling shiploader.

When completed in 1983, Massey will become the second high-capacity coal-handling terminal in the Newport News area to utilize Dravo's bulk materials handling technology; the other is the N&W railroad terminal at Lambert's Point, which was designed and built by Dravo Wellman.

Coal export activity on the U.S. Gulf Coast has picked up markedly as a result of the congestion at East Coast ports, and the McDuffie Terminals export facility in Mobile is a good example of a Gulf Coast port whose cargo-handling facilities are being upgraded in response to the current surge in coal exports. Originally equipped with a Dravo-built shiploader, the McDuffie terminal is currently being outfitted by Dravo with a 5,000 ton per hour, continuous barge unloader (CBU) that will double the terminal's barge-unloading capability (shown right).

Just recently, Dravo was awarded a contract to install a new rail car dumper and train positioner at McDuffie. A Dravo Wellman project, this single car dumper is designed to dump two railroad cars at a time, and will increase the terminal's unloading capacity by 50 cars per hour.

The deep drafts characteristic of U.S. West Coast ports make them ideal candidates for export coal terminals, and Dravo is involved in a number of coal-handling improvements being considered there. A tightly knit group of engineers with expertise in virtually every engineering discipline related to bulk materials handling was put together several years ago by Dravo to form a studies group to undertake studies for clients interested in exploring the feasibility of specific coal-loading facilities. These studies cover the entire spectrum of project feasibility, including capital and operating costs, financing arrangements, permit and construction approvals, and the like. Several such studies involving coal-handling improvements on the West Coast are currently under way.

For additional information on Dravo,

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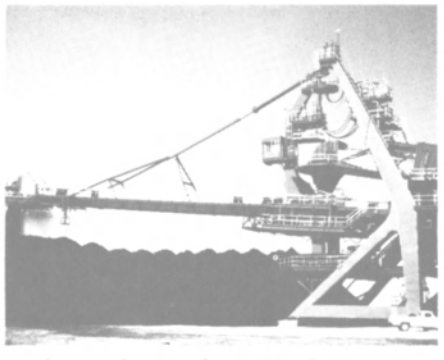
FMC CORPORATION



A coal stacker that handles loads as high as 7,000 tons per hour (normal operating rate is 6,000 tons per hour) was installed recently by FMC at Ontario Hydro's Nanticoke, Ontario, generating station on the north shore of Lake Erie. This capacity allows it to keep pace with the highest unloading rates of any self-unloading coal carrier on the Great Lakes. Said to be one of the largest stackers of its kind, it has a maximum slew angle of 250 degrees and produces a crescent-shaped pile of coal 60 feet high

representing storage of about 80,000 tons.

This is one of two unloading systems serving a highly complex coal-handling facility. FMC of Canada's Material Handling Systems Division in Scarboro, Ontario, designed and built the new coal-handling and stockpiling system, which includes a dock hopper with dust hood, two 84-inch-wide belt conveyors totaling 1,750 feet, and FMC's massive luffing and slewing coal stacker.

The stacker is unique in many respects. It is impressive for its dimensions as well as the 7,000-tph capacity. It stands 92 feet high, and the base covers an area of 2,403 square feet. The boom is 173 feet overall, and the 84-inch-wide boom belt can be luffed from a 12½-degree declined position to an 11-degree incline. The belt travels at a speed of 750 feet per minute.

With the exception of the conveyor drive, the stacker is entirely hydraulically driven. Luffing action is by hydraulic cylinder, and slew action by variable-speed drives transmitting torque to a rotating mast structure.

The operator's cabin is located on the rotating mast structure, well above the luff axis, providing a wide field of view. Cabin controls provide for either manual or automatic operation. Control also can be transferred to the central control room, but mandatory manual control is established during critical phases of the stocking-out operation — for example, where the pile is reaching maximum height.

Automatic control is achieved by a programmable controller that is linked to all safety devices and monitoring systems. It is capable of initiating sequential startup or shutdown of the entire system or portions of it. Telephone communication is available from all main points to the self-unloading vessel.

Safety devices and detectors include plugged chute detectors, motion sensors to insure correct sequencing, belt side-travel switches, and belt penetration devices to detect possible belt damage. The integrity of the hydraulic systems is monitored by a series of temperature and pressure detectors.

For additional information,
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HAGGLUNDS

AB Hagglund and Soner, Swedish manufacturer of hydraulic motors and deck machinery, is one of the world's leading suppliers of marine cargo deck cranes. Represented in the United States by Stal-Laval, Inc., Elmsford, N.Y., the Hagglund crane has become known as the U.S. crane—all Hagglund marine cargo cranes installed on ships built in the United States in the last 10 years have been contracted, installed, and serviced by Stal-Laval. A variety of crane types, including single, twin, team, and grab, as well as ice class, are now operational on American-built ships. More than 1,200 ships worldwide have been equipped with deck cranes by Hagglunds. The company has a continuing development program resulting in new designs and practical solutions to unique cargo problems.

The weakest link in the Arctic cargo handling chain is the stevedore. Human beings experience serious trouble when temperatures fall much below −25° C, or sooner if it is windy as well as cold. Some type of unit load handled by automatic cargo handling equipment is therefore a prerequisite for efficient cargo handling in the Arctic. Hagglunds manufacturing methods, quality control, materials, etc., make it possible to use standard deck cranes at temperatures down to −25° C, or down to −30° C with extra heating and different hydraulic oil. Hagglunds experts have the know-how and the experience of cargo handling in Arctic climate, enabling them to offer cranes and cargo handling equipment suited to operation at temperatures of −40° C or even lower. Hagglunds tests all new hydraulic crane components under winter conditions to determine reliability at low temperatures.

It may seem that a special
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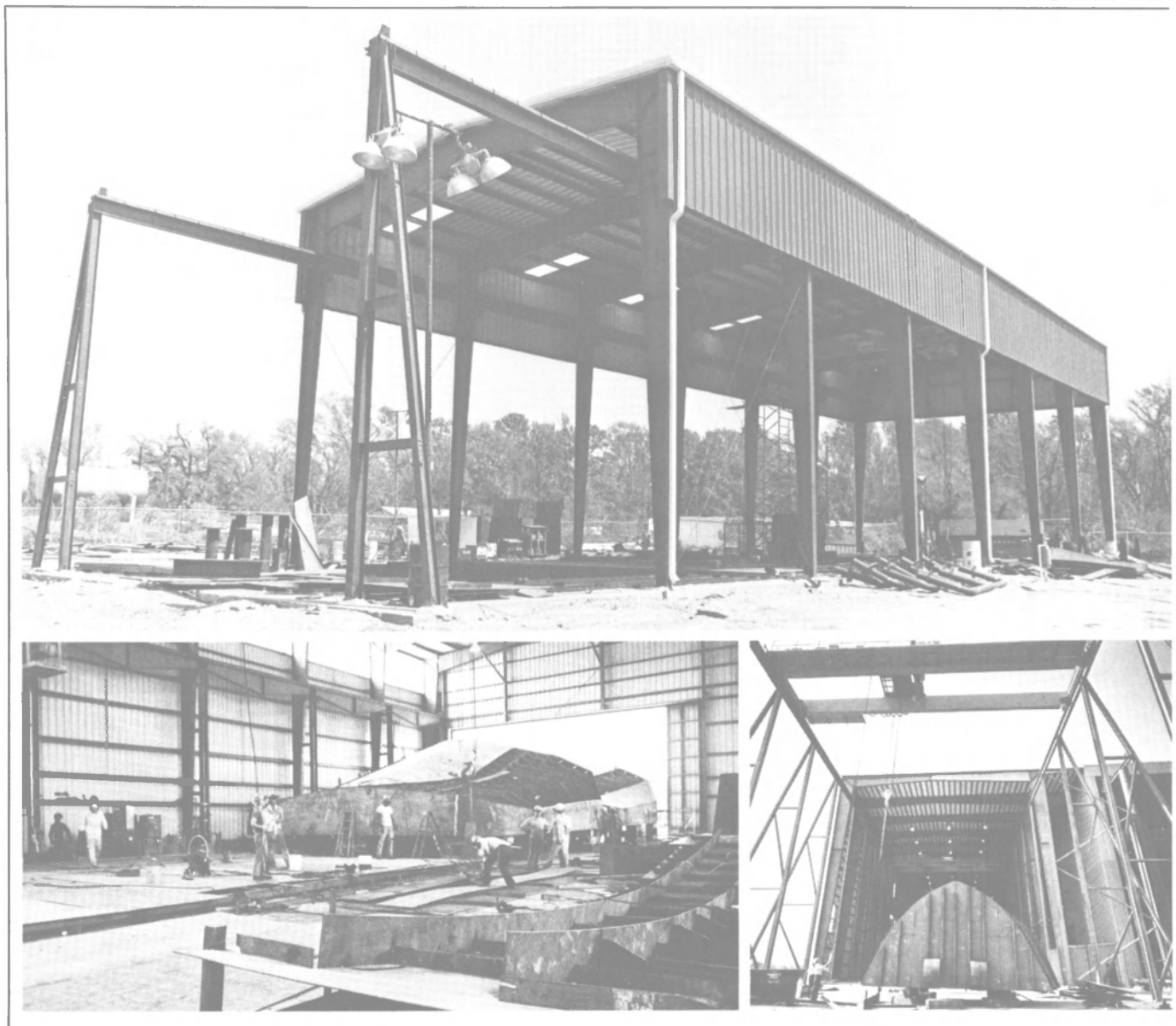


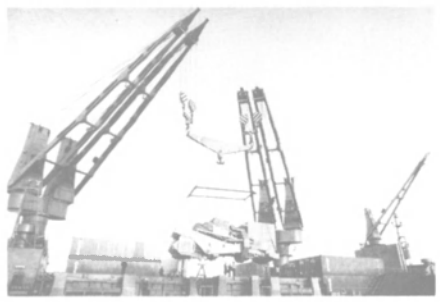
Cargo Handling Equipment — Hagglunds

(continued from page 31)

product like an Arctic crane is manufactured only in small numbers, but this is disputed by one of Hagglunds biggest orders. On December 12, 1980, Wartsila's Turku Shipyard in Finland gave an order to Hagglunds' deck machinery division confirming the yard's intention to cooperate with AB Hagglund and Soner in a major new building project consisting of nine ships designed for polar conditions. The order calls for 45 cranes to be delivered between December 1981 and December 1982.

Another indication of Hagglunds' continuing concern for quality in its products is its research into the optimum design for crane bases.

Simple cylindrical bases give rise to design problems which may be difficult to solve with conventional strength calculations. A further difficulty arises in the case of combined cylindrical/tapered cone bases in the determination of the stress which can arise at the transition between the cylindrical and tapered parts. The third type of base is the rectangular kind. Design calculations are analogous to those for cylindrical tapered bases, which means that the diaphragm stresses generated by the crane tilting



moment are not greatest around the crane axes of inertia. The most difficult type of base from all points of view is the side-located. This base presents all the problems encountered with the others, plus a few more. It is a challenging engineering problem involving FEM (Finite Element Method) of stress analysis for each individual case. A number of these special crane mounts are now in successful operation.

Another recent product resulting from research is the Team Crane®, a further development of the twin crane. In this newest system, two cranes are electrically interconnected and synchronized automatically, enabling operation "in team." The Norwegian Knutson Line is the owner of the Maria Bakke, which calls on U.S. West Coast ports with a "team" of 4 x TG2524 Hagglund cranes. Total lift capacity of these cranes is 100-ton with a single crane driver controlling the "team" as one machine. The installation of the Team Cranes results in a vessel being entirely independent of shore cranes to load or unload. Hagglund can provide a lift capacity of 240 tons by the installation of four of its 60-ton cranes. Units supplied as Twin Cranes may also be interconnected for team operation.

For more information and specifications on the full range of Hagglund hydraulic motors and deck machinery,

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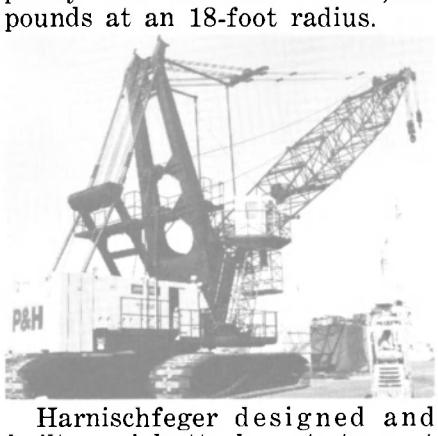
HARNISCHFEGER

A new 300-ton crane—a P&H 5300-R — was dedicated by the Port of Milwaukee late last year before invited guests that included shippers, shipping line officials, City and Port of Milwaukee officers, and executives of the Harnischfeger Corporation of Milwaukee, the crane's manufacturer. The crane is designed to handle virtually all types of cargo that passes through the Port—containers, heavy lifts to 300 tons, general breakbulk, and scrap.

Based on experience at other ports, the P&H 5300-R is expected to load containers aboard ship at a rate of 25 per hour on deck and 16 to 19 per hour in the hold. This approaches the speed of the huge gantry cranes in use at major ocean ports. This container-handling capability alone is expected to have a major impact on Milwaukee's cargo volume.

The products of Milwaukee's

heavy industry requires its port to be a heavy-lift facility. The P&H 5300-R, operating nominally with a 100-foot boom, has the ability to lift 400,000 pounds at a 25-foot radius, 149,000 out to 50 feet, and more than 58,000 pounds at a 100-foot outreach. When needed, the boom can be shortened to 70 feet and lift capacity will increase to 600,000 pounds at an 18-foot radius.



Harnischfeger designed and built special attachments to meet the Port of Milwaukee's particular needs. The boom foot mounting was raised to a height of 17 feet above the dock to enable the crane to work closer to the ship and increasing the boom reach over the deck of the ship. The extra-heavy-duty mast will fold forward to a height of 26 feet, enabling the crane to travel through a 27-foot underpass in the Port area. For the same reason, the height of the operator's cab was held to 26 feet. The operator's eye level is at 23 feet above the dock, which will give him a good view into the holds of most freighters sailing the Great Lakes.

For further information and free literature on all P&H cranes,

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HERCULES

Shipping firms with self-unloading vessels are benefiting from the use of an ultra-high molecular weight (UHMW) polymer manufactured by Hercules Incorporated to line their cargo hold hoppers. Ship operators that are saving thousands of dollars per unloading hour include many well-known names in Great Lakes shipping, such as American Steamship, Hanna Mining, Huron Cement, Canada Steamship Lines, Algoma Central Railway's Marine Division, Upper Lakes Shipping, Hall Corporation Shipping, and St. Lawrence Cement Company.

In addition, shipbuilding itself is undergoing a revolution in self-unloading hopper designs thanks to the properties of UHMW polymer with molecular weights in the range of three to six million. It has a coefficient of friction approximately half that of steel, providing a non-stick surface that, these shippers point out, greatly facilitates the unloading of cargo even when it is wet or sticky.

This means that materials such as coal, gypsum, and cement flow more easily and reliably than on unlined metal surfaces. It also permits wet material to slide more easily on the plastic's wax-like surfaces. This, in turn, has given them two options: to design steep hopper slopes, or to install liner sheets of 1900 UHMW polymer and reduce hopper slopes.

Normally designed with slopes as high as 57 degrees, hoppers of self-unloading ships can now be angled as low as 37 degrees when the polymer liner is used. The advantages of this reduced

slope angle have been proven out along several lines, according to Mentor Dynamics, Limited, Ontario-based fabricator pioneering in this new method of lining hoppers.

Shippers attest to the fact that the lower angle design on the hoppers of their freighters has resulted in several benefits: it increases the weight (or amount) of material that can be carried; and it improves the stability of the ship by making it possible to store this great volume below the vessel's center of gravity.

Some shippers report that their (continued on page 34)

Cargo Handling Equipment — Hercules

(continued from page 33)

unloading times have been reduced from as much as 48 to eight hours because the UHMW polymer allows material to slide out, not bulk up requiring lengthy times to get the last portions out. Shippers cite average times of 16-20 hours have been reduced to a mere eight, at cost savings of several thousand dollars per trip. An additional benefit is that 1900 UHMW polymer has virtually zero moisture absorbtion; materials slide easier wet or dry.

For additional information on UHMW polymer,

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KOCKUMATION

Kockumation AB of Malmo, Sweden, one of the world's leading producers of loading instruments, is now marketing the Loadmaster B20, the most advanced that the company has produced. It can instantly update a loading condition for fast decision-making. It can simulate all stages of a loading condition in order to identify the optimum solution. It allows the operator to store different loading conditions for future reference. It provides permanent storage for three loading conditions approved by a classification society. It can be connected to a level-gauging system. And it minimizes the risk of human error.

Kockumation's Loadmaster C30 model is a digital stress calculator. The system consists of a general-purpose minicomputer, a floppy disc storage medium, an alpha-numerican display, and a hardcopy unit. The program can be adapted to suit the requirements and operational routines of each individual customer.

The latest Loadmaster introduced is the V40, a fast, compact instrument that despite its low price is as flexible and powerful as the B20 over a wide range of applications.

The Loadmaster D50 calculates deadweight, forward / aft draft, bending moments and shear forces. An option is available for calculations of actual and required ship's stability. The D50 is a compact digital instrument—the complete calculator for cargo distribution.

The Loadmaster G70 is a computer that gives simple answers to difficult questions. It provides fast, accurate, and above all simple answers to questions about the effects of cargo distribution alternatives on stability, draft, trim, and deadweight. The data and results displayed on the panel can be obtained in a printout, eliminating the need for time-consuming manual documentation.

For more information on the Kockumation Loadmaster line,

Write 36 on Reader Service Card

LAKE SHORE

Designed by Clarke Chapman, an internationally known United Kingdom crane manufacturer, a line of level-luffing shipboard cargo cranes are now available from Lake Shore, Inc. of Iron Mountain, Mich. Manufactured in the United States with 100 percent U.S. content, these cranes have been proven in many years of shipboard service. Lake Shore is a leader in the manufacture of deck machinery.

For further information on Lake Shore/Clarke Chapman cranes,

Write 37 on Reader Service Card

LIDGERWOOD

Lidgerwood Manufacturing Company, New York, has long been a respected name in the commercial marine equipment business. The company is a manufacturing subsidiary of Superior-Lidgerwood-Mundy Corporation, Superior, Wisc.

Lidgerwood builds and markets cableways, marine machinery, large hoisting plants, steam, diesel and electric marine auxiliary machinery, ship stabilizers and capstans.

The company manufactures modern capstans for all types of

(continued on page 36)

Cargo Handling Equipment — Lidgerwood

(continued from page 34)

vessels and is currently providing this equipment for the mooring of the frigates in the current FFG program. The design provides for under-deck drive, quiet two-speed operation and antifriction bearing mounting for the capstan head above deck. A two-speed high-torque electric motor with a substantial electric brake supplies the motor power for the capstan.

For a complete catalog of marine equipment manufactured by Lidgerwood,

Write 38 on Reader Service Card

LINK-BELT

The New Haven (Conn.) Terminal (NHT) has installed a Link-Belt® LS-718 mobile crawler crane that handles a minimum of 200 tons of scrap per hour when loading ships. Prior to purchase of the LS-718, NHT undertook a study to determine the possibility of reducing the time required to load a ship with scrap. Two gantry-mounted and one crawler-mounted cranes fitted with lifting magnets are used.

After an extensive analysis, NHT made the decision to purchase a Link-Belt crawler crane with a lift capacity of 50 tons at a 50-foot radius and with a 130-foot boom. The unit is equipped with independent travel and elevated operator's cab. Also, the production requirement was established as 200 tons per hour to reduce ship loading time. NHT designed a special bucket to handle one truckload of scrap.

The LS-718 is said to be performing to the customer's satisfaction. It is handling the 29-ton load (9-ton bucket weight and 20 tons of scrap) easily, and obtaining the minimum of 200 tons per hour. The elevated cab does give a full view of the hatch opening, enabling the operator to spot the load even in the corners of the hold.

For additional information on Link-Belt cranes,

Write 39 on Reader Service Card

MACGREGOR

MacGregor cargo transfer and access equipment is known worldwide for providing power to move cargo on and off ships faster, using every new technique to streamline loading methods and cut time in port. MacGregor cargo-handling expertise has been applied to every kind of dry cargo ship afloat, custom-built or converted. Its equipment is backed by a service network covering every major maritime nation.

On ships without the necessary cranes, MacGregor has a method for using the hatch cover as a crane to manipulate 'tween-deck pontoon hatch covers within ships having large, flat sided holds. It was devised by Deutsche MacGregor of Bremen. The "rolling crane hatch cover" fulfills a dual purpose. It acts as a hatch cover and, because it is equipped with a powered traction drive with built-in lifting winches, it can be rolled along the weather deck coaming like a gantry crane, using the winch wire to lift, stack or otherwise move the pontoon panels situated directly below on the 'tween deck.

At the time of going to press, a total of four vessels had been equipped with a rolling crane hatch cover.

At the present stage of development, the vessel most able to benefit from the new device is the "paragraph" type coaster having one large hold. Many of these ships have been built in West German yards in recent years. In these vessels, the 'tween-deck hold often does not permit the stowage of pontoon covers, and they are usually not equipped with their own cranes.

The rolling crane hatch cover — conceived in response to an owners particular need—can be incorporated in either the Single Pull, Folding or Piggy-back hatch cover systems. With Single Pull it becomes the (detachable) lead panel in stowage; and with the folding system the crane cover is located between the folding pairs which stow fore and aft on the hatch.

Apart from its use as a straight pontoon hatch cover crane, the

rolling crane hatch cover can be used to move pontoon covers into position to form an extra transverse bulkhead in the cargo hold to separate different cargoes.

All resources of the International MacGregor Organisation are available in the United States through MacGregor Comarain Inc. of Cranford, N.J.

For additional information and free literature on MacGregor equipment,

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MARATHON LeTOURNEAU

Cargo handling equipment manufactured by Marathon LeTourneau Company, Houston, Texas, includes a line of marine pedestal cranes, a scrap metal handling crane, container straddle hoists and side porters, and large capacity front-end loaders.

Marathon LeTourneau marine pedestal cranes, installed on all classes of the company's self-elevating offshore drilling platforms and supplied to other segments of the marine industry for installation on other types of vessels, are manufactured in a range of lifting capacities and configurations to meet the variety of cargo handling requirements.

The PCM-350, newest and largest capacity Marathon LeTourneau variable radius marine pedestal crane, has a 60-ton lift capacity at 58-foot outreach. It utilizes dc electric motors for smooth operation and control of main hook and boom luffing, straw line, and crane swing.

Like all Marathon LeTourneau marine pedestal cranes, the PCM-350 can be operated from the cab or a remote station and features a unique gantry with all welded structural components and spring-loaded boom stop member.

Other marine pedestal cranes are the PCM-120AS, and PCM-80AS. The PCM-120AS, with a 50-ton maximum lift capacity with 100-foot boom, is available in optional models PCM-120 and PCM-120C.

Marathon's PCM-80AS has a 30-ton lifting capacity and unique column design which provides ideal support for operation of the swing gear and its motor driven pinion.

Marathon's JC-40S, a 20-ton gross capacity jib crane designed for scrap metal handling, incorporates the same field-proven LeTourneau electric motors found in the company's marine pedestal cranes and in the jib cranes widely used in the logging industry.

Marathon LeTourneau SHU-100 Straddle Hoists, which have a maximum load capacity of 100,000 pounds, are widely used in

containerized cargo handling facilities. The Straddle Hoists can span six rows of cargo containers and a truck lane or flat car rail spur. It can work with containers stacked three-high with space to pass a fourth container over the top.

The SHU-100 is powered by a diesel engine with dc and ac generators that supply power to all machine functions. The SHU-100 is capable of hoisting, trolleying,

(continued on page 38)

Cargo Handling Equipment — Marathon

(continued from page 37)

steering and traveling simultaneously. It is a highly versatile and maneuverable machine, primarily due to the unique LeTourneau dc electric wheel system which provides power directly to each wheel.

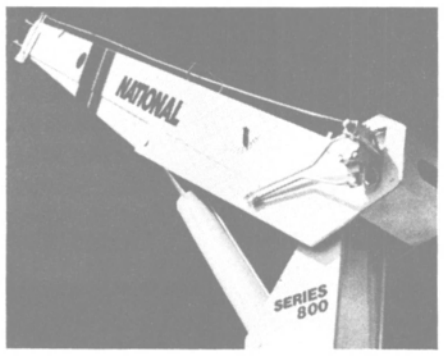
The company's 2582-CH LeTro Porter, also a container handler with diesel-electric drive, is rated to lift and carry container units weighing up to 67,200 pounds. Models of the 2582-CH are available for handling 20 to 40-foot containers.

Marathon LeTourneau's L-800, a 45,000-pound lift-capacity front-end loader, is used to load railcars with bulk cargoes such as coal, ore and wood chips. The diesel-electric loader is well suited for handling such bulk cargoes at port facilities because of its maneuverability and versatility.

For free brochures on Marathon cargo handling equipment,

Write 41 on Reader Service Card

NATIONAL CRANE



A new brochure titled *The National Marine Lifting System* describes the full line of National Crane Corporation's hydraulic cranes for shipboard, dockside, offshore, and other marine uses. This brochure is packed with descriptive and technical information concerning both the National telescoping and fixed-boom cranes. Four models are available in each classification, with capacities ranging from 10,700 to 30,000 pounds. Boom lengths on the telescoping models are available to 56 feet.

Also described in the brochure are National's accessory equipment for marine cranes. Remote controls, control consoles, and self-contained power pack and pump units are all explained and illustrated in this full-color publication.

Full explanations of National's construction features, marine conditioning, and performance characteristics are provided, along with load rating charts for the full line. Dimensional drawings and an explanation of National Crane's warranty and parts system complete the package.

National's pedestal-mounted, hydraulic marine cranes are the versatile alternative to many jobs now done by manpower or by lifting methods that are not adequately matched to the job. More and more customers are finding National a cost-efficient lifting system for docks, offshore platforms, fishing boats, oil terminals, and many other uses.

For more information and a free copy of the brochure,

Write 42 on Reader Service Card

NATIONAL SUPPLY

National Supply Company of Houston, a Division of Armco, has introduced a new line of light-duty hydraulic pedestal cranes, with three compact models offering load capacities to 45,000 pounds and booms to 100 feet. They are designed for platform, drilling, or dockside operations that need dependable lift within space or weight limitations.

Many major North Sea proven features on National's larger cranes are on these light-duty models.

National cranes hold a proven performance and safety record and meet or exceed the requirements of API, ABS, USCG, Lloyd's Register, and Norwegian DnV.

National hydraulic pedestal cranes are designed to be space

and weight savers, with overall compactness, minimum tail swing and comparative lightweight.

Space and weight are two very important factors in offshore operations where every square foot and pound can directly affect capital investment and operating costs.

For heavy-duty operations of rugged environments, National Supply offers four North Sea-proven models with standard boom lengths to 140 feet and maximum load capacity to 180,000 pounds. Crane models include the OS-105, OS-215, OS-435, and the new OS-435 Heavy-Duty.

For lighter duty offshore operations, National now offers a completely new line of small cranes. The OS-45, OS-35 and OS-25 give boom lengths to 100 feet and maximum load capacities to 68,000 pounds. These models are designed specially for the light-to-medium lifting requirements of many production platforms, small jackups or service rigs.

Heavy- or light-duty National cranes are versatile and adaptable to most dockside or other marine functions.

National offers a unique hydraulic power system. For the variety of offshore lifting requirements, separate motors are incorporated for the boom hoist, main hoist, fast line hoist and swing systems, adding to overall crane reliability and performance.

Unlike most systems, maximum system pressure is **not** constantly maintained; rather, pressure varies to satisfy load requirements. The result is better lift efficiency, longer service life.

A console, designed for easy operations, allows each crane function and its speed to be easily controlled by the operator. Separate hydrostatic circuits mean functions are completely independent of each other and can be individually or simultaneously controlled with no loss of speed, power or lift.

National cranes are designed for safety with forged alloy steel swing bearing and matching adapter flange. Ball races are hardened and ground with gear teeth designed as an integral part of the outer race.

The entire hydraulic system plus major power and control components are modularized for fast inspection and easy replacement or servicing when necessary. Major components are weather protected.

On large National models, pneumatically actuated controls provide better dependability and less maintenance.

Both main and fast line hoists have two-stage planetary reduction systems that are completely enclosed. Gears and bearings are lubricated during drum rotation. Power controlled load lowering is standard.

The boom hoist has a two-stage planetary reduction system within the drum, automatically operated lock pawl and power-controlled load lowering.

Swing is powered by a reversible motor-drive through a multi-stage gear reduction system with anti-friction bearings and oil-tight case. Gears and bearings have force feed lubrication. The swing brake is mounted on the gear reducer input shaft.

For free brochures on National Supply cranes and offshore equipment,

Write 43 on Reader Service Card

(continued on page 40)

Cargo Handling Equipment

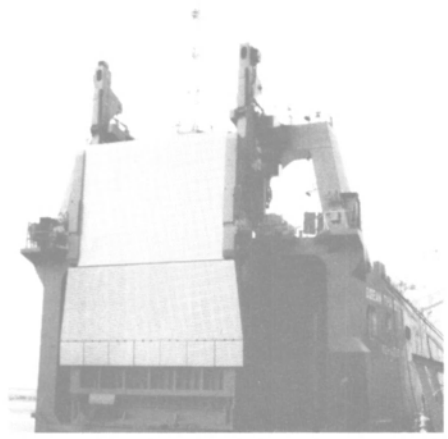
(continued from page 39)

NAVIRE CARGO GEAR

Navire Cargo Gear International AB, NCG International, based in Gotherburg, Sweden, is the parent company of a worldwide organization comprising subsidiary companies, licensees, representatives, service stations, and production facilities. This organization is devoted to sophisticated engineering, mainly in the fields of cargo access, cargo handling, and other marine-related fields where NCG's specialized technology, experience, and design capabilities can be put to good advantage.

The role of NCG International is to coordinate market information and operating experience, as well as technical research and development. NCG also directs and coordinates sales activities, service and spare parts supply, and public relations, besides formulating group policy.

The NCG subsidiaries operate as independent companies and can undertake any project, design job, or service request that they may encounter in their own markets. Through NCG International, each subsidiary has access to the accumulated know-how and experience of the Group.



In its cargo access equipment line, NCG offers a wide range of hatch covers such as pontoon, piggy-back, and folding covers; mechanically, electrically, or hydraulically operated for ships designed for vertical cargo handling. For bulk and combination carriers, the unique Hydroseal side-rolling cover is another example of the company's innovative technology.

NCG is today the leading supplier of roll-on/roll-off access equipment. This product group includes stern ramps, fixed or angled; fixed, semi- or full-slewing; articulated or not; and mechanically or hydraulically operated. Other RO/RO products include bow and stern doors, internal ramps and covers, elevators, and hull and bulkhead doors.

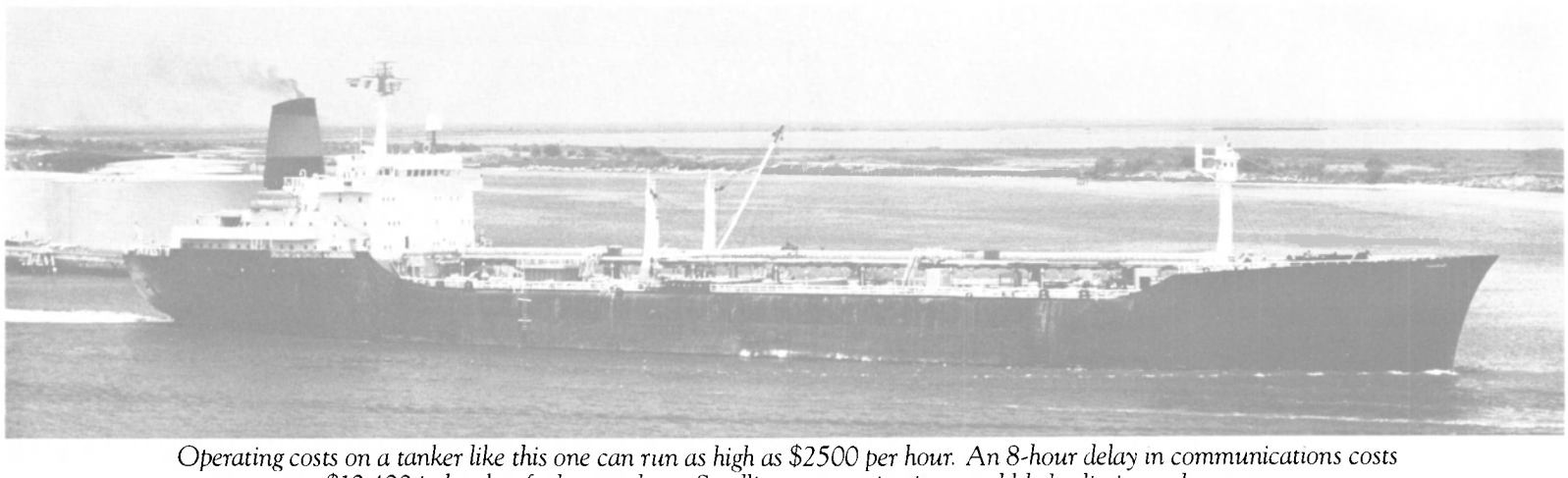
The NCG Group has also been involved in the development of the elevators for all major barge carrier systems. Train ferries represent another area where NCG technical solutions have literally linked countries.

NCG also offers complete liquid cargo handling systems with remote control for the rapid loading and discharge of tankers, crude as well as product carriers. These systems, now used by virtually all the major oil companies, are based on components such as valves, actuators, etc. that can be obtained throughout the world. This insures low maintenance costs and maximum security for the tanker operator.

As more and more RO/RO ships enter service, demands for berthing facilities are increasing. The Port of Oslo, where the considerable water depth would have required extensive and costly engineering work if permanent new piers were constructed, chose a Navire floating linkspan that can easily be moved from one location to another within the port to cope with varying requirements due to changes in the traffic pattern.

Navire's latest contract for a linkspan installation is with the Port of Shuaiba in Kuwait. Designed by Navire Cargo Gear in conjunction with Shuaiba port officials, this unit is a floating pontoon type that can handle the largest RO/RO ships currently planned. It will be built in Kuwait by Kuwait Shipbuilding and Re-

(continued on page 46)



Operating costs on a tanker like this one can run as high as $2500 per hour. An 8-hour delay in communications costs you $10,400 in bunker fuel costs alone. Satellite communications could help eliminate those costs.

Your ship is a business.

Inmarsat Satellite Communications can make it work harder.

Contact by conventional HF radio can take *8 hours or longer* in some parts of the world.

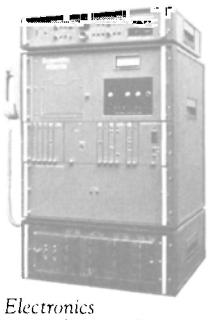
But you can be linked, via the worldwide INMARSAT system, with ships and offshore facilities—*in minutes.*

When situations change overnight, this system lets you react quickly. It could make the difference between profit and loss.

ONE SYSTEM, INMARSAT COMPATIBLE

The 3055M Satellite Communications Terminal is compatible with the new INMARSAT satellite system. It is also versatile, and easy to operate. For example, with voice channel operation, the user simply provides the desired phone number to the shore station operator, who will in turn provide the correct domestic or international telephone connection.

But that's not all. With the 3055M's Data Management Unit option, your home office can obtain readouts on ship location, engine performance, cargo condition, or any other information in a shipboard data storage device.



Electronics are sophisticated yet simple to operate.

EASY TO INSTALL

The 3055M's compact and modular design makes installation simple. The system consists of two main parts:

1. ANTENNA

The antenna, mounted above deck, is radome-protected for rugged duty and is easily adaptable to a variety of vessel configurations; it is self-stabilizing, and features an automatic antenna steering system which insures reliable communications at all times.

Antenna unit is easy to mount, and self-stabilizing even in rough weather.

2. ELECTRONICS PACKAGE

Below decks electronics and power supply units are designed with crowded shipboard conditions in mind. Different components can be mounted separately to suit existing rack space configurations.

For example, the Call Control Unit, which is necessary for normal operating and message handling functions, is mounted in the radio room. It requires only 3½ inches of rack space.

The power supply, the antenna control unit, and the communications electronics unit can be mounted elsewhere. Or, if space permits, they can be stacked together in a compact console.

USED BY COMSAT

The 3055M Terminal was developed in the United States by Scientific-Atlanta, the world leader in the design and manufacture of maritime satellite communications equipment. It is based on the same proven design which we have provided to Comsat General and others.

In fact, starting with our involvement with MARAD in 1973, Scientific-Atlanta has designed, built, tested, and delivered more ship-board terminals than any other manufacturer in the world.

WRITE OR CALL FOR INFORMATION

Clip this coupon for more information on the fastest and most reliable maritime communications system there is, or call us at (404) 449-2939, or 449-2085.

Scientific Atlanta MR
Communications

3845 Pleasantdale Road,
Mail Stop 17-A
Atlanta, GA. 30340

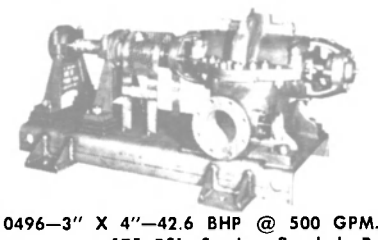
Please send me more information about the Scientific-Atlanta Model 3055M Inmarsat Satellite Communications Terminal.

NAME_____
TITLE_____
COMPANY_____
ADDRESS_____
CITY_____
STATE_____ ZIP_____
BUSINESS TELEPHONE ( )_____
APPLICATION_____

United States: One Technology Parkway, Box 105600, Atlanta, Georgia 30348. Telephone 404-441-4000, TWX 810-766-4912, Telex 0542898
Canada: 1640 Bonhill Road, Unit 6, Mississauga, Ontario L5T 1C8, Canada. Telephone 416-677-6555, Telex 06983600
Europe: Horton Manor, Stanwell Road, Horton, Slough SL3 9PA, England. Telephone Colnbrook (02812) 3211, Telex 849406

4 x 3 WEIL BRONZE CENTRIFUGAL FIRE PUMP
500 GPM @ 100 PSI HEAD
600 GPM @ 3600 RPM
144 PSI — 100 HP

NEW UNUSED



EX U.S.N.

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

WORTHINGTON 300 GPM 150 LB HEAD CENTRIFUGAL FIRE PUMP

NEW UNUSED

EX U.S.N.

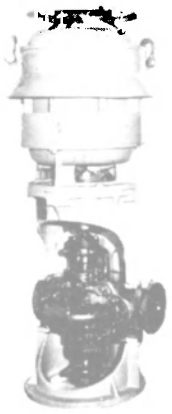
#1223620—3550 RPM—5½" suction—4½" discharge—Imp. diam. 10¾"—test pressure 225 lbs. MOTOR: G.E. model 5K1405Y—60 HP—400/60/3—Frame 405—type K—72 amps—3550 RPM.

BRONZE 2000 GPM PUMP 75' HEAD

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

$1775 EACH

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



NEW UNUSED

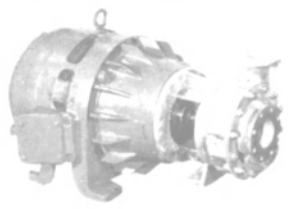
EX-U.S.N.

All Naval bronze. 36.5 BHP—3500 RPM—3" discharge—4" suction. Test pressure 300 lbs. Discharge pressure 150 lbs. Electro Dynamics—Frame FRAC-405—type XNX —#90398—45 HP—3500 RPM 57/5 amps—45° rise—440/3/60.

PUMPS

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

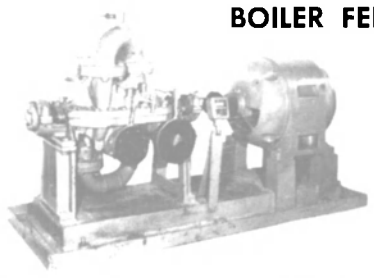
3½" SUCTION



2½" DISCHARGE

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

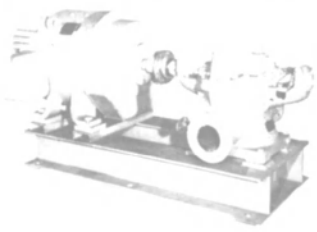
BUFFALO 100 GPM — 980' HEAD BOILER FEED PUMP



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

FAIRBANKS-MORSE 750 GPM — 125 PSI STAINLESS STEEL CENTRIFUGAL SEA WATER FIRE & FLUSHING PUMP

NEW UNUSED

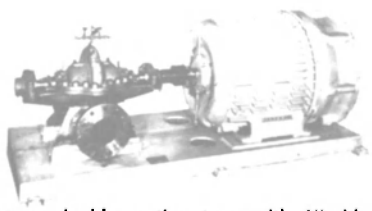


EX U.S.N.

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

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

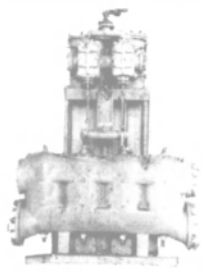
NEW UNUSED



EX U.S.N.

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

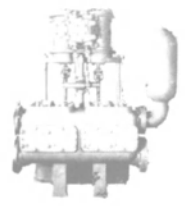
WORTHINGTON 16" X 14" X 18" VERTICAL DUPLEX STRIPPING PUMP



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

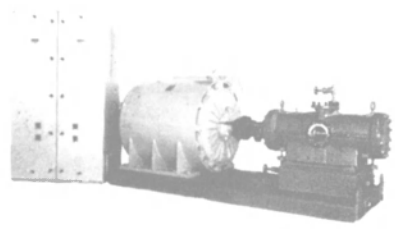
RECONDITIONED 1980 ABS — READY TO GO

STEAM DRIVEN VERTICAL DUPLEX FIRE & GENERAL SERVICE PUMPS



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

700 G.P.M. @ 150 P.S.I.
NEW — UNUSED — EX-U.S.N.
MOTOR DRIVEN ROTARY HORIZONTAL PUMPS
WITH 4-SPEED 440/3/60 MOTOR

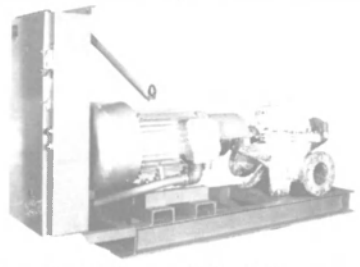


Inlet 8" — outlet 6". Powered by 4-Speed 440/3/60 motor. Motor is 100/75/50/37.5 HP — 1200/900/600/450 R.P.M. Motor has Cutler-Hammer control. Weight 10,000. Inquire for complete details.

FIRE PROTECTION FOR SHIPYARDS !

(Several installed in yards doing Navy work)

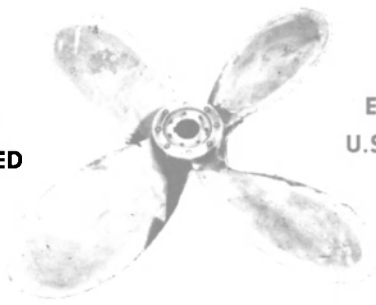
BRONZE FIRE PUMPS 1000 GPM @ 150' HEAD



6" Suction—5" Discharge. 1750 RPM—motor driven—100 HP—440/3/60/1750. Motor control & pump on prefab base for portability. New motor, base and coupling. Gardner-Denver reconditioned pump.

4-BLADE LST BRONZE PROPELLERS

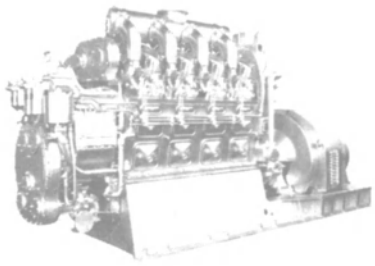
NEW UNUSED



EX U.S.N.

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.

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



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

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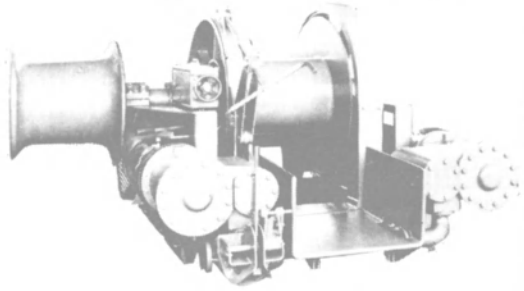
STEAM MOORING WINCHES

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



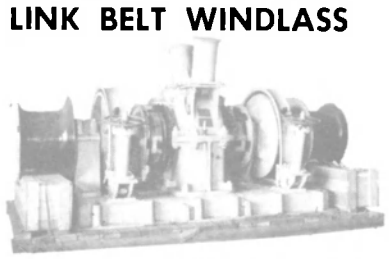
ALSO HANDLES 16,000 LBS @ 150 FPM
OR 50,000 LBS @ 8 FPM

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

ALSO IN STOCK
12" x 14" Double Gypsy Unit

ALL UNITS CAN BE DEMONSTRATED RUNNING

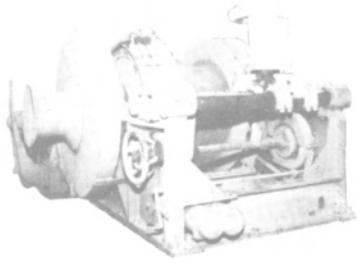
NEW — UNUSED
LINK BELT WINDLASS



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

NEW — UNUSED — EX-U.S.N.

100,000 LB. ALMON JOHNSON
Constant Tension Mooring Winches



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

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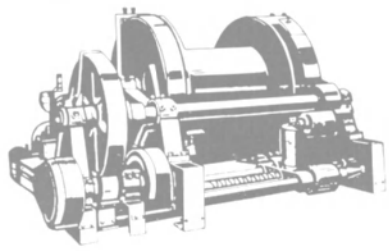
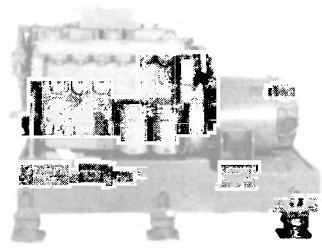
9 X 10 TWIN ENGINE DRIVE
Air or Steam — 125/250 PSI



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

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

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

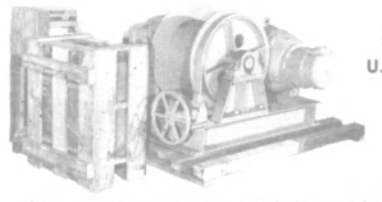


Delco 120 volt DC 500 amp stab. shunt 1200 RPM generator. Engine is GM 6-71 — heat exchanger cooled. Radiator shown is not included.

Reconditioned — Ready To Go.

GENERAL PURPOSE WINCH
3500 LBS AT 200 FPM

NEW UNUSED



EX U.S.N.

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

CARGO WINCH — NEW — UNUSED
2-DRUM 2-GYPSY DECLUTCHABLE

EX U.S.N.

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

NEW HAYWARD
DUPLEX STRAINERS

Cast Steel — (1) 6" — (2) 8"

Bronze — (1) 4"

2 NEW — UNUSED
ACCOMMODATION LADDERS
38' LONG — 24" WIDE

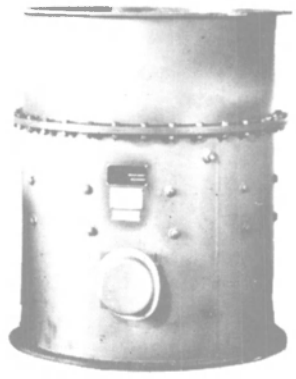
Self-feathering — with handrails on both sides. (Less turntables)

$6750

ROSS COOLER — SIZE 1042

Single pass — with ⅜" Cupro nickel tubes, tube sheets and heads. Steel shell. 2½" water inlet — 2½" oil inlet. Overall length 55" — 38" tube length.

NAVY AXIAL FLOW FANS



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

ALSO 1 20,000 CFM FAN AVAILABLE

NEW — UNUSED
AXIAL FLOW FANS

- 6000 CFM — 3 HP — 440/3/60
- 10,500 CFM — 5 HP — 440/3/60 — 1250 RPM
- 12,800 CFM — 7/1.9 HP — 440/3/60 — 1750 RPM

FAIRLEADS

NEW — UNUSED 4-ROLLER TYPE
UNIVERSAL SHIPBOARD FAIRLEADS

Opening between vertical rollers 10" — between horizontal rollers 4". Roller size 7½" — pin size 2½". Rollers 24" long. Extended legs for welding to deck. All are 18¼" x 33½" at top angled to 44" x 46½" at bottom. ⅞" Steel. Rollers have grease fittings. Plans available on request. SUITABLE FOR VESSELS UP TO 200,000 TONS. WIRE SIZE UP TO 5" CIRCUMFERENCE OR 95 TONS, NORMAL BREAKING STRENGTH. MAXIMUM LEAD 80°.

6 ROLLER TYPE

MOORING FAIRLEADS
WITH 12" CLEAR OPENING

4 Vertical rollers — 5½" diameter—2 horizontal rollers—5½" diameter, split to enable working from either end of fairlead. Steel sideframe ⅞"—top & bottom 1". Handles 1½" wire easily—up to maximum lead 80°.

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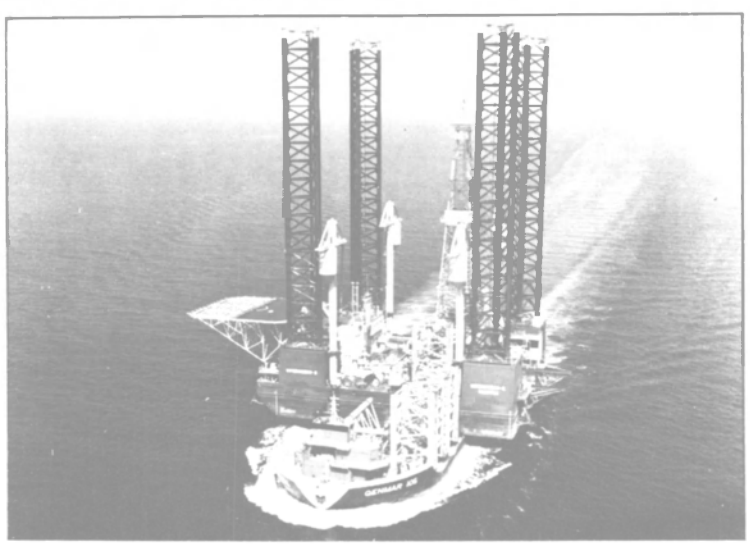
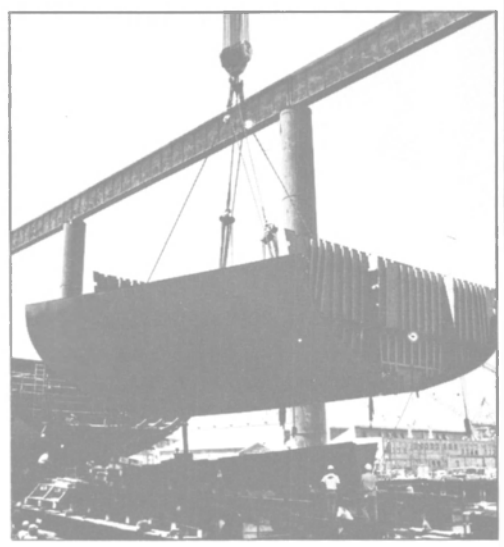


GREAT LAKES

SHIPYARDS



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MARITIME REPORTER AND ENGINEERING NEWS

Cargo Handling Equipment — Navire

(continued from page 40)

pairyard Company; delivery of the unit to the Shuaiba Area Authority is scheduled for April 1982.

For further information on Navire's full product line,

Write 44 on Reader Service Card

PACECO

Paceco, Inc., a subsidiary of Fruehauf Corporation, a major manufacturer of container-handling cranes, recently completed its move from Alameda, Calif., to Gulfport, Miss. Paceco has invested more than $26 million in expanding its 100-acre fabrication facility during the past two years. The facility has in excess of 10 acres of under-roof fabrication area, including a new 58,-800-square-foot, air conditioned machine shop.

The fabrication area is connected by rail to a new 38,650-square-foot, environmentally controlled metal preparation and coating facility, and within walking distance of the new three-story headquarters building. The Paceco plant, one of the largest and most modern of its kind, is located on the Harrison County Industrial Seaway.

Activities at the plant include heavy steel fabrication of container-handling, bulk-handling, and heavy-lift cranes for onshore and offshore applications, as well as contract manufacturing and fabrication for the offshore industry including complex subassemblies that require sophisticated machining capabilities. Paceco licensees are located in Japan, Korea, Canada, Italy, Africa, England, France, Australia, Brazil, and Spain.

Paceco and its licensees produce the Portainer® ship-to-shore container cranes with maximum capacities of 51 tons, suitable for rail spans of 36 to 164 feet, as well as high-speed "Mach" cranes that can be fully automated. Models available include A-frame, modified A-frame, low profile, articulated boom, and economy feeder port model. All are available with adjustable lifting spreaders. Rotating trolleys are also available.

Also in the Paceco line is a range of rubber-tired and rail-mounted Transtainer® gantry type cranes for container terminal operations. The basic range has maximum capacities of 40 tons with spans up to 77 feet. Rail-mounted Transtainers have spans up to 164 feet. The standard rubber-tired units span six rows of containers stacked four or five high plus a truck lane. Design features include 90-degree change of travel direction to facilitate changing stacking lanes or areas. Options include automated steering and other features compatible with computer link or automated terminal design.

Paceco also produces a large number of Shipstainer shipboard gantry type container cranes. These are normally installed when vessels are trading with ports where no shoreside container-handling facilities are available. In addition, a range of heavy-lift cranes is available for barge or ship mounting. These large revolving-boom cranes have lifting capacities from 250 to 3,000 tons.

For additional information on Paceco cranes,

Write 45 on Reader Service Card

PECK & HALE

Peck & Hale is celebrating its 35th birthday—35 years of service to the marine and other in-

(continued on page 48)

We're big enough to do the job and small enough to care!

There are a lot of people that make up Southwest Marine. Each one is important to the care and welfare of every ship that enters our yard. We're capable of large ship repair work for we have dry dock capacity up to 22,000 tons. We're capable of accepting ships anywhere along the west coast for we have yards in San Diego, San Pedro and San Francisco, but most of all we have people who care. When we set your ship back into the water, you can be sure it's done with pride, craftsmanship and satisfaction of a job well done.

SOUTHWEST MARINE, INC. / THE SHIPCLINIC

SPECIALISTS IN THE REPAIR, MODERNIZATION & MAINTENANCE OF SEAGOING VESSELS

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SAN FRANCISCO YARD – P.O. Box 7644 (Pier 28), San Francisco, CA 94120 (415) 543-0499

Cargo Handling Equipment — Peck & Hale

(continued from page 46)

dustries with a complete and successful line of cargo handling and securing equipment.

Within the marine sector, the company's redesigned and patented "Breech Base" system provides vessel operators with additional versatility. The breech base socket may be fitted with stackers for normal container stowage, with D rings for ro/ro operation, and with a flush cover for protection during bulk loading. The use of breech base securing points allows maximum strength and flexibility with a minimum of components.

Peck & Hale is contributing to the trend for minimized lashings with a new high strength securing system and the ability to more effectively evaluate stowage weights by means of a detailed computer generated dynamic analysis, geared to the requirements of such classification societies as Germanischer Lloyd.

Another major contribution is a new product line specifically developed due to the growing concern for safety in ro/ro lashing applications.

Peck & Hale maintains a worldwide distributor network, enabling ship operators to procure replacement parts at most major ports throughout the world. Recent additions to the system include Australia, New Zealand, Germany, Puerto Rico, Houston, Savannah, Jacksonville, Miami and Philadelphia.

For a catalog on the complete Peck & Hale line,

Write 46 on Reader Service Card

RAYTHEON OCEAN SYSTEMS

Raytheon Ocean Systems of East Providence, R.I., has been successful in marketing one of the most effective and popular vessel loading instruments.

LOADMAX provides a fast, easy method of planning optimum loading for any type of ship. It rapidly calculates and displays accurate draft, hull strength and stability data for any loading condition. Raytheon reports this instrument is as simple to use as a desk calculator. Tonnage distribution and calculated results can be read at a glance. Elements which could possibly cause confusion such as knobs, thumbwheels and cluttered CRT displays have been eliminated.

Designed for the particular operating requirements of a specific ship, LOADMAX combines numeric tonnage displays with an easily understood mimic diagram of the vessel. A separate graphic display shows whether the ship is in hogging or sagging condition and if sheer force or bending moment limits are being exceeded.

An extremely reliable system with a proven record, LOADMAX provides a vessel owner with the means for fast, efficient vessel loading with maximum safety.

For a free brochure completely describing LOADMAX,

Write 47 on Reader Service Card

SALZGITTER-KOCKS

Salzgitter-Kocks G.m.b.H. of Bremen, West Germany, is one of the world's largest and best-known designers and manufacturers of deck machinery and cargo handling equipment. They are represented in the U.S. by Marine Technical Associates (MTA), 195 Paterson Avenue, Little Falls, N.J.

The Salzgitter-Kocks product line includes cranes of all types, including deck cranes, container loading/unloading cranes, container starting cranes, dockside cranes, shipyard cranes and floating derricks. Hook capacities for the deck cranes range from 3 to 200 tons. Outreach is from 10 to 30 meters.

The company also specializes in designing special individual cranes or custom crane systems to meet any requirement.

In addition to cranes, the com-

(continued on page 50)

MTU: know us by the company we keep

Time after time, in application after application, the leaders in the offshore industry specify MTU marine diesel engines for their crew/supply boats. The many exceptional reasons include its low fuel consumption, high power output, operational safety and durability, low weight and compactness, and a reliable service organization.

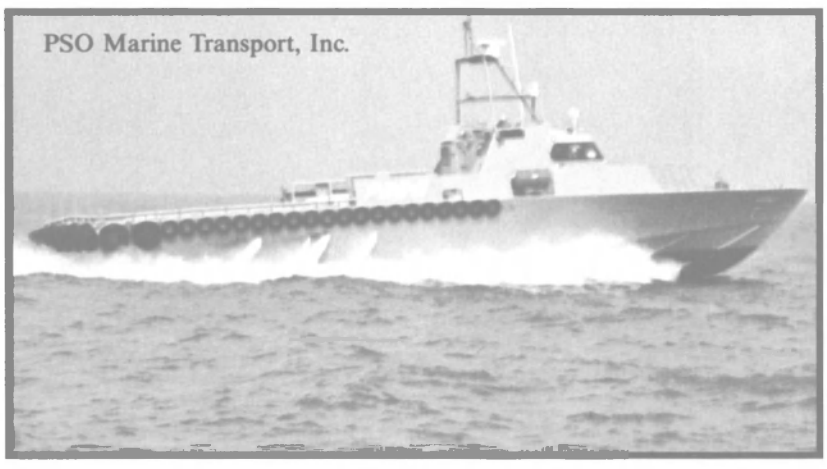
Our 4-cycle engine, by its very nature, consumes less fuel than any comparable engine. This fact is even more impressive when you consider the ever increasing fuel costs.

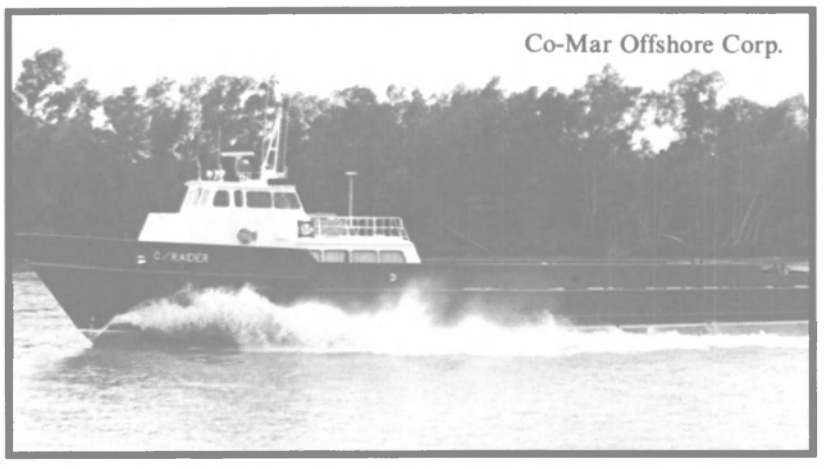
MTU high performance diesels can be used on continuous duty. This comes as no surprise since MTU diesels lead the world market in operational safety and durability in the field of high speed transportation. You can't get anywhere faster or safer than with MTU.

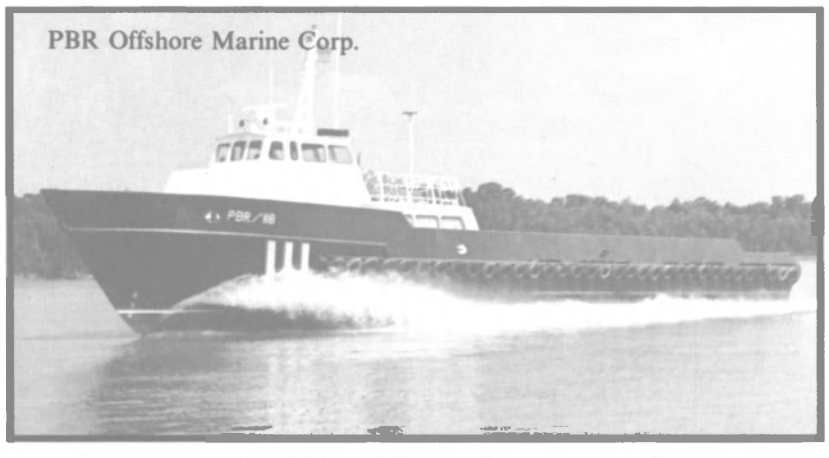
Ease of installation is due primarily to the design, low weight and compactness of the engines. In addition, MTU offers complete service/parts back-up and a proven service/parts exchange program for any area of the world. The reliability of an MTU engine is unsurpassed due to the rugged quality control tests and checks performed on each one. Our demands on every engine are far greater than those of our customers.

Decades of testing and technology are responsible for the quality of our engines and the success they have had as industry leaders.

No other engine manufacturer can make the claims we do and back them up. And with fuel and other operating costs rising almost daily, MTU marine diesel engines make more sense than ever. You can tell by the company we keep.


PSO Marine Transport, Inc.


Co-Mar Offshore Corp.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10450 Corporate Drive, Sugar Land (Houston), Texas
77478 Phone: (713) 491-4140, Telex: 791201

Cargo Handling Equipment — Salzgitter-Kocks

(continued from page 48)

pany manufactures a complete line of shiploaders, conveyor belt systems, conveyor belt stackers, bucket wheel loaders/reclaimers, and blending facilities.

A full line of anchoring and mooring equipment is also offered, including windlasses, chain stoppers and capstans.

Electric, hydraulic, steam, or diesel drive winches are available, some up to 250 tons pull.

A notable installation of Kocks in the United States is the container cranes at the Port of Savannah, Ga.

A 62-page catalog is available describing the full Salzgitter-Kocks line. It includes photos, drawings, specification tables, dimensions, etc. For a free copy,

Write 35 on Reader Service Card

SIWERTELL

AB Siwertell of Sweden custom designs and builds ship unloaders that can discharge a wide variety of materials from dry bulk carriers. The company is represented in the United States by Salwico, Inc. of Hoboken, N.J. Compared with pneumatic systems, the Siwertell unloader offers additional features such as: considerably lower power requirement; reduced maintenance and cost for air filters; and ability to handle a wider range of materials.

Free-flowing materials that have well-defined angle of repose are unloaded easily by the Siwertell system. These include granules such as grains, fertilizers, nuts, and soy beans, and particles such as alumina, rock phosphate, and soda ash. The system also handles materials that can form steep-angled banks and hard crusts and for which digging power is essential. Examples are powders such as cement, flour, lime, and potato starch; granules such as pellets; and particles including bauxite, coal, coke, salt, sulphur, and wood chips.

The Siwertell screw conveyor transports the material vertically to the boom, where it is discharged into a horizontal screw conveyor between the outer end of the boom and the center of the slewing tower, from which it is fed down through the slewing ring. From this point, transportation is arranged to suit local requirements. Capacity range is normally 100 to 1,000 tons per hour, but higher capacities can also be economical, depending on the material handled and the size of the ships. Being a closed system, it presents no air pollution problems when fine powders are handled.

A Siwertell ship unloader delivered to Rinker Materials Corporation in Port Canaveral, Fla. has a capacity of 600 tons per hour (cement), is operated from a portable controller, and can unload ships of up to 30,000 dwt.

For additional information and free literature on the Siwertell ship unloader,

Write 48 on Reader Service Card

SKAGIT

Skagit's Series 300 pedestal cranes are the latest in a long line of offshore cranes designed and manufactured by the Sedro-Woolley, Wash. company, a division of Continental Emsco Company. Each is a product of 25 years of practical experience, research, and development of offshore cranes. Since Skagit built its first offshore crane for the U.S. Air Force in 1956, it has developed more than 25 different models and built more than 150 separate crane units.

Tubular lattice booms 60 feet long come standard with all Series 300 cranes. Using 20-foot boom sections, a maximum length of 120 feet can be obtained. Boom sections are pin-connected and easy to assemble; a 5-foot whip extension with single sheave is provided. Boom design conforms to ABS and API design criteria.

The 300 offers operator comfort, ease of control, and quick response. Controls and gauges are placed to make every move, every

lift as easy and as smooth as possible. Visibility from the cab is outstanding, and tinted safety glass helps keep eyes from tiring in the sun. Signal horn, windshield wipers, and catwalk railings are just a few of the standard safety features.

For more information and a free full-color brochure on the Skagit Series 300,

Write 49 on Reader Service Card

UNIT CRANE

Unit Crane & Shovel Corporation of New Berlin, Wisc. has a brochure available describing a variety of pedestal-mounted Unit Mariner cranes that offer economical, dependable solutions to most marine handling problems, including offshore oil platforms, drilling vessels, workboats, supply vessels, dredges, and barges, as well as dockside cargo handling. Sales and service of Unit Mariners to the offshore industry are handled by Offshore Crane & Equipment, Inc. of Houston and New Orleans.

Every Unit Mariner crane, hydraulic or mechanical, is designed to meet API standards; several meet or exceed ABS specifications. All are available with diesel or electric prime movers. Load capabilities range from 5 to more than 65 tons—a range to fit the greatest number of jobs — with emphasis on big lifting capacities at long radii.

The model 650-H is the heavyweight of Unit Mariner offshore cranes. It has a lift capacity of more than 65 tons, a reach up to 150 feet, and spooling capacity of more than 1,760 feet. The 40-foot-tall A-frame design provides the capability for larger and exceptionally useful lift capacities at extended boom radii. For positive environmental protection, all structural members are blasted to bare metal, then covered with a three-coat anti-corrosion system.

The hydraulic Unit Mariner 150-H, with trim dimensions, can be mounted where many other cranes could not fit. The separate power package can be placed anywhere up to 50 feet from the crane, and can serve two cranes. The 150-H has a nominal lift capacity of 15 tons, and exceptional capacity at long radii.

For brochures and literature on Unit Mariner cranes,

Write 50 on Reader Service Card

WIJSMULLER

Wijsmuller's semi-submersible heavy-lift vessel Super Servant recently crossed the Atlantic with an unusual cargo — a complete floating generating station. After unloading at Baton Rouge, La. on the Mississippi, the plant was towed some 1,600 miles upriver to its final destination, where it will generate electricity for the

entire town of Vanceburg, Ky., located on the Ohio River.

Towing the plant across the Atlantic by tug would have been a difficult operation, but the self-propelled Super Servant is specially designed to load and transport all kinds of heavy and awkward cargo. The vessel can be submerged to a maximum depth of about 19.7 feet over its entire cargo deck to float cargo aboard, while cargo can also be loaded on to its flush deck by the roll-on/roll-off method.

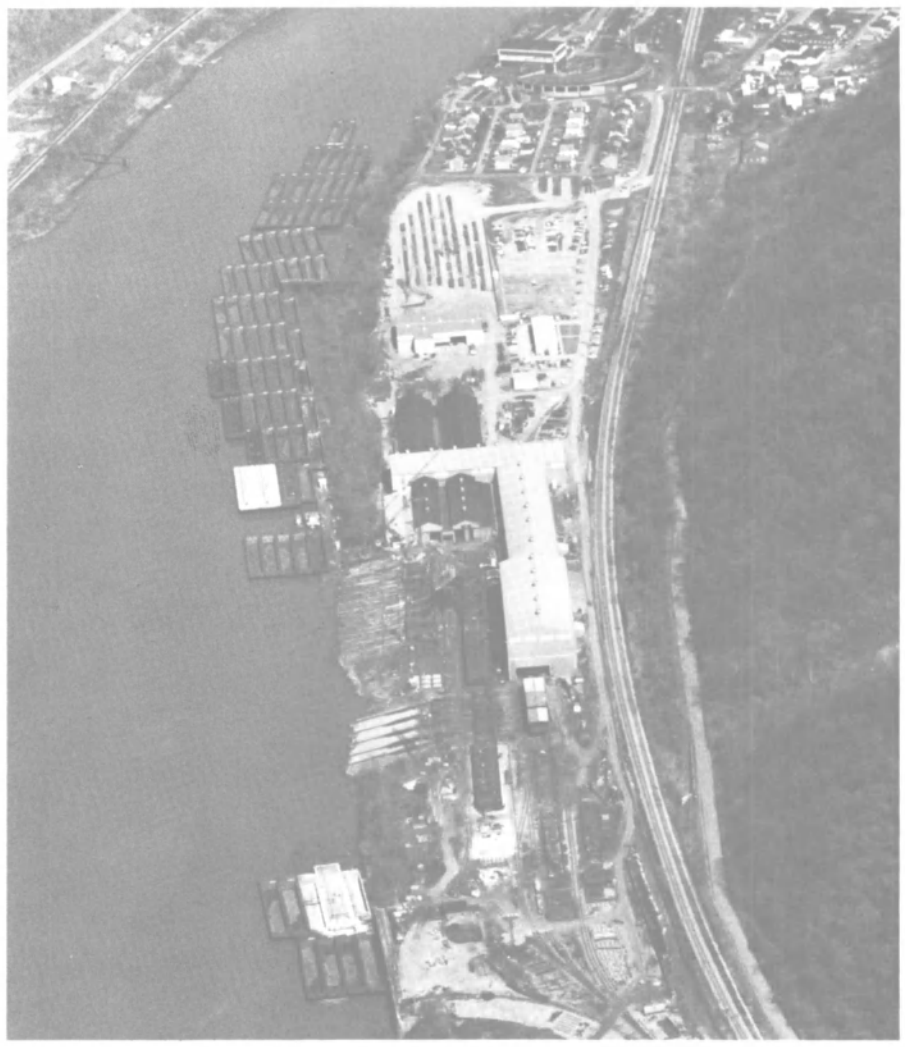
The generating plant was built by Alsthom-Atlantique, the French electrical engineering and shipbuilding group, at St. Nazaire. The entire loading operation took place in the dock where the plant had been built in eight months, demonstrating the flexibility of the Super Servant class of vessel.

Heavy-lift specialists Wijsmuller, headquartered in Ijmulden, Netherlands, have three semi-submersible vessels in service, with two more on order in Japan.

For more information on Wijsmuller's operations,

Write 51 on Reader Service Card

65 Coal Hopper Barges Delivered By HBC Barge, Inc.



HBC Barge, Inc., Brownsville, Pa., has recently delivered 65 coal hopper barges to American Electric Power. The barges will be in service on the Kanawa River. Built to American Electric Power's standards and specifications, the barges have special design features to meet the company's operating requirements. Each barge measures 175 feet by 26 feet by 11 feet.

Christen First Of 12 Supply Boats For Golden Gulf Marine

The M/V Golden Gulf (shown above), a 180-foot long-range supply boat built by Moss Point Marine, Escatawpa, Miss., was christened recently at ceremonies held at the Poydras Street Wharf, New Orleans, La.

The new vessel, designed to service the offshore oil industry, is owned by California-Gulf Partnership, with Golden Gulf Marine Corporation as managing general partner. Boson-JMJ Marine Corporation, New Orleans, will be the operator, under the direction of **Richard Desonier**, president.

The Golden Gulf has a 40-foot width and working deck space of 4,500 square feet. It can transport a deck load of 550 long tons, and has a liquid mud capacity of 1,500 barrels and dry mud capacity of 3,600 cubic feet.

According to Boson-JMJ Marine Corporation, the Golden Gulf will run with a crew of seven, with accommodations for 16. Fuel capacity is 57,000 gallons, with 11,200 gallons of potable water aboard.

The Golden Gulf is the first of 12 vessels to be built for Golden Gulf Marine Corporation by Moss Point Marine. It is the ninth vessel completed by the shipyard since its establishment less than a year ago, according to **John Dane III**, president of Moss Point Marine.

Shown above at the christening of the M/V Golden Gulf, left to right: **John Dane III**, president, Moss Point Marine; **J. Michael Jones**, chairman/CEO, Golden Gulf Marine Corp.; and **Mrs. J. Michael Jones**.

Christening the M/V Golden Gulf was **Mrs. J. Michael Jones**, wife of **J. Michael Jones**, chairman and chief executive officer of Golden Gulf Marine Corp.

Lavino Shipping Company Purchased By Management From Corporate Parent

Lavino Shipping Company, Philadelphia, Pa., announced recently that it had been purchased from E.J. Lavino and Company, its corporate parent, by an investment group represented by the shipping company's current management.

F.H. Muldoon, president of Lavino Shipping Company, will be chairman of the new corporation which will continue to use the Lavino Shipping Company name. **Craig N. Johnson,** vice president of corporate development, and **William J. Neumann,** vice president of finance and administration, will maintain their responsibilities and serve as directors of the new organization.

In announcing the purchase, Mr. **Muldoon** said that "The sale is a positive step for each company. The 61-year operating relationship between E.J. Lavino and Company and Lavino Shipping Company has been positive and profitable. Now both parent and subsidiary will be better able to concentrate on specialized lines of commerce.

"The current transition provides continuity of leadership to Lavino Shipping Company and a guarantee that its reputation for excellent service will be maintained. All current services and facilities of the company are to be continued. The integration of ownership and management will allow Lavino Shipping Company the greatest flexibility to explore all profit opportunities in the specialized transportation and logistics field," Mr. **Muldoon** stated.

No sales price was disclosed for the transaction. Lavino Shipping Company, founded in Philadelphia in 1920, offers agency, chartering, cargo packing, project marshalling, cartage, stevedoring and terminal operations to shippers, vessel operators, importers and explorers in 14 U.S. cities.

MacGregor Houston Relocates And Expands

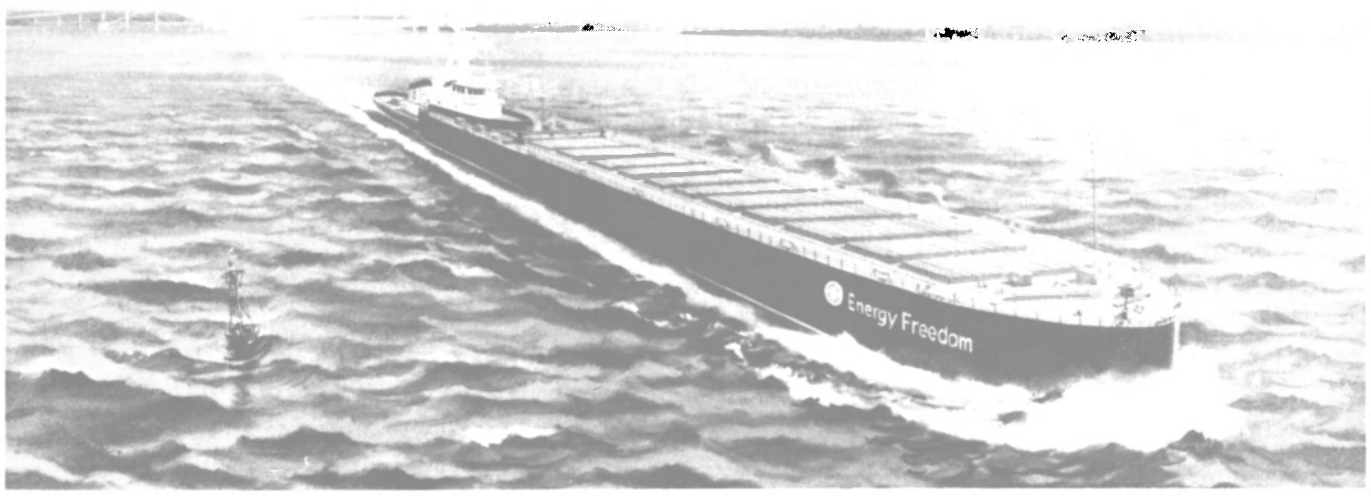
Doug Comer, operations manager for MacGregor Land & Sea Houston, has announced that due to the rapid expansion of business since opening the MacGregor office in Houston three years ago, it has become necessary to relocate and expand their office and repair facilities. The new location contains approximately 45,000 square feet, which will house not only inventory of MacGregor spare parts and metric hoses and fittings, but will also contain repair and fabrication facilities for steel fabrication, hydraulic, and general repairs. The new address is 5737 Ransom, Houston, Texas 77087; the telephone number will remain (713) 641-3506.

Pickands Mather Promote Several At Cleveland And Duluth Offices

Pickands Mather & Co., Cleveland, Ohio, has announced several managerial promotions in its Cleveland headquarters and Duluth, Minn., field office.

In Cleveland, **Jay T. Ansberry,** vice president and controller, has been named vice president-administration. **Robert W. Biggs,** treasurer, has been appointed vice president and treasurer. **Ralph E. Berger,** assistant controller-managed properties, has assumed the responsibilities of controller. **Thomas J. Manthey,** director of public affairs, has been appointed assistant vice president-public affairs. **Charles L. Matson,** manager of purchasing, has been named general manager-purchasing and traffic. **Cynthia B. Bezik,** financial analyst, has assumed the responsibilities of manager-financial analysis.

At PM's Duluth office, **Philip D. Brick,** public affairs attorney, has been appointed director of public affairs and will transfer to Cleveland. **Thomas W. Hayes,** public affairs supervisor, has assumed the responsibilities of director of public affairs-Lake Superior district.



Artist's rendition of the Energy Freedom and the M/V Gulf Majesty.

Energy Freedom Christened At Bay Shipbuilding Corp.

The Energy Freedom coal barge was christened by officials of New England Electric System during ceremonies at Bay Shipbuilding Corp. in Sturgeon Bay, Wis.

The Energy Freedom is a deep-notch tug barge built by Bay Shipbuilding Corp. to carry domestic coal from ports along the Eastern Seaboard to New England Electric's generating stations in southern New England. The barge will be owned and operated by Universal American Shipping Corporation of Greenwich, Conn.

"We chose the name Energy Freedom for this barge because it represents New England Electric's continuing goal to reduce dependence on foreign oil. Our corporate plan, NEESPLAN, is reducing our oil reliances from 79 percent in 1979 to less than 30 percent by the end of this year, and to less than 10 percent foreign oil in our mix by 1985. The Energy Freedom will contribute to this goal and is a vital link in our plan for independence, "said **Guy W. Nichols**, chairman of New England Electric.

New England Electric has chartered the barge from Universal American Shipping Corporation to carry coal from the ports of Hampton Roads, Baltimore and Philadelphia to its Brayton Point Station in Somerset, Mass., and Salem Harbor Station in Salem, Mass.

"The barge will make its first coal delivery to our plants in New England in early September. Every eight days thereafter, it will deliver 34,000 net tons of coal to our generating stations. In its first year of service, the coal it will carry will displace five million barrels of oil which will save our customers an estimated $50 million on their electric bills," Mr. **Nichols** reported.

The Brayton Point generating station is currently undergoing a $180-million conversion from oil burning to coal burning. Two of the generating units at the plant already are burning coal and a third unit will be converted to coal burning by the end of 1981. When fully converted, coal burning at the station will save 12 million barrels of oil per year and approximately $169 million for the customers of New England Electric's retail companies.

New England Electric also plans to convert three generating units from oil burning to coal burning at its Salem Harbor Station. When the conversion is complete by 1985, it is expected to save $54 million in fuel costs for customers and three million barrels of oil per year.

Together, the two plants will burn 3.7 million tons of coal per year.

Mr. **Nichols** praised the cooperation of the builder of the barge, Bay Shipbuilding Corp., a subsidiary of The Manitowoc Company, Inc., for the speed and the quality of their construction efforts. Bay Shipbuilding designed, engineered and built the Energy Freedom in the record time of nine months from date of contract commitment. The Energy Freedom is the third of five ocean carriers recently contracted to be built by Bay Shipbuilding Corp. for various customers.

The barge has an overall length of 550 feet, beam of 78 feet, a total hold capacity of 1.5 million cubic feet, and a summer deadweight of 33,700 tons. The 7,200 brake horsepower tug Gulf Majesty will push the barge from a 60-foot stern notch at an estimated speed fully loaded of 10.4 knots.

In attendance at the christening of Energy Freedom, from left: **George K. Geiger**, president, Bay Shipbuilding Corp., and his wife, **Carol**; **Mrs. Joan T. Bok**, vice chairman of New England Electric System, vessel sponsor; **Karl L. Meyer**, president, Universal American Shipping Corporation, and his wife, **Judy**; and **Guy W. Nichols**, chairman, New England Electric System.

Burton Shipyard Inc. Names Three Officers

As a part of a complete reorganization, Burton Shipyard, Inc., Port Arthur, Texas, recently announced the following appointments: **Gene M. Woodfin**, chairman of the board and chief executive officer; **Nathan M. Smythe**, president and chief operating officer; and **Ronnie Moerbe**, vice president and general manager.

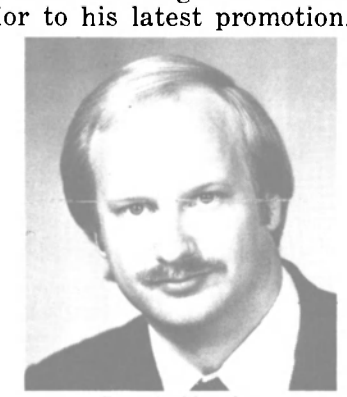
Gene M. Woodfin

Mr. **Woodfin**, an attorney, retired in January 1981 from Marathon Manufacturing Co. as chairman of the board and chief executive officer.

Nathan M. Smythe

Mr. **Smythe** started his marine career at Newport News Shipbuilding and Dry Dock Co. in 1941. Following Newport News he worked at Higgins Industries, Avondale Shipyards, Ingalls Shipbuilding Division, Litton Industries, Equitable Shipyards, Inc., and Alabama Drydock and Shipbuilding Co.

Mr. **Moerbe** was chief estimator and chief engineer at Burton prior to his latest promotion.



Ronnie Moerbe

Burton Shipyard, Inc. has specialized in the offshore supply-tug type vessels, having delivered more than 100 vessels of this type to the trade. Currently, Burton is engaged in the construction of seven tuna purse seiners for Van Camp Sea Foods of San Diego, Calif. One hull has been delivered, with another scheduled for delivery Oct. 1, 1981.

Taubler And Mullahy Promoted At Delaware Marine & Mfg. Co.

Paul A. Taubler has been elected a vice president of Ocean Technology, Inc. of Milford, Del., the parent firm of Delaware Marine & Manufacturing Co.

Mr. **Taubler** joined the engineering department of Delaware Marine in 1975 as a draftsman and became chief of engineering in 1978. As vice president he will be responsible for project coordination, scheduling and overall supervision of construction planning.

Prior to joining Delaware Marine, Mr. **Taubler** was employed as an engineer for the naval architectural firm of Richard R. Taubler, Inc., a position he still holds.

James L. Mullahy has been promoted to the position of chief engineer. Mr. **Mullahy** joined the engineering department of Delaware Marine in 1980. In addition to supervision of design work he will be in charge of special projects and quality control.

Prior to joining Delaware Marine, Mr. **Mullahy** worked for Yank Boat Works, Tuckahoe, N.J., and the architectural firm of John Milner Associates, West Chester, Pa.

Delaware Marine & Manufacturing Co. builds tugboats, supply boats, fishing vessels and similar craft at its shipyard in Milford, Del.

$3.6-Million Navy Sub Contract Awarded EG&G

EG&G Washington Analytical Services Center, Rockville, Md., was awarded a $3.6-million contract by the U.S. Naval Sea Systems Command, Arlington, Va., to provide system engineering and integrated support to the Trident submarine program.

Technical support will include electronic and computer science engineering. The contract specifically covers ship and integrated command and control system work on the Trident missile firing submarine. This contract follows earlier work by EG&G WASC on the submarine-based Trident missile systems having nuclear warhead capabilities.

EG&G Washington Analytical Services Center (EG&G WASC) is a subsidiary of EG&G, Inc., a Fortune 500 corporation headquartered in Wellesley, Mass.

134 Worthington Pumps Chosen For 3 Exxon Product Tankers

One hundred thirty-four cargo and ballast pumps for three product tankers being built for Exxon (U.S.A.) by Avondale Shipyards, New Orleans, La., will be supplied by the Shawnee, Okla., plant of Worthington Group, McGraw-Edison Company.

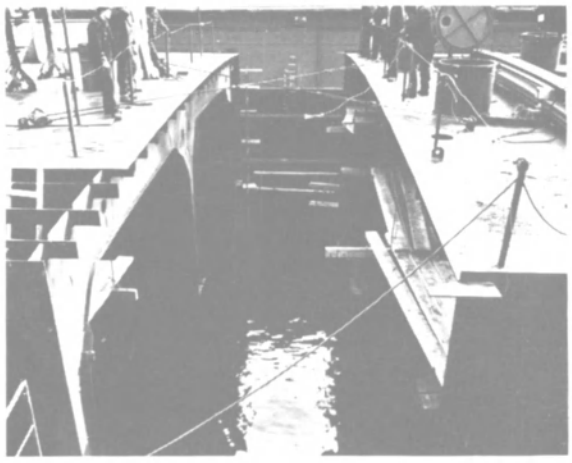
The special marine cargo pumps plus spare parts included in the multimillion-dollar order, will be delivered in 1982. The three 42,000-dwt product carriers are scheduled to be delivered in 1983 and 1984. Later this year, Worthington will test for Exxon a highly efficient new stripping system designed to reduce the amount of liquid product remaining on tank surfaces after unloading.

Phila. Naval Shipyard Contracts Phillyship For Boiler Repair/Overhaul

Phillyship, Philadelphia, Pa., an international firm specializing in ship and engine repairs, was recently contracted by the Philadelphia Naval Shipyard (work order #4ND-045-81) to repair and overhaul a 600-pound CA-68-class marine boiler. The project, in excess of $500,000, has started and will continue into the fall of 1981.

The project will be implemented on a 24-hour, seven days a week basis. According to Phillyship president **Joel H. van Diepen**, OSHA-qualified technicians will utilize state-of-the-art techniques for the removal of asbestos, which is taking place before the commencement of the mechanical part of the contract.

Halifax Yard Completes First Ship Lengthening Contract



A closeup of M/V James Transport after she had been sliced.

The Canadian ship repairer Halifax Industries Limited, Nova Scotia, recently completed its first lengthening contract.

The contract was to lengthen the 4,700-grt products tanker M/V James Transport, owned by Halco Inc. of Montreal, by inserting a new 40-foot-long midbody section at a cost of approximately one million (Canadian) dollars.

The job was carried out at Halifax Ship yards in the company's floating dock, Scotiadock, and on completion provided the vessel with four additional cargo tanks.

After gas freeing and internal removals and disconnections, the James Transport was cut in two. The floating dock was then submerged enough to allow the bow section to be floated apart from the stern section. The floating dock was then raised to its normal position with the two sections 55 feet apart.

The new prefabricated 200-ton midbody section was then lifted into the dock in two sections — upper and lower — by means of Halifax Industries' floating timberland crane.

The new section was aligned and joined to the stern section of the vessel before Scotiadock was again flooded to allow the bow section to be floated back to the rest of the vessel.

After alignment, the two sections were welded and internal modifications completed. The job took approximately 10 weeks to complete.

The new length of the M/V James Transport is 411 feet, her breadth is 55 feet, and depth 27.5 feet.

Prefabrication of the new midbody section coincided with the completion at Halifax Shipyards of the yard's six-million-Canadian-dollar steel fabrication improvement program, which included a new panel welding line, a new numerically controlled burning machine, and an advanced surface treatment line.

Wartsila And Keppel Shipyard To Manufacture Diesels In Singapore

Oy Wartsila Ab, Finland, and Keppel Shipyard, Singapore, in a joint venture have formed Wartsila Power Singapore (Pte) Ltd., for the manufacture of diesel engines in Singapore. The company will produce and market Vasa 22 diesel engines and handle the marketing of other Wartsila engine types in ASEAN countries and the Far East.

Clas-Eirik Strand of Wartsila's Vasa Factory has been appointed managing director of the company. Mr. **Strand** joined the Vasa Factory in 1975, and has acted as technical manager of the Diesel Department since 1980. He will move to Singapore next year.

Bjorn Chydenius has been named assistant managing director of the company. Mr. **Chydenius** has been in charge of the Wartsila Singapore Office since 1977, and will continue in that position.

Pertti Hekkala, sales manager at the Vasa Factory, will be marketing manager of the new company.

MarAd Awards $280,000 Research Contracts On Marine Use Of Coal

The Maritime Administration (MarAd) has awarded three research contracts relating to the use of coal as a marine fuel. The total cost of the research will be $280,000.

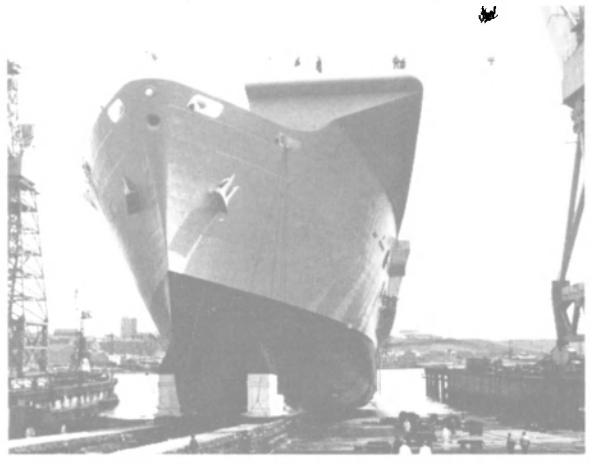
The largest contract, for $116,000, was awarded to ECON, Inc., Princeton, N.J., and Parsons-Brinckerhoff, New York, N.Y., to investigate alternatives for providing coal bunkers in various U.S. ports. The study will evaluate factors such as the cost of capital, real estate, operations, and taxes.

Santa Fe Corp., Alexandria, Va., was awarded a $91,000 contract to analyze the maintenance and repair requirements of coal-fired steam-turbine propulsion systems. The study is expected to cover spare parts requirements, failure rates for major components, the shipboard man-hours required for routine and preventive maintenance, and other elements affecting the in-service performance of these systems.

A $73,000 contract was awarded to VERSAR, Inc., Springfield, Va., to assess environmental factors influencing the use of coal as a marine boiler fuel. The study will examine the effects of stack gas emissions and ash discharge from coal-fired ships on the environment. It will be based on a selected scenario and profile of vessels servicing ports and international trade routes.

All three studies are scheduled to be completed in early 1982.

Launch Carrier 'HMS Ark Royal' To Be Completed By Mid-'80s



HMS Ark Royal, the Royal Navy's latest antisubmarine aircraft carrier (above) is pictured after her launch from the Swan Hunter yard on the River Tyne in northeast England recently.

The last Invincible-class through-deck cruiser to be built, HMS Ark Royal has an expected completion date of 1985. The ship will be used as an offshore base for vertical take-off Sea Harrier fighter aircraft and Sea King antisubmarine helicopters. It will also be a communications center from which to control surface escorts and coordinate operations with Royal Air Force (RAF) Nimrod maritime patrol aircraft.

The ship, which was launched by Her Majesty **Queen Elizabeth** and the Queen Mother, is the fifth to bear the name Ark Royal and — at over £200 million — is the most expensive warship ever built for the Royal Navy. It has an overall length of approximately 676 feet (206 meters), beam of 105 feet (32 meters), and will accommodate over 1,000 officers and men.

Balder Fleet Adding 12 New Vessels For Offshore Service

The Balder Offshore Fleet, owned by Parley Augustsson & Co., Oslo, Norway, will expand its operational capability by the addition of 12 new ships due for delivery during the next 18 months.

These additional ships, all Ulstein's 700 Series designs, the first of which has already been delivered, will comprise two type UT 706 platform supply/diving support vessels and 10 type UT 704 anchor-handling, tug, supply vessels.

Balder Offshore, whose current fleet strength numbers seven vessels operating in the North Sea area and offshore Canada, includes four vessels equipped with moonpools and dynamic positioning to permit dual role operation in either diving support or platform supply modes.

Annual Meeting Of NWC To Be Held In St. Louis September 16-18

More than 500 leaders from business, government, and waterway user companies are expected to attend the 21st annual meeting of the National Waterways Conference scheduled for September 16-18 at Stouffer's Riverfront Towers, St. Louis, Mo.

Conference chairman **James A. Skinner Jr.** of Nashville, president of T.L. Herbert & Sons, Inc., announced that Secretary of Transportation **Drew Lewis** will deliver the main address. Other guests participating in the program include **William R. Gianelli,** Assistant Secretary of the Army (Civil Works), Missouri Governor **Christopher S. Bond,** Adm. **John B. Hayes,** Commandant, U.S. Coast Guard, and Maj. Gen. **E.R. Heiberg III,** civil works director, Army Corps of Engineers.

The National Waterways Conference was founded in 1960 to promote a better understanding of the public value of the American waterways system. The theme for this year's three-day meeting is "National Economic Recovery: The Vital Role of American Waterways."

The 1981 conference will host concurrent meetings of four other organizations: the American section of the Permanent International Association of Navigation Congresses, the Arkansas Waterways Commission, Inland River Ports and Terminals, Inc., and the Propeller Club of St. Louis.

Mr. **Lewis** will be the keynote speaker at the opening luncheon on Thursday, Sept. 17. He will discuss "America's New Beginning: Shaping Waterways Policy to Fit National Economic Recovery Goals."

Mr. **Skinner** said the annual meeting program will provide an authoritative, up-to-date analysis of current developments in waterways policy: the prospects for passage of the Reagan Administration's "user charge" proposals, the points of view of Congress and the White House on water resources policy, the impact of federal budget cuts on waterway programs, and shifts in water resources and transportation inherent in the nation's economic recovery program.

The program features three panel discussions focusing on these and other issues confronting the waterways.

Jacques Cunningham of Catoosa, Okla., port director of the Tulsa Port of Catoosa, will moderate a panel on the topic, "Waterway Transportation: Key to Expanded Export trade."

Richard A. Wilson of Sunset Hills, Mo., president and chief executive officer of Agri-Trans Corporation, will lead a panel assessing "The Push for Higher Waterway User Taxes: Will Economic Impacts Be Considered?" The third panel will focus on "The Changing Nature of National Water Resources Policy." Its moderator will be **Charles I. McGinnis** of St. Louis, senior vice president and general manager of Fru-Co Engineers, Inc., and chairman of the Water Policy Task Force of the National Society of Professional Engineers.

Full program details and registration materials are available from the National Waterways Conference, 1130 17th Street Northwest, Washington, D.C. 20036, (202) 638-0090.

IMM Energy Services Acquires Offshore Service Company

IMM Energy Services & Technology, Inc., Stamford, Conn., recently announced it has acquired all the stock of International Moorings & Marine, Inc., a privately owned company engaged in servicing the offshore oil and gas industry.

Based in New Iberia, La., International Moorings & Marine, Inc. is now a wholly owned subsidiary of IMM.

IMM also announced that its shareholders had approved the shift of its state of incorporation from New Jersey to Delaware and had changed the company's name from Crestek, Inc. to IMM Energy Services & Technology, Inc.

Belgian Firm Orders 60 MARISAT Terminals From Scientific-Atlanta

Scientific-Atlanta, Inc., Atlanta, Ga., has received an order from SAIT Electronics, Brussels, Belgium, for 60 MARISAT shipboard terminals. The terminals will be sold and installed by the SAIT Marine International Division of SAIT Electronics.

The order is part of an anticipated long-term association that will unite Scientific-Atlanta's maritime satellite communications products with SAIT's international marketing organization. A SAIT Marine spokesman indicated that the 60 shipboard terminals are expected to be installed by the end of 1981. SAIT has a network of more than 45 sales and service outlets throughout the world, and has parts and service arrangements in over 400 ports worldwide.

M/V Miss Sheila, M/V Cole Delivered By Mississippi Marine Towboat Corp.

John Nichols, president of Mississippi Marine Towboat Corporation, Greenville, Miss., announced the recent delivery of the M/V Miss Sheila (shown above) to Red Wing River Towing, Inc., Red Wing, Minn., and the M/V Cole (shown below), to White River Fleeting, Inc., Greenville.

The Miss Sheila is a 70 foot, 1,350 shp pushboat, constructed in Mississippi Marine's stock boat construction program. Mississippi Marine attempts to maintain an ongoing stock boat program in order to offer quick delivery for customers who can not wait for long construction time. Mississippi Marine currently has an 85-foot by 30-foot by 10-foot, 6-inch, 1,800 shp, pushboat under construction in its stock boat construction program. This vessel is scheduled for completion in the fourth quarter of 1981.

The Miss Sheila is 70 feet in length with a molded beam of 26 feet. The vessel is equipped with heavy rub rails, port and starboard, increasing the overall beam to 27 feet. The Miss Sheila has a 10-foot hull depth and operates with a fully loaded design draft of 8 feet, 6 inches.

The vessel carries 17,400 gallons of fuel oil, and is equipped with fuel oil fill stations, port and starboard of the main cabin. The vessel has a potable water capacity of 6,700 gallons and 600 gallon lube and slop oil tanks.

The vessel is arranged with a main cabin providing an enclosed steering room aft, separate generator compartment, upper engine room and forward quarters and galley area. The Texas deck provides sleeping accommodations for six in three separate staterooms, while the main deck has a single double stateroom. An enclosed stairway provides access from the main deck to the Texas cabin and up to a large raised wheelhouse. The wheelhouse provides 360-degree visibility and a 27-foot eye level.

The vessel is powered by Twin GM Detroit Diesel 12V-149s—providing a total of 1,350 shp—and is equipped with Twin Disc MG 540 (7-to-1) reduction gears. The vessel is equipped with 7-inch-

diameter shafting which are fitted with Sturm sleeves. The shafts turn a pair of 78-inch-diameter by 60-inch-pitch four-blade, stainless-steel Coolidge propellers. The main engine controls are Mathers AD-14, air control. Steering is provided by two heavy steering rudders and four flanking rudders. All rudders have 7-inch-diameter shafts and are heavily constructed.

Fernstrum grid coolers recessed in the sides of the hull provide main engine cooling. The radiator cooled generators are Twin GM 4-71, 1,200-rpm, 50-kw units which are installed in a separate room on the main deck level aft of the engine room.

The M/V Miss Sheila is designed for both harbor and short line towing service. She is equipped with two Nabrico, model 20-11-EH, electric/hydraulic winches. Winch controls are located on the main deck and in the wheelhouse. The hull has seven 36-inch Nabrico kevels, two Nabrico roller chocks, and four buttons. The 12-foot-high push-knees are equipped with heavy rubber bumpers. A hand winch boat davit has been installed on the aft deck for raising and lowering the vessel's launch.

Mississippi Marine's shipyard is currently very active. In addition to the stock 1,800-hp pushboat previously described, Mississippi Marine also has under construction a 143-foot offshore geophysical vessel for Tidewater Marine Service; two 2,400-hp-class pushboats, and several smaller vessels. Mississippi Marine also offers repair service which includes two drydocks at its Greenville site.

Mississippi Marine delivered the M/V Cole, the first of three for the same owner, within 90 days after receipt of contract. It is a 56-foot by 20-foot by 7-foot, 6-inch workboat designed for fleeting service.

The M/V Cole is powered by two GM Detroit Diesel 16V-71 main engines coupled to a pair of Twin Disc MG-518 (4.5:1) reduction gears. The gears turn two 5½-inch-diameter shafts. The Coolidge propellers are 50-inch by 46-inch, four-blade, stainless steel, especially designed with extra heavy edge thickness and increased blade area ratio. The main engine cooling is provided by Fernstrum grid coolers and engine controls are provided by Morse MD-24 cable controls.

The vessel is equipped with two steering rudders and four flanking rudders. The mechanical over hydraulic system is main engine driven. While the vessel is equipped with a pair of 12-kw, model #A2D 12000 Dieselec, air-cooled generator sets, a separate 12-volt system also is provided permitting the M/V Cole to operate without the generators. Navigation lights, searchlights, and other necessary lighting is dual 12 v dc and 120 v ac. The two power winches are Skipper Hydraulic, 25 ton, powered by the main engine driven hydraulic pumps and reservoir package which also allows for operation of the vessel without the use of the generator sets.

The M/V Cole's raised pilothouse provides a 25-foot eye level and 360-degree visibility. A catwalk and stairs provide good access to both empty barges as well as the vessel's main deck.

Avondale Receives Mobil Contract For $11.3 Million Offshore Drilling Platform

The Offshore Division of Avondale Shipyards, Inc., Avondale, La., an Ogden Corporation subsidiary, was recently awarded an $11.3-million contract by Mobil Oil Exploration and Producing Southeast Inc. (MOEPSI) of New Orleans, for the land phase fabrication of an eight-pile drilling platform planned for use in water depth of approximately 400 feet. Fabrication of this platform will begin immediately and is scheduled for completion in September 1982.

The 7,200-ton drilling platform will have the capability of developing 18 wells. Upon completion, this platform will be installed offshore Louisiana. The orderbook for work at Avondale Shipyards, including the Offshore Division, is now in excess of $660 million.

100 Orders For New Racal-Decca Radar

Racal-Decca Marine Radar Limited has announced that orders for its ARPA—Automatic Radar Plotting Aid — have passed the 100 mark, nine months since its introduction. Some 50 additional orders are at an advanced stage of negotiation. In the past three months the total orders for all types of Racal-Decca Marine Radars alone has exceeded some £5 million, reported **David C. Elsbury**, chairman and managing director of the Racal-Decca group.

Multiple orders for the new Racal-Decca ARPA have been received from the Kuwait Oil Company, Tschudi and Eitzen of Norway, Johnson Line of Sweden, and Ocean Tramping of China, British Petroleum, China Shipbuilding Corporation, Van Ommeron, P & O, and Great Eastern.

Raymond International Buys 600-Foot Crane Ship For $34.5 Million

A unit of Raymond International Inc., Houston, Texas, recently purchased a crane ship from an Italian firm for $34.5 million, according to **Henry F. LeMieux**, chairman and chief executive officer.

Mr. **LeMieux** said that Raymond Offshore Constructors, Inc., a wholly owned subsidiary, concluded the purchase of a large crane ship from Micoperi SpA. The ship, renamed "Sirius," is already in the Gulf of Mexico and working under a contract from a major oil company.

The purchase is being financed by a consortium of U.S. banks that has entered into an interest support agreement with Mediocredito Centrale, an agency of the Italian Government, for 80 percent of the cost at 6.5 percent interest over five years.

The 600-foot-long and 116-foot-wide ship is equipped with a 360-degree revolving crane that has a 2,000-ton lifting capacity over the bow and an 1,800-ton revolving lifting capacity.

Weeks Stevedoring Co. Purchases Two Cranes

Richard N. Weeks, president of Weeks Stevedoring Co., Inc., Cranford, N.J., has announced the purchase of the two floating cranes Luria Brothers & Co. Inc. used at Port Newark to load scrap iron. The cranes are Clyde Model 20-DE-65+32 equipped with 80-inch-deep magnets, clamshell buckets, and grapples. Weeks Stevedoring Co., Inc. is the largest bulk stevedore in the Port of New York, and now has 14 floating cranes in operation with capacities up to 14 cubic yards.

'Red' Adair To Address Oil Spill Conference

Paul N. (Red) Adair, the internationally known expert in oilwell fire control and blowouts, will be featured speaker at the 8th Annual Spillage Control Conference to be held October 29 through 31 at Ft. Lauderdale's Marriott Hotel and Marina.

Mr. **Adair,** one of several outstanding speakers being assembled for the event, will show films of some of his more historic and exciting battles with petroleum, gas, and chemical fires. Through the Red Adair Company, he and other members of his firefighting team control over 42 oilwell fires and blowouts each year.

Another highlight of the conference will be the first public spill simulation exercise of the combined Coast Guard Response and Strike Teams, which will be staged alongside the conference hotel on the Intracoastal Waterway. The demonstration will be a full-scale operation simulating a tug and barge accident and spill.

More than 350 persons are expected to attend the conference, sponsored as a public service by Belcher Oil Company, a subsidiary of The Coastal Corporation. Cosponsors are District 7 of the U.S. Coast Guard, the Environmental Protection Agency, the Florida Department of Natural Resources, and the Florida Spillage Control Association.

For program and registration details, write Spillage Control Conference, P.O. Box 525500, Miami, Fla. 33152.

Award $860,000 Contract To Seaward Int'l For Saudi Harbor Protection

Seaward International, Inc., Falls Church, Va., has been awarded an $860,000 contract for the installation, supervision, and training of an oil-spill protection program for the Jeddah Oil Refinery harbor area in Saudi Arabia. The refinery is operated by Petromin, an agency of the Saudi Arabian Government, which is responsible for the development of oil, gas, and mineral resources.

The systems will handle a wide range of spill types, from small leaks that collect in pockets along the shore, to larger spills from ruptured transfer hoses in the berthing areas. These systems include: permanent oil boom and skimmer systems installed downwind of the tanker berthing areas to capture large spills; fast deployment harbor boom for additional containment of large spills; a small portable skimmer, to be used with a vacuum truck; and sorbent pads for cleaning up small spills along the shore.

Each system will be designed and procured by Seaward International and installed under Seaward supervision. Seaward also will train key refinery personnel in the use of the equipment. This program will be completed early in 1982.

Krupp Atlas Promotes Blayer And Drogowitz

Krupp Atlas Elektronic Division, Jersey City, N.J., has promoted **Mike Drogowitz** to the position of U.S. operations manager and **Ed Blayer** to U.S. service manager.

Mike Drogowitz

Ed Blayer

Formerly the East Coast operations manager, Mr. **Drogowitz** will expand his present responsibilities to coordinate the total U.S. operations regulating all orders, shipments, and documentation between the Krupp Atlas regional offices and dealer network and customers.

Mr. **Drogowitz** comes to Krupp Atlas with an extensive background in sales, service, and operations. He most recently was employed for nine years at Sony Corp. in New York.

Mr. **Blayer** also has been based for the past year in Krupp's East Coast office as the service manager. His new responsibilities will be to coordinate and strengthen the Krupp Atlas U.S. service network. He will be responsible for all service activities in the three regional offices, and be the primary instructor for dealer training programs.

Mr. **Blayer** came to Krupp Atlas with an extensive technical background and holds five different FCC licenses. He has held senior technical positions at several firms including Allaire Engineering, Western, and Seaboard Communications. Most recently, he was superintendent of electronics at McAllister Bros. in New York.

Both Mr. **Blayer** and Mr. **Drogowitz** will continue to operate from the Krupp Atlas Jersey City office.

Argonne Labs Offers Fuel Saving Chart To Ship Operators

Attendees at a recent maritime conference have identified the 10 most effective ways that ship operators can save fuel.

Most of the approaches involve modification, conversion or installation of thoroughly tested equipment. But the element having the greatest potential for shipboard energy-conservation is developing a strong motivation to save fuel among ship officers and engineers.

These conclusions were reached at the International Maritime Industry Energy Conservation Workshop, conducted in New York recently by the Department of Energy's Argonne National Laboratory, where some 40 alternatives for saving shipping energy were discussed.

The results of the workshop will be incorporated in a chart developed by Argonne that summarizes information available on alternatives for saving fuel aboard ship. The chart is available to U.S. and foreign-flag operators engaged in U.S. foreign trade.

Nine of the 40 engineering and operational alternatives were identified as having major potential for saving energy. These alternatives and their individual fuel-saving potentials are:

Slower ship speeds, as allowed by their effects on other operating costs and service requirements, can save as much as 30 percent of the fuel normally used.

Improved hull maintenance, including the use of self-washing coatings, can cut fuel costs 7 percent.

Finer engine tuning, including combustion and instrument improvements, can save 10 percent.

Conversion from steam to diesel engines can save as much as 25 percent.

Fueling with coal or coal slurries reduces petroleum consumption and can provide large fuel-cost savings.

Improvements in ship trim can save up to 25 percent.

Improvements in the steam cycle or diesel engine can save up to 7 percent.

Improvements in the steering efficiency can also save fuel, but the precise amount depends on the ship and its route.

It was noted at the workshop that fuel-savings percentages are not directly additive because successive improvements may functionally overlap and operate on a diminishing base of ship fuel consumption. Many of these alternatives include several sub-alternatives with varying energy-conservation potentials.

Attending the workshop were representatives of Farrell Lines, Finland Steamship Co., Matson Lines, Moore McCormack Lines, Prudential Lines, Mobil Shipping Transportation Co., and Utah Transport.

Representatives from the University of Michigan, the State University of New York Maritime College, the U.S. Maritime Administration, and three maritime consulting firms, also were present.

Copies of the Argonne summary chart are available from **Ken Bertram**, Center for Transportation Research, Building 12, Argonne National Laboratory, Argonne, Ill. 60439.

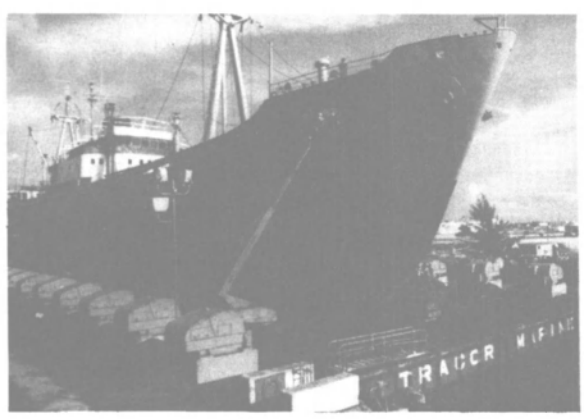
Swedish And Italian Firms Join To Explore Offshore In Turkey

A Swedish group of companies headed by Salen Energy, and AGIP SPA, the Italian Government-owned company, have reached an agreement providing for the acquisition by AGIP of a 51-percent interest in an offshore exploration and production contract in the Iskenderun Bay in Turkey.

The Swedish group negotiated the contract with IPAO, the Turkish state-owned oil company in 1979, and during 1980 it carried out two seismic surveys in the contract area, using the Turkish vessel Sismik I. AGIP will act as operator for the joint venture.

Drilling activity is expected to start this September using the drillship Saipem II.

Tracor Marine Syncrolift Certified By U.S. Navy



Tracor Marine, Inc., Port Everglades, Fla., is the first shipyard in the U.S. to meet the stringent requirements of MIL STD 1625A-(SH) and receive certification of its syncrolift vertical lift dock by the Naval Sea Systems Command.

The syncrolift (shown above) is designed to haul vessels up to 4,200-tons displacement on its 350-foot by 82-foot platform and align with a horizontal rail system for transferring them to inland locations within the shipyard. Tracor Marine also operates two floating drydocks of 2,100-ton and 3,300-ton capacities.

Adm. Kollmorgen Named Chief Of Naval Research

Rear Adm. **Leland S. Kollmorgen,** USN, was confirmed by Congress, and has assumed the duties as Chief of Naval Research, Office of Naval Research, Fairfax, Va. He will also serve as Deputy Chief of Naval Material (Technology) and Chief of Naval Development.

In these capacities, he directs the planning and execution of the Department of the Navy Technology Base programs for basic research and exploratory development. In addition, he is responsible for the administration and supervision of all Department of the Navy activities relating to patents, inventions, trademarks, and copyrights. Admiral **Kollmorgen** was previously the director of the Systems Analysis Division, Office of the Chief of Naval Operations.

Name Two Engineering Officials At Marinette

Two appointments were announced recently in the engineering department of Marinette Marine Corporation, Marinette, Wis. **Ben Bogdan Tyzner** has joined the firm as chief marine engineer, and **James Byrnes** accepted the position of chief, outfitting design.

Ben Bogdan Tyzner

James Byrnes

Mr. **Tyzner's** responsibilities include the management of mechanical, piping, and heating, ventilation, and air-conditioning design groups. He has held positions with Sun Shipbuilding and Drydock Company, the J.J. Henry Co., and most recently was director of engineering for AMTEC Development Corporation, Chicago.

Mr. **Byrnes** is responsible for all outfitting design development and preparation. He comes to Marinette Marine with over 29 years' experience with R.A. Stearn, Inc. of Sturgeon Bay, Wis., where he was most recently vice president of operations.

Nuclear-Powered Sub 'Dallas' Joins The Fleet

The nuclear-powered attack submarine Dallas (SSN-700) was commissioned recently during ceremonies held at General Dynamics, Electric Boat Division, Groton, Conn.

William P. Clements Jr., Governor of Texas, was principal speaker during the ceremonies. **Mrs. Clements** was the ship's sponsor.

The Dallas is the first U.S. Navy ship named in honor of the city in Texas, county seat of Dallas County and the second largest city in the state. Dallas also commemorates the name of Vice President **George Mifflin Dallas.**

Used primarily for antisubmarine warfare, the Dallas is a Los Angeles-class submarine and has an overall length of 360 feet(109.7 m), a beam of 33 feet (10.1 m), and a submerged displacement of 6,900 tons. The submarine's complement will be 12 officers and 115 enlisted men. Armament includes four 21-inch torpedo tubes for MK 48 torpedoes and SUBROC missiles. The tubes are also designed to launch Harpoon missiles.

Appledore Gets $2-Million Order To Design Shipyard For Dome To Build Arctic Vessels

A & P Appledore, Canada Ltd., a member of the A & P Appledore Group, has been awarded a $2-million (Canadian) contract by Dome Petroleum Limited of Calgary, to design a shipyard capable of building large arctic vessels, including Arctic VLCCs up to 200,000 dwt.

A & P Appledore's involvement in Dome's new shipbuilding facilities include: site investigation, project scheduling, shipyard layout design, shipyard equipment engineering, manpower and management planning, conceptual ship design, and design for production.

The proposed shipyard will possess the highest steelwork manufacturing technology to meet the specific needs of Arctic-class vessels. The envisaged steel throughput will be approaching 100,000 tons yearly.

The shipyard design will possess the flexibility to construct a mix of vessel types ranging from conventional ships to the fabrication of offshore modules. It is estimated that this shipyard will be completed and in production by the middle of 1984. The yard will have over double the capacity of any existing yard in Canada, and could well be the largest in North America in terms of yearly steel throughput.

A & P Appledore is also actively involved in plans for modernization and possible expansion of Davie Shipyard in Lauzon, near Quebec City.

PROFESSIONAL

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5. Bajo Grande (REFINERY)
6. Bajo Grande (GAS PLANT)
7. Punta Palmas
8. San Lorenzo
9. La Salina
10. Maracaibo Piers & at anchorage
11. San Carlos-Pilot Station

B) COASTAL PORTS
12. Punta Cardon
13. Amuay Bay
14. Puerto Cabello Piers & at Dry-dock
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PROFESSIONAL

continued

$7.2-Million Contract Awarded Delaval By U.S. Navy

Transamerica Delaval, Turbine and Compressor Division, Trenton, N.J., was awarded a $7,264,104 firm fixed price contract for ship sets, main condensers for the class 688 submarines with an option for additional shipset. Work will be performed in Florence, N.J. The Naval Sea Systems Command is the contracting activity.

Marine Maintenance Seminar Scheduled For Oct. 28 In New York

The next Marine Maintenance Seminar sponsored by Meeting Resources, Inc. will be held on October 28 this year at the Vista International Hotel at the World Trade Center in New York City. Focusing on the need to probe managerial evaluation of maintenance systems and techniques, the program will consist of presentations by corporate maintenance executives and others from within and outside the maritime industry. Executives from the airlines, the railroads, and heavy industry have been invited to make presentations regarding their maintenance philosophy and the economic factors affecting their decisions.

In addition, an examination of the systems and techniques currently available continues with "A Focus on Condition Monitoring." In this segment, three specific areas will be explored: ferrography, vibration monitoring, and computer-controlled analog monitoring. Question and answer sessions will be held after each segment. The moderator for these panel discussions will be Prof. **Aaron Kramer** of the Engineering Department at the SUNY Maritime College, Fort Schuyler, N.Y.

The registration fee for this one-day seminar is $225, which includes attendance at all sessions, lunch, and copies of all papers. Further information and advance registrations can be obtained by calling **Bill Pankow** at (212) 425-4345 or by writing to Meeting Resources, Inc., 32 Broadway, New York, N.Y. 10004.

A LONGER LINE FOR MATSON'S LURLINE — The trailership Lurline is undergoing conversion at Sun Ship, Inc. shipyard in Chester, Pa., to a combination roll-on/roll-off trailership and lift-on/lift-off container carrier. The 700-foot Matson Navigation Company vessel will be lengthened to 826.5 feet by insertion of a 126.5-foot midbody section. Capacity will be increased from 434 twenty-four foot units to 1,046 units, auto space from 139 to 179, and refrigerated units from 100 to 204. The new 'ro/lo' carrier will reenter West Coast-Hawaii service early in 1982, Matson's centennial year.

A Report On ASNE Day 1981

Dr. **Robert A. Frosch** delivers banquet address at ASNE Day 1981.

More than 2,000 persons participated in the 1981 national meeting of the American Society of Naval Engineers (ASNE) held in Washington, D.C. Nineteen local ASNE sections from around the country, including four student sections, were represented.

The theme of the two-day meeting held at the Shoreham Hotel was "Naval Design and Engineering—New Dimensions." The technical sessions were opened with a keynote address "The Challenge of Design" delivered by Rear Adm. **James W. Lisanby,** Deputy Commander for Ship Design and Integration, Naval Sea Systems Command. Many phases of ship and combat system design — including the latest in advanced approaches — were presented and discussed at the technical sessions.

Adm. **James D. Watkins,** USN, Vice Chief of Naval Operations, delivered the luncheon address, "Increased Force Levels and Warfighting Readiness Through Better Ship Design." He challenged the ASNE members to "increase harmony between the naval engineers and the unrestricted line officers of the Navy" by defining realistic requirements in the first place, and by bringing the best technical minds to bear on basic shipbuilding issues such as propulsion plant and electrical generating capacity. He called upon naval engineers to demonstrate the highest levels of design competence to provide new ships for which future maintenance, overhaul, and modernization will be only a "fine-tuning" exercise.

At the banquet, five prestigious awards were presented. The Harold E. Saunders Award for 1980 was presented to Rear Adm. **John D. Bulkeley,** USN (ret.), for his contributions to naval engineering during his tenure as president, Board of Inspection and Survey. Admiral **Bulkeley** received the Medal of Honor during World War II.

The ASNE Gold Medal Award was presented to Capt. **Alfred Skolnick,** USN, for outstanding professionalism and leadership in directed energy weapon system development. Captain **Skolnick** is the project manager of the Navy's High Energy Laser Project.

John Mittleman from the Naval Coastal Systems Center (NCSC) in Panama City, Fla., received the Solberg Award for research and development activity in the field of underwater ship inspection.

Dr. **Carl T. Zovko** of the Naval Surface Weapons Center, White Oak Laboratory, received the "Jimmie" Hamilton Award for his technical paper on unusual propulsion systems for underwater vehicles.

Capt. **Frank G. Law** (ret.), who until recently was the secretary-treasurer of the ASNE, was the recipient of an award named in his honor for contribution to the advancement of ASNE through dedicated service in furtherance of its ideals. Captain **Law** served the society for over 11 years after his retirement from the Navy in 1969.

Dr. **Robert A. Frosch,** president of the American Association of Engineering Societies, delivered the banquet address, "Technology is Fun, It's the Other Things . . ." He urged engineers and technically trained people to become involved in defining the problems in meeting military requirements and to help reduce serious problems in delivering efficient systems on time and within budget. He also discussed the need for developing more creative budgeting processes to allow for the kinds of tradeoffs necessary to produce highly complex systems that are designed to meet still-developing requirements.

Assistant Secretary Of Navy Outlines New U.S. Program To Achieve Maritime Superiority

The year 1981 is a watershed, "a point of basic change in the direction and momentum of American maritime policy" that will see the start of the restoration of U.S. superiority," stated Assistant Secretary of the Navy **George Sawyer** in a recent address to the graduating class at Webb Institute of Naval Architecture.

Speaking to Webb's class of 1981 at the Glen Cove, N.Y. campus, Mr. **Sawyer** said that the restoration during this decade "is clearly a policy hallmark of the Reagan Administration." In deliniating the plans for the Navy, Mr. **Sawyer** noted that the classic definition of seapower also includes the merchant marine. He expressed the hope that the newly formed joint White House Industry Task Force "can develop and implement a unified national policy helpful both to our commercial maritime and our strategic interests."

George Sawyer

The Navy policy, he said "is a policy which many of us believe the country should never have relinquished some 20 years ago; should certainly have corrected 10 years ago; and which by now will be difficult and expensive to execute. Make no mistake. It is absolutely essential that we as a nation must persevere this time. History does not often provide second chances.

"In the substance of material and economic dependency, the United States is an island—a factual condition which is even more prevalent today than during our emergence initially as a nation and subsequently as a world power.

"Today, a third of our total business profits are dependent on foreign trade; more than 50 percent of over 20 key and strategic materials comes from foreign sources; as do some 40 percent of our petroleum stocks. Thirty-eight out of our 40 allied nations are overseas. Thoughtful individuals," he stated, "have noted these and other similar statistics many times before—and so have our potential adversaries.

"Since the Cuban Missile Crisis in 1962, the Soviet Union—itself not an island nation and either self-reliant or possessing internal lines of supply with its principal allies and trading partners—has amassed under the single-minded purpose of Admiral **Gorshkov** the greatest Navy and merchant marine in its history. Today it rivals the combined naval and maritime force of the U.S. and our Allies, and is well positioned to threaten the vital lifelines which comprise our strategic and economic commerce. One need only ask himself —'Why does a nation not dependent on a maritime lifeline dedicate itself toward achieving superiority over its potential adversary who does?' — to understand what our response must be. Nevertheless, during these intervening years we have rather consistently been lulled into thinking in terms of parity—thereby gainsaying the basic geo-political facts of our mutual coexistence and, indeed, the proofs of our own history.

"By setting our sights each year on parity, we have achieved only continuing deterioration and decline. In the past 15 years, we have been effectively disarming our Navy from well over 900 to 460 deployable vessels, while our commitments have increased by at least a third. Similarly, our merchant marine has declined from a poor sixth position to a dismal 10th position in the world, carrying in 1980 only 5 percent of our total trade, and less than 27 percent of the important general cargo segment. In 1979, the

last complete year before the Afghan invasion, the Soviet merchant marine carried more American cargo than did our U.S.-flag fleet.

"So much for history; what of the near-term future under the now espoused policy of maritime superiority and what of your roles in that future? First, with regard to our Navy, we have enunciated a clear policy and, with a viable consensus in our Congress and our public, have started its implementation. The net effect of the Reagan supplemental was an addition of $1.1 billion to the Department of the Navy TOA in fiscal year 1981, and $8.7 billion in fiscal year 1982. This represents real program growth of approximately 11 percent in fiscal year '81 and approximately 15 percent in fiscal year '82 compared to the Carter budget. With promulgation of our five-year shipbuilding plan later this year, the full significance of this policy will become clear."

Secretary **Sawyer** said the U.S. will "Rebuild our active fleet from its current level of 460 vessels to over 600 before the end of the decade. The core of this new Navy will be 15 carrier battle groups capable of taking the fight to a formidable adversary — a force which can take a punch as well as deliver it. The Navy plans to augment these forces with up to four more surface action groups."

In addition, the Secretary said plans include the upgrading of the fleet of nuclear attack submarines from 81 to 100, and the continued building of the Trident SSBN forces.

"We will develop our vital amphibious lift capability to sustain an entire Marine Amphibious Force, plus an additional Brigade —about a 70,000-man total force. Finally, we will broaden and strengthen the Navy's related SEALIFT assets, both to sustain our fleet at sea and to deliver essential material under both standby and rapid response modes during the initial deployment period before the sustaining lift capability of our own and allied merchant marines can be brought to bear.

"To achieve this 600-ship objective and accommodate the inevitable afflictions of age and obsolescence, we will need to build and convert an average of over 25 ships a year. Numbers, however, are not the only criterion. We plan to build more capable, as well as more, ships."

Mr. **Sawyer** said that similar initiatives are planned in naval aircraft, weapons, and readiness programs. The accomplishment of these objectives, he noted, will not be simple in a peacetime environment. "It will require a concerted, sustained investment of human, financial, and material resources." He said that studies indicate that the U.S. physical shipbuilding and manufacturing base can respond to this challenge. "Theoretically, our human resources should also be equal to the task — but this, probably, is the area of greatest concern. Specifically, can our professional and management cadres in government and industry respond rapidly and capably and avoid our becoming bogged down in cost overruns, programatic delays, and technological shortfalls? I believe that the answer to this critical question is yes, but its proof will depend largely on how you and the relative handful of others like you respond in the immediate years ahead as you proceed from today's graduation into your professional careers.

"The technological challenges inherent in our proposed shipbuilding program are both abundant and significant," Mr. **Sawyer** noted. He cited a few examples which, he predicted, will be developed and probably employed in new ships.

"The first real application of the modular weapon systems concept on a first line combatant, our DDGX. This development will achieve complete physical modularity, and an important beginning will be made toward realizing the technologically complex but highly important distribution

(continued on page 70)

New U.S. Program For Maritime Superiority

(continued from page 69)

of computer processing and data base concepts.

"The development and application of more energy efficient propulsion and ships service electric concepts to combatant ships. Included here will be the COGAS, RACER plant, and further application of integrated mechanical/electrical or all electrical plants.

"Substantial developments in all technologies relating to 'survivability,' including improved arrangements and subdivision; more sophisticated applications of convential materials and the more exotic, lightweight armor; 'citadel' ventilation concepts to provide adequate protection to ABC warefare at sea; and automatic fire foam and other damage limiting systems.

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"In the sealift enhancement area we will devote significant funding to various merchant ship cargo-handling improvements of value to the Navy, such as container over-the-shore systems, SEASHED, and refueling/replenishment at sea equipment add ons.

"The Navy rebuilding will not be based entirely on new construction," Mr. **Sawyer** said, "but will include a number of major conversions during the next five years, including battleships, several TAKs, nuclear cruisers, at least one hospital ship and one or two of the laid-up Essex class aircraft carriers.

"The funding requested in the 30 newbuildings and conversions involved in the Reagan 1982 ships construction and associated R&D budget submitted is in excess of $10 billion — about 30 percent more than the Carter 1981 budget. And we intend to increase this level of funding by an average of over 7 percent in real terms over the next five-year period," he stated.

"We fully intend to rebuild our fleet and to achieve this in real terms of capability as well as numbers. It will be an exciting albeit challenging period.

"Whither our merchant marine —that essential second element in what historians and strategists equate as 'Seapower'? It is, I am saddened to say, in a continuing declining condition, without as yet a clear policy either articulated or implemented. This is a critical, national problem. In my judgment, the current reality of significant dependency on foreign nations both for our world trade in peace and for our strategic sealift in war is intolerable. Unfortunately, the solution is multifaceted — a number of elements are involved. Technology alone is only one factor, as the growth and commercial maturity of that American innovation, containerization, vividly attests.

"I can only pray that the newly formed joint White House/Industry Task Force and the eventual new Administration team together can develop and implement a unified national policy helpful both to our commercial maritime and our strategic interests. In the final analysis, all of us who comprise this industry—including we in the Navy—must put aside narrow self-interest and work together to formulate consistent policies and programs which will finally reverse this long slide toward dependency. I have some definite ideas where I believe the Navy can help—but we cannot do it alone. Management and labor in both our fleets and shipyards, along with our various governmental regulatory agencies involved must also do their part. In the past, the American naval

(continued on page 83)

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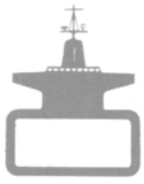

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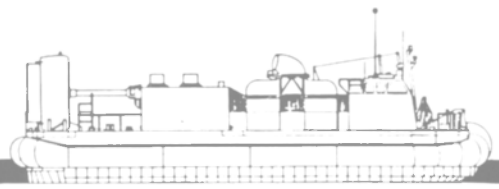

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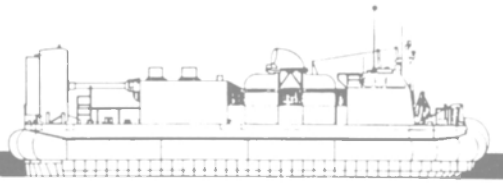

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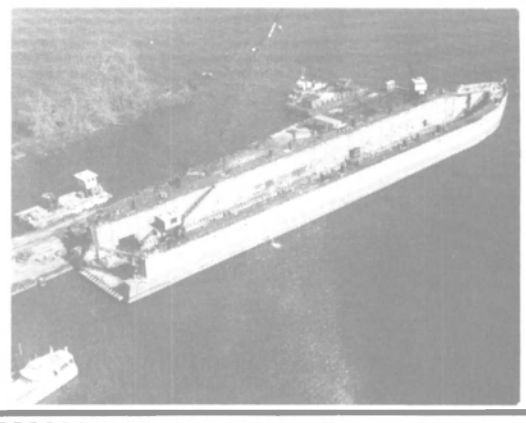

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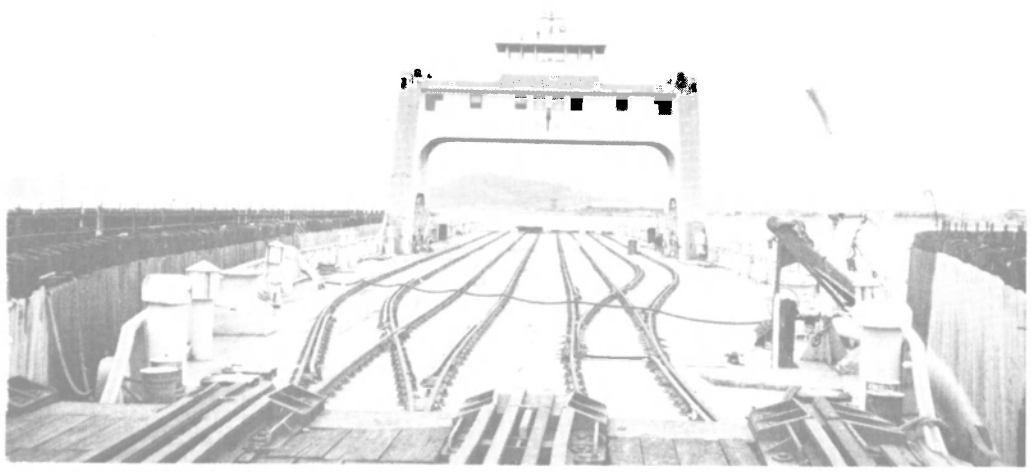

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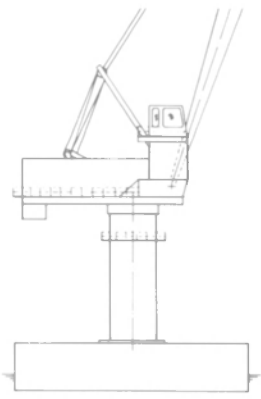

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RPM (maximum)	10,033
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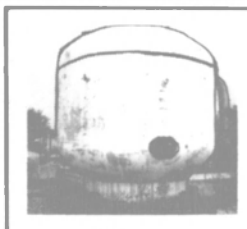

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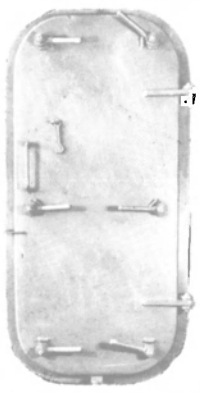

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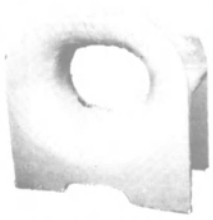

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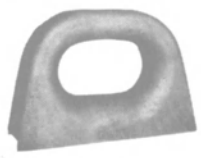

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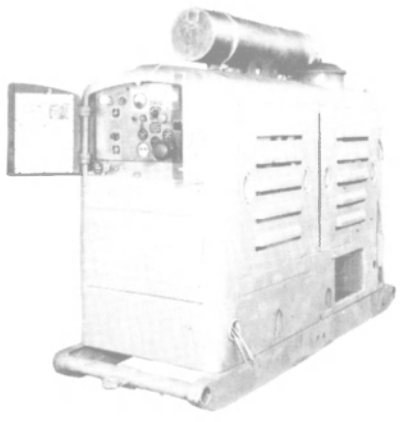

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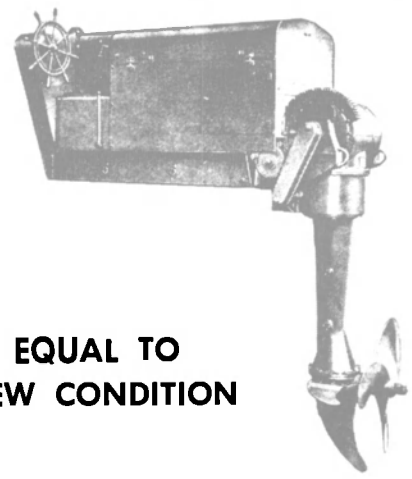

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Equal-to-new-condition. Driven by GM 6-71 diesel—165 HP @ 1800 RPM—2-cycle—6 cylinders. Weight 9300 lbs—48" X 24" propeller. Unit shown with outboard shaft in running position. Distance from deck to bottom of skeg 89". 4 Units immediately available.

THE BOSTON METALS COMPANY

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

NEW SURPLUS BERGER MODEL 614-0 MOORING FAIRLEADS

for 1¼" WIRE — DECK MOUNTED

12" Opening Allows for Large Wire Rope Loop

14" Diameter sheave — 12" shank opening — tapered roller bearing. Weight 1135 lbs.

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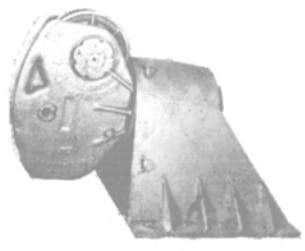
SURPLUS BERGER FAIRLEADS



2 Model 620 — for 1⅝" wire — 20" sheave.

$3950 EACH

Also 1 for 1¼" wire

$2450 EACH

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FIBERGLASS 53 PERSON DIESEL POWERED LIFEBOATS

Length overall	8 M. (26.24')
Beam over fenders	2.89 M (9.5')
Beam over outside shell	2.75 M (9')
Depth	1.15 M (3.7')
Empty boat weight	2380 Kg (5247 lbs)
Boat weight w/passengers	6355 Kg (14,010 lbs)
Cubic ft. per passenger	15.31
Distance between hooks	6700 MM (21' 11½")

With air-cooled Deutz diesel engine, gear box and propeller. Has fuel oil and water tanks, provision storage. Mfg. by FR Fassmer & Co., Germany. Built to German Lloyds requirements. #6706 built 1977; #6859 built 1977.

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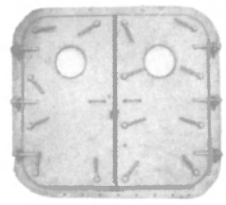
60" X 54" WATERTIGHT STEEL DOUBLE DOORS



Used doors — with 10" diameter lites. Each door has 7 dogs for a total of 14.

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15½" CLEAN BRASS 4-DOG MARINE PORTLIGHTS

15½" 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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Bailey Refrigeration Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231
James D. Nall Co., Inc., 3195 NW 20th Street, Miami, FL 33142
York Division (Borg-Warner Corp.), P.O. Box 1592, York, PA 17405

ANODES—Cathodic Protection
Engelhard Industries Division, 2655 U.S. Route 22, Union, NJ 07083
Kaiser Aluminum & Chemical Corp., 300 Lakeside Dr., (Rm 2039KB), Oakland, CA 94643
Wilson Walton International Inc., 66 Hudson Street, Hoboken, NJ 07030

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

BLASTING—Cleaning—Equipment
Aurand, 1270 Ellis Street, Cincinnati, OH 45223
Butterworth Systems Inc., 224 Park Ave., Florham Park, NJ 07932
Goff Corporation, One Pleasent Grove Rd., Seminole, OK 74868

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

BROKERS
Aldenships, 2182 S.E. 17th Street, Fort Lauderdale, FL 33316
B.R.I. Coverage Corporation, 156 Williams Street, New York, NY 10038
Capt. Astad Company, Inc., P.O. Box 53434, New Orleans, La. 70153
Hughes Bros., Inc., 17 Battery Pl., New York, N.Y. 10004
Mowbray's Tug and Barge Sales Corp., 21 West St., N.Y., N.Y. 10006

BUNKERING SERVICE
Belcher Company, Inc., 8700 West Flagler, P.O. Box 525500, Miami, FL 33152
Gulf Oil Trading Co., 1290 Ave. of the Americas, N.Y., N.Y. 10019

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

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

CHOCKING SYSTEMS
Palmer Products Inc., P.O. Box 8, Worcester, PA 19490
Philadelphia Resins Corp., 20 Commerce Drive, Montgomeryville, Pa. 18936

CONTAINERS—Cargo Container Handling
Paceco Inc. (A division of Fruehauf), West Seaway Access Road, Gulfport, MS 39501

CONTROL SYSTEMS—Monitoring
Arnessen Marine Systems, Inc., One Battery Plaza, New York, NY 10004
Henschel Corporation, 14 Cedar St., Amesbury, Mass. 01913
Megasystems, Inc., 1075 N.W. 58th Street, Boca Raton, FL 33431
National Marine Service, Inc., 1750 Brentwood Blvd., St. Louis, MO 63144
Pan American Systems Corporation, P.O. Drawer 400, Belle Chasse, LA 7C037
Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.
Transamerica Delaval, Inc., Gems Sensors Division, Cowles Road, Plainville, CT 06062

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

CRANES—HOISTS—DERRICKS—WHIRLEYS
Blohm & Voss Company, 55 Morris Avenue, Springfield, NJ 07081
M. P. Howlett, Inc., 410 32nd St., Union City, N.J. 07087
National Supply Company, 1455 West Loop South, Houston, TX 77027
J. D. Neuhaus, Witten-Heven, Hebezeuge, D 5810 Witten-Heven, West Germany
Paceco Inc. (A division of Fruehauf), West Seaway Access Road, Gulfport, MS 39501

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Markey Machinery Co., Inc., 79 S. Horton St., Seattle, Wash. 98134
Navire Cargo Gear (SEA) Pte. Ltd., 9th Floor Orchard Towers, Orchard Road, Singapore 0923

DIESEL ACCESSORIES—CYLINDER LINERS
B & W Marine Service, One State Street Plaza, New York, N.Y. 10004
General Thermodynamics Corporation, 210 South Meadow Road, P.O. Box 1105, Plymouth, Massachusetts 02360
Golten Marine Company, Inc., 162 Van Brunt Street, Brooklyn, NY 11231
Twin Disc, Inc., 1328 Racine Street, Racine, WI 53403

ELECTRICAL EQUIPMENT
Argo Marine, Div. of Argo Intl., 140 Franklin St., New York, N.Y. 10013
Federal Pacific Electric Company, P.O. Box 1800, Somerville, NJ 08876
Marine Safe Electronics of Canada Ltd., 101 Jardin Dr., Suite 24, Concord, Ontario, Canada L4K 1B6
Oceanic Electrical Mfg. Co., Inc., 159 Perry Street, N.Y. 10014
Port Electric Supply, 157 Perry Street, N.Y., N.Y. 10014
Zidell Explorations, Inc., 3121 S.W. Moody St., Portland, Ore. 97201

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

EQUIPMENT—Marine
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Argo Marine, Div. of Argo Intl., 140 Franklin St., New York N.Y. 10013
Comet Marine Supply Corp., 157 Perry St., New York, N.Y. 10014
Conhagen/USMP Company, Inc., 4475 South Clinton Ave., South Plainfield, NJ 07080
Consafe Inc., P.O. Box 40339, Houston, TX 77040
Duraline, 75 Hoffman Lane, Central Islip, NY 11722
Kearfott Marine Products, 550 South Fulton Ave., Mount Vernon N.Y. 10550
J. H. Menge & Company, Inc., P. O. Box 23602, New Orleans, La.
John P. Nissen, Jr. Company, Glenside, PA 19038
Rockwell International, Power Tool Division, 400 N. Lexington Ave., Pittsburgh, PA 15208
Schnitzer-Levin Marine Co., 445 Littlefield Ave., So. San Francisco, CA 94080
Schwepper Beschlag GmbH, Postfach 101110, 5620 Velbert 1, West Germany
Stal Laval Inc., 525 Executive Blvd., Elmsford, NY 10523
Sudoimport, 5 Kalyaevskaya, Moscow K-6, USSR
Unitor Ships Service A/S, Mastemyr, 1410 Kolbotn, Norway
Waukesha Bearings Corp., P.O. Box 798, Waukesha, Wisc. 53186
Xorbox, Division of Greene & Kellogg, Inc., 290 Creekside Dr., Tonawanda, NY 14150

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

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

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Hartzell Propeller Fan Company, 901 S. Downing Street, Piqua, OH 45356
Joy Manufacturing Co., 338 So. Broadway, New Philadelphia, Ohio 44663
Zidell Explorations, 3121 S.W. Moody St., Portland, Ore. 97201

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Johnson Rubber Co. (Marine Div.), 16025 Johnson St., Middlefield, Ohio 44062
Seaward International, Inc., 6269 Leesburg Ave., Falls Church, Va. 22044

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Continental Illinois National Bank, 231 S. LaSalle, Chicago, IL 60693
Kidder, Peabody & Co., Inc., 10 Hanover Square, New York, N.Y. 10005
Warburg Paribas Becker, Inc., 2 First National Plaza, Chicago, Ill. 60670

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

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

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

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

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

HULL CLEANING
Butterworth Systems Inc., 224 Park Ave., Florham Park, N.J. 07932
Phosmarin Equipment, 21, Boulevard de Paris, 13002 Marseille, France
Seaward Marine Services, Inc., 6269 Leesburg Pike, Falls Church, VA 22044
Sub Enterprises, Inc., P.O. Box 16531, Irvine, CA 92713

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

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

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Bailey Carpenter & Insulation Co., Inc., 74 Sullivan St., Brooklyn N.Y. 11231

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

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

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

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Schat Davit Corporation, 226 West Park Place, Newark, DE 19711

LIGHTING EQUIPMENT—Lamps, Fixtures, Searchlights
Browning Marine, Inc., (Aqua Signal), P.O. Box 806G, St. Charles IL 60174
The Guest Corporation, 17 Culbro Drive, West Hartford, CT 06110
Oceanic Electrical Mfg. Co., 157 Perry Street, New York, N.Y. 10014
Oreck Corp., 100 Plantation Rd., New Orleans, LA 70123
Perko Inc., P.O. Box 6400D, Miami, Florida 33164
Port Electric Supply Corp., 157 Perry Street, New York, N.Y. 10014

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

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

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

NAVAL ARCHITECTS, MARINE ENGINEERS, SURVEYORS
Advanced Marine Enterprises, Inc., 1725 Jefferson Davis Highway (Suite 1300), Arlington, VA 22202
Agemar, Ave. 17 No. 108-129, P.O. Box 1465, Maracaibo, Venezuela
All Points Associates, Inc., RD #1, Box 3309, Monroeville, OH 44847
American Standards Testing Bureau, Inc., 40 Water Street, New York, N.Y. 10004
Amirikian Engineering Co., Chevy Chase Center Bldg., Suite 505, 35 Wisconsin Circle, Chevy Chase, Md. 20015
J.L. Bludworth, P.O. Box 2441, Corpus Christi, TX 78403
Jacksonville, Florida 32211
Del Breit Inc., 326 Picayune Place (Suite 201), New Orleans, LA 70130
C.D.I. Marine Co., Regency East, Suite 222, 9951 Atlantic Blvd.,
CTS & Associates, 11320 S.W. 108 Court, Miami, Fla. 33176
CADCOM, 107 Ridgely Ave., Annapolis, MD 21401
Childs Engineering Corp., Box 333, Medfield, Mass. 02052
John P. Colletti & Associates, P.O. Box 13378, Pittsburgh, PA 15243
Columbia-Sentinel Engineers Western, Inc., P.O. Box 21542 Seattle, WA 98111
Crandall Dry Dock Engrs., Inc., 21 Pottery Lane, Dedham, Mass. 02026
Crane Consultants Inc., 15301 1st Ave., So. Seattle, Washington 98148
C.R. Cushing & Co., Inc., One World Trade Center, New York, N.Y. 10048
Norman N. DeJong & Associates, Inc., 1734 Emerson St., Jacksonville, Fla. 32207
Design Associates Inc., 14360 Chef Menteur Highway, New Orleans, LA 70129
Designers & Planners, Inc., 2341 Jefferson Davis Hwy., Suite 1100, Century Bldg., Arlington, VA 22202
Donhaiser Marine, Inc., 11511 Katy Freeway, Houston, TX 77079
Francis C. Ducote, P.E., P.O. Box 644, Kenner, LA 70063
Parker C. Emerson & Associates, 17935 Cardinal Drive, Lake Oswego, Oregon 97034
Christopher J. Foster, Inc., 16 Sintsink Drive East, Port Washington, N.Y. 11050
Friede and Goldman, Ltd., 225 Baronne St., New Orleans, La. 70112
Giannotti & Associates, Inc., 703 Giddings Ave., Suite U-3, Annapolis, MD 21401
Gibbs & Cox, Inc., 40 Rector Street, New York, N.Y. 10006
John W. Gilbert Associates, Inc., 58 Commercial Wharf, Boston, Mass. 02110
The Glosten Associates, Inc., 610 Colman Bldg., 811 First Ave., Seattle, WA 98104
Phillip Gresser Associates, Ltd., 3250 South Ocean Blvd., Palm Beach, FL 33480
Morris Guralnick Associates, Inc., 620 Folsom Street, Suite 300, San Francisco, CA 94107
Hampton Roads Engineering, Inc., 119 E. Little Creek Rd., Norfolk, VA 23505
J.J. Henry Co., Inc., Two World Trade Center—Suite 9528, New York, N.Y. 10048
Hoffman Maritime Consultants Inc., 9 Glen Head Road, Glen Head, NY 11545
Hydronautics, Incorporated, 7210 Pindell School Road, Howard County, Laurel, Maryland 20810
Iantzen Engineering Co., 6655-H Amberton Drive, Baltimore, Md. 21227
James S. Krogen & Co., Inc., 3333 Rice St., Miami, Fla. 33133
Littleton Research and Engrg. Corp., 95 Russell St., Littleton, Mass. 01460
Lucander Designs, P.O. Box 711, San Perlita, TX 78590
Alan C. McClure Associates, Inc., 2600 South Gessner, Houston, TX 77063
John J. McMullen Associates, Inc., 1 World Trade Center, New York, N.Y. 10048
MacLear & Harris, Inc., 28 West 44 Street, New York, N.Y. 10036
Marine Consultants & Designers, Inc., 308 Investment Insurance Bldg., Corner E. 6th St. & Rockwell Ave., Cleveland, Ohio 44114
Marine Design Inc., 401 Broad Hollow Road, Rte. 110, Melville, N.Y. 11746
Marine Technical Associates, Inc., 195 Paterson Avenue, Little Falls, NJ 07424
Maritime Service Company, 1357 Rosecrans St., Suite B, San Diego, CA 92106
Rudolph F. Matzer & Associates, Inc., 13891 Atlantic Blvd., Jacksonville, Fla. 32225
Mechanical Resources Inc., 191 Cambridge Avenue, Jersey City, N.J. 07307
George E. Meese, 194 Acton Rd., Annapolis, Md. 21403
Metritape, Inc., 33 Bradford Street, Concord, MA 01742
NKF Engineering Assoc., Inc., 8150 Leesburg Pike, Vienna, VA 22202
Nelson & Associates, Inc., 1405 N.W. 167th Street, Miami, FL 33169
Nickum & Spaulding Associates, Inc., 911 Western Ave., Seattle, WA 98104
Captain Conrad P. Nilsen, 66 Beverly Road, Bloomfield, NJ 07003
Norgaard and Clark, 114 Sansome St., San Francisco, CA 94104
Ocean-Oil International Engineering Corporation, 3019 Mercedes Blvd., New Orleans, La. 70114
Offshore Power Systems, 8000 Arlington Expressway, Jacksonville, FL 32211
Oromar International Enterprises, Inc., P.O. Box 13069, Port Everglades, FL 33316
PRC Guralnick, 5252 Balboa Ave., San Diego, CA 92117
Pacific Industries Inc., 1440 Canal Street, Suite 1915, New Orleans, LA 70112
Pearlson Engineering Co., Inc., 8970 S.W. 87th Ct., Miami, Florida 33156
S.L. Petchul, Inc., 1380 SW 57th Ave., Fort Lauderdale, Fla. 33317
Pilotage Consultants, Inc., P.O. Box 3, Atlantic Highlands, NJ 07716
M. Rosenblatt & Son, Inc., 350 Broadway, New York, N.Y. 10013 and 657 Mission St., San Francisco, Calif.
Sargent & Herkes, Inc., 611 Gravier St., New Orleans, La. 70130
Schmahl and Schmahl, Inc., 1209 S.E. Third Ave., Fort Lauderdale, Florida 33316
Seacor Systems Engineering Associates, Corp., P.O. Box 2030, 19 Cherry Hill Industrial Park, Perina Blvd., Cherry Hill, NJ 08003
Seaworthy Engine Systems, 36 Main Street, Essex, CT 06426
George G. Sharp, Inc., 100 Church St., New York, N.Y. 10007
T. W. Spaetgens, 156 West 8th Ave., Vancouver, Canada V5Y 1N2
R.A. Stearn, Inc., 253 N. 1st Ave., Sturgeon Bay, WI 54235
Richard R. Taubler Inc., 8 Columbia St., Milford, Del. 19963
Thames Engineering Consultants Inc., P.O. Box 589, New London, Ct. 06320
Timsco, 622 Azalea Road, Mobile, AL 36609
Townsend Marine Consultants, 18 Church Street, Georgetown, CT 06829
Wadam Wartsila Helsinki Shipyard, P.O. Box 132, SF-00151 Helsinki 15, Finland
Wesley D. Wheeler Assoc., Ltd., 104 E. 40th St., Suite 206, New York, NY 10016
Thomas B. Wilson, 920 North Avalon Blvd., Wilmington, CA 90744
Wind Ship Development Corporation, 690 Main Street, Norwell, MA 02061
Wink Incorporated, 8020 Mayo Blvd., New Orleans, LA 70126
XPLO Corporation, 229 Fifth Street, Gretna, LA 70053

NAVIGATION & COMMUNICATIONS EQUIPMENT
AAT Communications Corporation, 1854 Hylan Blvd., New York, NY 10305
American Hydromath Co., Buckwheat Bridge Rd., Germantown, N.Y. 12526
Apelco Marine Electronics, Division of Raytheon, 676 Island Pond Rd., Manchester, NH 03103
Comsat General Corp., 950 L'Enfant Plaza, S.W., Washington, D.C. 20024
DEBEG Marine, Inc., 10 Manor Parkway, Salem, NH 03079
Electro-Nav Inc., 840 Bond Street, Elizabeth, NJ 07201
Furuno U.S.A., 271 Harbor Way, S. San Francisco, CA 94080
Griffith Marine Navigation, Inc., 134 North Avenue, New Rochelle, NY 10801
Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
Hose McCann Telephone Company, Inc., 9 Smith Street, Englewood, NJ 07631
ITT Mackay Marine, 2912 Wake Forest Road, Raleigh, N.C. 27611
Intermarine Electronics, Inc., Flowerfield Bldg. #7, St. James, N.Y. 11780
Iotron Corp., 5 Alfred Circle, Bedford, MA 01730
Kongsberg North America Inc., 135 Fort Lee Road, Leonia, NJ 07605
Kongsberg Vapenfabrikk, Norcontrol Division, P.O. Box 145, Horten 3191, Norway
Krupp Atlas-Elektronik, 241 Erie Street, Jersey City, NJ 07302
Magnavox Navigation Systems, 2829 Maricopa Street, Torrance, CA 90503
Maritel, Inc., 139 Old Solomon's Island Road, Annapolis, MD 21401
Nav-Com, Inc., 711 Grand Blvd., Deer Park, NY 11729

Navidyne Corp., 11824 Fishing Point Drive, Newport News, VA 23606
Navigation Communications Systems, Inc., 20100 Plummer Street, Chatsworth, CA 91311
North American Philips Communication Corp., 55 Knights Bridge Road, Piscataway, NJ 08854
RCA Service Co., Building 204-2, Camden, N.J. 08101
Racal-Decca Marine, Inc., P.O. Box G, #1 Commerce Blvd., Palm Coast, FL 32037
Radar Devices, Inc., 2955 Merced Street, San Leandro, CA 94577
Raytheon Marine Co., 676 Island Pond Road, Manchester, N.H. 03103
Raytheon Ocean Systems Company, Westminster Park, Risho Avenue, East Providence, RI 02914
Raytheon Service Co., 103 Roesler Rd., Glen Burnie, MD 21061
Simrad Inc., 1 Labriola Court, Armonk, N.Y. 10504
Southern Marine Research, Inc., 1401 N.W. 89th Court, Miami, FL 33172
Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.
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., 505 Atrium One, 11811 1-10 East, Houston, TX 77029
Shell Oil Co., 1 Shell Plaza, Houston, Texas 77002
Mobil Oil Corporation, 150 East 42nd St., New York, N.Y. 10017
Texaco, Inc. (International Marine), 135 East 42nd St., N.Y., N.Y. 10017

OIL/WATER SEPARATORS
Alfa-Laval, Inc., 2115 Linwood Avenue, Ft. Lee, NJ 07024
Butterworth Systems Inc., 224 Park Ave., Florham Park, N.J. 07932
National Marine Service, Inc., 1750 Brentwood Blvd., St. Louis, MO 63144

PAINTS—COATINGS—CORROSION CONTROL
American Abrasive Metals, 460 Coit Street, Irvington, NJ 07111
Ameron, 4700 Ramona Blvd., Monterey Park, CA 91754
"CONSOL" manufactured by Hanline Bros., Inc., 1400 Warner St., Baltimore, MD 21230
Devoe Marine Coatings Co., P.O. Box 7600 Louisville, KY 40207
E.I. Dupont De Nemours & Co., Inc., Nemours Bldg. Rm. N-2504-2, Wilmington, DE 19898
Eureka Chemical Company, 234 Lawrence Ave., So. San Francisco, CA 94080
Henkel Corporation, 4620 West 77th Street, Minneapolis, MN 55435
International Paint Co., 17 Battery Place North, Suite 1150, New York, N.Y. 10004
Jotun-Baltimore Copper Paint Co., 840 Key Highway, Baltimore, MD 21230
Mobay Chemical Corporation, Plastics & Coatings Div., Pittsburgh, PA 15205
Mobil Chemical Co., Maintenance & Marine Coatings Dept., P.O. Box 250, Edison, N.J. 08817
Palmer Products Inc., P.O. Box 8, Worcester, PA 19490
Selby, Battersby & Company, 5220 Whiby Avenue, Philadelphia, PA 19143

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

PIPE-HOSE—Cargo Transfer, Clamps, Couplings, Coatings
Camlock Flange Sales Corp., 449 Sheridan Blvd., Inwood, L.I., N.Y. 11696
CUNICO Corp., Cooney Pipe & Copper Works Div., 214 N. Hawaiian Ave., Wilmington, CA 90748
Hydro-Craft, Inc., 4223 Edgeland, Royal Oak, Mich. 48073
Kubota Ltd., 2-47, Shikit Suhigashi 1-Chome, Naniwa-Ku, Osaka 556-91, Japan
Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030
Sanchem, Inc., 1600 South Canal Street, Chicago, IL 60616
Tioga Pipe & Supply Company, 2450 Wheatsheaf Lane, Philadelphia, PA 19137

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

PROPULSION EQUIPMENT—Bowthrusters, Diesel Engines, Gears, Propellers, Shafts, Turbines
Alco Power Inc., 100 Orchard St., Auburn, N.Y. 13021
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
Centrico, Inc., 100 Fairway Court, Northvale, NJ 07647
Colt Industries' Fairbanks Morse Engine Division, Beloit, Wisc. 53511
Combustion Engineering, Inc., Windsor, Connecticut 06095
General Electric Co., Diesel Power Products, 2901 E. Lake Rd., Erie, PA 16531
Kawasaki Heavy Industries, Ltd., 2-4-1 Hamamtsu-cho, Minato-ku, Tokyo, Japan
MTU of North America, Inc., 10450 Corporate Drive, Sugar Land, TX 77478
Maritime Industries, Ltd., 6307 Laurel St., Burnaby, B.C. Canada V5B 3B3
Michigan Wheel, 1501 Buchanan Ave., S.W., Grand Rapids, MI 49507
Omnithruster Inc., 15418 Cornet Ave., Santa Fe Springs, CA 90670
Oosterhuis Industries, Inc. (Marine Engineering, Inc.), P.O. Box 30587, New Orleans, LA 70190
P.J. Plishner Marine, 2 Lake Avenue Ext., Danbury, CT 06810
Port Electric Turbine Div., 155-157 Perry St., New York, N.Y. 10014
Propulsion Systems Inc., 21213 76th Ave., So., Kent, WA 98031
Schottel of America, Inc., 8375 N.W. 56 Street, Miami, Fla. 33166
Skinner Engine Company, P.O. Box 1149, Erie, PA 16512
Steamco Corporation, 1020 East 8th Street, Jacksonville, FL 32206
Tacoma Boat Co./Escher Wyss, 1840 Marine View Dr., Tacoma, WA 98422
Transamerica DeLaval Inc., Engine & Compressor Div., 550 85th Ave., Oakland, CA 94621
Transamerica Delaval, Inc., Turbine & Compressor Div., P.O. Box 8788, Trenton, N.J. 08650
Turbine Specialties, Inc., P. O. Box 207, West State Street Road, Salina, KS 67401
Voith Schneider of America—U.S. Agent: Eli Sharprut, 347 Evelyn St., Paramis, N.J. 07652

PUMPS—Repairs—Drives
Barco Corporation, 16 Bahama Circle, Tampa, FL 36606
Penco Division Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030
Transamerica Delaval, IMO Pump Division, P.O. Box 447, Monroe, NC 28110
Worthington Group-McGraw Edison Co., 270 Sheffield Street, Mountainside, NJ 07092

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
Atlantic Cordage Corp., 60 Grant Avenue, Carteret, NJ 07008
Samson Ocean Systems, Inc., 99 High Street, Boston, Mass. 02110

RUDDER ANGLE INDICATORS
Electric Tachometer Corp., 68th & Upland St., Philadelphia, Pa. 19142
Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
Hose McCann Telephone Co., Inc., 524 W. 23rd St., N.Y. 10011
Modular Systems, 164 Franklin Avenue, Rockaway, NJ 07866
Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.

SAFETY EQUIPMENT
ACR Electronics, Inc., 3901 North 29th Avenue, Hollywood, FL 33020
Datrex, 3770 N.W. So. River Drive, Miami, FL 33142

SANITATION DEVICES—Pollution Control
American United Marine Corp., 575 Madison Avenue, New York, NY 10022
Argo Marine Pollution Systems Division, 140 Franklin St., New York, N.Y. 10013
Chapman Engineers (Omnipure Division), 6101 Southwest Freeway, Suite 100, Houston, TX 77057
Envirovac (Division of Dometic Inc.), 1260 Turret Drive, Rockford IL 61111
Marine Moisture Control Co., Inc., 449 Sheridan Blvd., Inwood, L.I., N.Y. 11696
Marland Environmental Systems, Inc., N. Main Street, Walworth WI 53184
Microphor, Inc., P.O. Box 490, Willits, CA 95490
Red Fox Industries, P.O. Drawer 640, New Iberia, LA 70560
St. Louis Ship FAST Sewage Systems, 611 East Marceau St., St. Louis, Mo. 63111
Somat Corporation, Pomeroy, PA 19367

SCAFFOLDING EQUIPMENT—Work Platforms
Patent Scaffolding Co., 2125 Center Ave., Fort Lee, N.J. 07024

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

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

SHIPBREAKING—Salvage
The Boston Metals Co., 313 E. Baltimore St., Baltimore, Md. 21202
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 52030, New Orleans, La. 70150
Bay Shipbuilding Corporation, 605 North Third Avenue, Sturgeon Bay, WI 54235
Bender Shipbuilding & Repair, P.O. Box 42, Mobile, AL 36601
Bergeron Industries Inc., P.O. Box 38, St. Bernard, La. 70085
Bethlehem Steel Corp., One State Street Plaza, N.Y. 10004
Blohm & Voss Company, 55 Morris Avenue, Springfield, NJ 07081
Bludworth Bond Shipyard Inc., P.O. Box 5065, Houston, TX 77012
Boeing Marine Systems, P.O. Box 3707, Mail Stop 14-11, Seattle, WA 98124
Cantieri Navali Riuniti, Via Cipro, 11, 16100 Genova, Italy
Carrington Slipways Pty, Ltd., Old Punt Road, Tomago, N.S.W., Australia 2322
Centromor, One World Trade Center, Suite 3557, New York, N.Y. 10048
China Shipbuilding Corp., c/o Allegro Transportation Supply Co., One Penn Plaza, Room 1606, New York, NY 10119
Conrad Industries, P.O. Box 790, Morgan City, La. 70390
Curacao Drydock Company Inc., 26 Broadway, Suite 741, New York, NY 10004
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
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
Jeffboat, Inc., Jeffersonville, Ind. 47130
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
Marine Fabricators, P.O. Box 246, Green Cove Springs, FL 32043
Matton Shipyard Co., Inc., P.O. Box 645, Cohoes, New York 12047
Midland Marine Corporation, One Pennsylvania Plaza, New York, NY 10001
Misener Industries, Inc., 5353 Tyson Avenue, P.O. Box 13625, Tampa, Fla. 33681
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
O.A.R.N. (Officine Allestimento-Riprazioni Navi), P.O. Box 1395, Genoa, Italy 16100
Paceco Inc. (A division of Fruehauf), West Seaway Access Road, Gulfport, MS 39501
Pearlson Engineering Co., P.O. Box 8, Kendall Branch, Miami, Fla. 33156
Port Allen Marine Service, Inc., P.O. Box 108, Port Allen, LA 70767
Progressive Shipbuilders & Fabricators, Inc., P.O. Box 9130, Houma, LA 70361
Promet (PTE) Ltd., 27 Pandam Rd., Jurong Industrial Estate, Singapore 22
St. Louis Shipbuilding—Federal Barge, Inc., 611 East Marceau, St. Louis, Mo. 63111
Savannah Shipyard Co., P.O. Box 787, Savannah, GA 31402
Southwest Marine, Inc., P.O. Box 13308, San Diego, Ca 92113
Sudoimport, 5 Kalyaevskaya, Moscow K-6, USSR
Sun Ship Inc., Chester, PA 19013
Swiftships Inc., P.O. Box 1908, Morgan City, LA 70380
Tacoma Boatbuilding Co., Inc., 1840 Marine View Drive, Tacoma, WA 98422
Tandanor (Piacentini), Antartida Argentina 555 Darsena Norte, (1104) Buenos Aires-Republica Argentina
Thomas Marine Inc., 37 Bransford Street, Patchogue, NY 11772
Todd Shipyards Corp., 1 State St. Plaza, New York, N.Y. 10004
Total Transportation Systems Inc., 813 Forest Dr., Newport News, VA 23606
Total Transportation Systems (International) A/S, Bjornegarden, P.O. Box 28, N5201 Oslo, Norway
Tracor Marine, P.O. Box 13107, Port Everglades, Fla. 33316
Tug Barge Systems, Inc., subsidiary of Ingram Corp., 4100 One Shell Square, New Orleans, La. 70139
Union Dry Dock & Repair Co., Foot of Pershing Road, Weehawken, N.J. 07087
West Coast Salvage And Contracting, 2150 East Kent Avenue, Vancouver, B.C. V5P 2T2

SHIPPING—PACKING
Candia Shipping (USA) Inc., One World Trade Center, Suite 1611, New York, NY 10048
Crane Packing Co., 435 Regina Drive, Clarksburg, MD 20734

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

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

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

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

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

TANK LEVELING INDICATORS
Transamerica Delaval, Inc., Gems Sensors Division, Cowles Road, Plainville, CT 06062
Vu-Gage System, 150 E. 42nd St. (Room 910), New York, NY 10017

TERMINALS—Oil-Transfer
Caicos Petroleum Services Div., Federal Chicago Corp., 2222 North Elston Avenue, Chicago, IL 60614

TOWING—Barges, Vessel Chartering, Lighterage, Salvage, etc.
Bay-Houston Towing Co., 805 World Trade Bldg., Houston, Texas 77002
Chotin Transportation, Inc., 580 Walnut St., Cincinnati, Ohio 45202
Curtis Bay Towing Co., Mercantile Bldg., Baltimore, Md. 21202
Henry Gillen's Sons Lighterage, 21 West Main St., Oyster Bay, N.Y. 11771
Great Lakes Towing Company, 1800 Terminal Tower, Cleveland, OH 44113
Gulf Fleet Marine Corporation, Canal Place One, Suite 2400, New Orleans, LA 70130
James Hughes, Inc., 17 Battery Pl., New York, N.Y. 10004
McAllister Bros., Inc., 17 Battery Pl., New York, N.Y. 10004
McDonough Marine Service, P.O. Box 26206, New Orleans, La.
Moran Towing & Transportation Co., Inc., One World Trade Center, Suite 5335, New York, N.Y. 10048
Ocean Salvors Company, One World Trade Center, New York, NY 10048
Smit International (Americas) Inc., 17 Battery Place, New York, NY 10004
Suderman & Young Co., Inc., 918 World Trade Bldg., Houston, Texas 77002
Turecamo Coastal & Harbor Towing Corp., One Edgewater St., Clifton, Staten Island, N.Y. 10305

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

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

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

WINCHES AND FAIRLEADERS
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
A.L. Don Company, Foot of Dock Street, Matawan, NJ 07747

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 **If you are interested in having your company listed in this Buyers Directory Section, contact John C. O'Malley at (212) 689-3266**

U.S. SHIP CONSTRUCTION CONTRACTS

1 — MERCHANT VESSELS UNDER CONSTRUCTION OR ON ORDER AT U.S. YARDS — AUGUST 1, 1981

Builder	Owner	Total No.	Type	Hull Nos.	Est. GT (Each)	Est. DWT (Each)	Est. HP (Each)	Est. Total Cost ($Mil.)
Avondale Shipyards	American President Lines	3	Container	2329-31	40,500	30,300	D-43,200	330.0
	Suwanee River	1	Tug/Barge	2327-8	16,000	41,300	D-18,200	37.7
	Ogden Marine	2	Products	2318-19	25,000	42,000	D-15,000	100.0
	Corps of Engineers	1	Dredge	2322	9,900	8,000	D-10,400	67.5
	United States Trust	1	Dredge	2332	—	9,980	D-13,800	40.0
	Exxon Company U.S.A.	3	Products	—	26,000	43,000	D-17,000	300.0
Bath Iron Works	Corps of Engineers	1	Dredge*	402	6,000	—	D-7,000	65.0
	Falcon I Sea Transport	2	Tanker	404-5	24,000	33,900	D-14,720	142.0
	Calif. & Hawaii Sugar	1	Barge*	406	21,000	37,000	—	25.0
Bay Shipbuilding	Beker Shipping	1	Bulk Barge	728	20,000	41,000	—	NA
	Universal American Barge	1	Bulk Barge	729	17,500	33,000	—	NA
	Ocean Barge	1	Bulk Barge	730	17,500	33,000	—	NA
Bethlehem-Sparrows Point	Artemis Marine	1	Tug/Barge	4652	32,000	47,000	D-18,200	52.6
	First-Fifth Tug/Barge	5	Tug/Barge	4653-7	32,000	47,000	D-18,200	266.0
Equitable Shipyards	City of New York	1	Ferry	1714	3,000	4,200	D-7,800	15.0
General Dynamics-Quincy	Coastwise Shipping	4	Tank Barge	73-75, 82	—	27,000	—	57.0
	New England Electric	1	Collier	—	23,500	36,000	T-12,000	60.0
	Watermanship Steamship	1	RO/RO-Cont.*	85	18,500	23,500	T-32,000	61.0
Levingston Shipbuilding	Asco Falcon I	2	Bulk	752-3	23,500	36,000	D-14,800	80.0
National Steel & SB	Union Oil	2	Products	416-17	24,500	37,500	T-13,000	100.0
	American Tankships	2**	Products	419-20	24,500	37,500	D-11,400	102.0
	American Trading Trans.	3	Products	424-6	27,000	44,000	D-11,400	153.0
Norfolk Shipbuilding	Coordinated Caribbean	1	Barge	34	4,000	6,680	—	21.2
Southern Shipbuilding	Great Lakes Dredge	1	Dredge	120	3,300	4,400	D-3,000	NA
Sun Ship, Inc.	Sun Transport	1	Products	677	17,000	31,000	D-14,200	36.0
	Waterman Steamship	2	RO/RO-Cont.	679-80	18,500	23,500	T-32,000	137.5
Upper Peninsula SB	State of Michigan	1/4	Tug(1)/ Barge(4)	001-5	5,400	10,000	D-8,000	35.5
Wiley Manufacturing	American Dredging	1	Dredge	104	2,500	3,750	D-7,200	NA
	Texas Gulf	1	Dredge	108	2,800	3,800	DE	NA

* Subcontracted from Sun Ship. ** Option for three additional sister ships.

2 — OFFSHORE DRILLING RIGS UNDER CONSTRUCTION OR ON ORDER AT U.S. YARDS — AUGUST 1, 1981

Builder	Owner	Name	Type	Delivery
Alabama Maritime Mobile, Ala.	Diamond M	Diamond M. Hunter	Semisub.	11/81
	"	Diamond M. Eagle	"	4/82
	"	Diamond M. Falcon	"	1/83
Baker Marine Ingleside, Texas	Huthnance Dlg.	Charger I	Jackup	11/81
	Huthnance Dlg.	Charger II	"	11/81
	Magnum Marine	Mr. Demp	"	11/81
	Magnum Marine	Robert N. Haskin	"	5/82
	Magnum Marine	Robert W. Womack	"	6/82
	Pool Offshore	Pool Offshore Rig 54	"	12/81
	Savage Drilling	Ponca	"	8/82
Bethlehem Steel Beaumont, Texas	Griffin-Alexander	Griffin-Alexander V	Jackup	5/82
	"	Griffin-Alexander VII	"	9/82
	"	Griffin-Alexander VIII	"	3/82
	Houtech Energy	Houtech I	"	8/81
	"	Houtech II	"	10/81
	" "	Houtech III	"	3/82
	" "	Houtech IV	"	9/82
	Marine Drilling	J. Storm XVII	"	9/81
	O & U Drilling	Nordrill II	"	1/82
	Teledyne	Mobile 20	"	11/82
	Alfa Drilling	(unnamed)	"	1/83
Bethlehem Steel Sparrows Point, Md.	Griffin-Alexander	Griffin-Alexander III	Jackup	10/81
	"	Griffin-Alexander IV	"	3/82
	"	Griffin-Alexander VI	"	6/82
	Temple Drilling	Cheyenne	"	4/82
	Phoenix Seadrill	(unnamed)	"	7/82
Chicago Bridge & Iron Pascagoula, Miss	Dixilyn-Field	DF-77	Jackup	6/82
	Blocker Drilling	(unnamed)	Submersible	10/82
	" "	(unnamed)	"	2/83
General Dynamics Charleston, S.C.	Bailey & Shannon Inc.	Bill Bailey	Jackup	10/81
	" "	Bob Warner	"	12/81
	" "	Burr Rayburn	"	4/82
	" "	Herb Williamson	"	6/82
	" "	Mark Jones	"	1982
	" "	Mr. Webster	"	1982
Gulfport Shipbuilding Port Arthur, Texas	Perfordora S.A.	(unnamed)	Jackup	5/82
Ingalls Shipbuilding Pascagoula, Miss.	Transworld Drilling	Transworld 70	Submersible	8/81
	" "	Transworld 72	"	12/81
	" "	Transworld 73	"	2/82
	Bonito Offshore	Bonito I	Jackup	3/82
	"	Bonito II	"	12/82
	Chiles Drilling	Yucatan	"	9/81
	Global Marine	Glomar Main Pass I	"	11/81
	"	Glomar Main Pass II	"	1/82
	"	Glomar Main Pass III	"	5/82
	"	Glomar Main Pass IV	"	9/82
	Huthnance Drilling	Vanguard I	"	9/81
	"	Vanguard II	"	10/82
	Keyes Offshore	Keyes 301	"	8/81
	" "	Keyes 302	"	9/81
	" "	Keyes 303	"	7/82
Levingston Shipbuilding Orange, Texas	Dixilyn-Field	DF-87	Jackup	9/82
	Noble Drilling	Ed Holt	"	11/81
	" "	(unnamed)	"	12/82
	Compania Perforadora	(unnamed)	"	5/82

2 — OFFSHORE DRILLING RIGS UNDER CONSTRUCTION OR ON ORDER AT U.S. YARDS — AUGUST 1, 1981 (Con.)

Builder	Owner	Name	Type	Delivery
Marathon LeTourneau Brownsville, Texas	Chiles Drilling	Seabee	Jackup	3/83
	Global Marine	Glomar Adriatic II	"	9/81
	" "	Glomar Adriatic V	"	8/83
	" "	Glomar Adriatic VI	"	10/83
	" "	Glomar Adriatic VII	"	1/84
	Penrod Drilling	Penrod 86	"	2/82
	" "	Penrod 88	"	5/82
	" "	Penrod 90	"	8/82
	" "	Penrod 98	"	4/84
	Rowan Drilling	(unnamed)	"	12/82
Marathon LeTourneau Vicksburg, Miss.	Penrod Drilling	Penrod 87	Jackup	5/82
	" "	Penrod 89	"	9/82
	" "	Penrod 91	"	1/83
	" "	Penrod 99	"	4/84
	Rowan Drilling	Gilbert Rowe	"	10/81
	" "	Cecil Provine	"	2/82
	Rowan Drilling	(unnamed)	Jackup	12/83
	" "	(unnamed)	"	11/84
	" "	(unnamed)	"	3/85
	" "	(unnamed)	"	1985
Vemar Shipyard Channelview, Texas	Atwood Oceanics	Richmond	Submersible	11/81
	Cliffs Drillling	(unnamed)	Jackup	9/81
	" "	(unnamed)	"	11/81
	Penrod Drilling	Penrod 170	Submersible	12/81
	" "	Penrod 171	Submersible	4/82
	" "	Penrod 172	Submersible	8/82
	Macan Offshore	(unnamed)	Jackup	4/82
	Goldrus Marine	(unnamed)	Submersible	3/83

3 — MAJOR U.S. NAVAL VESSELS UNDER CONSTRUCTION OR ON ORDER AT U.S. YARDS — AUGUST 1, 1981

Builder	Type	Navy Nos.	No.	Est. Contract Value, $Mil.
Avondale Shipyards	Fleet Oiler	AO-178-9	2	$144.0
	" "	AO-180, 186	2	146.2
Bath Iron Works	Guided-Missile Frigate	FFG-21, 24, 26	3	178.2
	"	FFG-29, 32, 34	3	147.0
	"	FFG-36, 39, 42	3	209.9
	"	FFG-45, 47, 49	3	195.4
Boeing Marine Systems	Missile Patrol Hydrofoil	PHM-2	1	21.3
	"	PHM-3-6	4	178.0
Derecktor Shipyard	Med. End. Cutter*	WMEC 905-13	9	350.0
GD-Electric Boat	Attack Submarine	SSN-699	1	428.0
	"	SSN-700-4	5	2,171.4
	"	SSN-705-10	6	2,605.6
	"	SSN-719-20	2	——
	Trident Submarine	SSBN 726	1	285.4
	"	SSBN 727-9	3	699.4
	"	SSBN 730	1	354.5
	"	SSBN 731-2	2	699.0
	"	SSBN 733	1	401.0

3 — MAJOR U.S. NAVAL VESSELS UNDER CONSTRUCTION OR ON ORDER AT U.S. YARDS — AUGUST 1, 1981 (Con.)

Builder	Type	Navy Nos.	No.	Est. Contract Value, $Mil.
Ingalls Shipbuilding	Missile Destroyer	DDG-994-6	3	1,050.0
	Destroyer	DD-997	1	231.0
	Aegis Missile Cruiser	CG-47	1	287.8
	" " "	CG-48	1	298.0
Lockheed Shipbuilding	Sub. Tender	AS-41	1	209.5
	Dock Landing Ship	LSD-41	1	338.6
Marinette Marine	Fleet Ocean Tug	T-ATF-172	1	8.4
National Steel & SB	Destroyer Tender	AD-42-4	3	520.0
	Cable Repair Ship	T-ARC-7	1	107.0
Newport News SB	Attack Carrier	CVN-70-71	2	1,718.6
	Attack Submarine	SSN-712-15	4	388.0
	"	SSN-716-18	3	380.8
Peterson Builders	Patrol Gunboats **	F-PGG-2-9	8	70.1
Tacoma Boatbuilding	Missile Patrol Chaser **	F-PCG-1-4	4	52.5
	Med. End. Cutter*	WMEC-901-4	4	130.0
Todd-San Pedro	Guided Missile Frigate	FFG-19, 23, 25	3	151.0
	"	FFG-27, 30, 33	3	147.0
	"	FFG-38, 41, 43	3	214.8
	"	FFG-46	1	67.7
Todd-Seattle	Guided-Missile Frigate	FFG-18	1	49.6
	"	FFG-20, 22	2	100.7
	"	FFG-28, 31, 35	3	147.0
	"	FFG-37, 40	2	143.2
	"	FFG-44, 48	2	135.3

*For U.S. Coast Guard. **For Saudi Arabia.

New U.S. Program For Maritime Superiority

(continued from page 70)

architect and marine engineering community has consistently pointed the way toward greater productivity and operating efficiency. I predict that we will continue to do this through innovations such as the application of newer slow and medium-speed diesel technology; coal firing for specialized bulk vessels; and continued advancements in computer-aided and integrated ship design and manufacturing technology."

The achievement of our nation's primary objective — maritime superiority — will not be an easy task, nor is it even assured, Mr. **Sawyer** stated. "Although we have the physical facilities and the financial resources required, the principal test will be the adequacy of our collective will and skill—in other words our management perseverence and professional ability. Our principal adversary has amassed a fleet over three times the size of ours, and each year out builds us by about the same factor of three. We can't 'out muscle' him in numbers; but we can 'out think' him through the strength of our technology and innovation. It has worked for us as a nation in the past, and it will continue to work for us in the future, because both technology and innovation themselves stem from the core strengths of our society — freedom — to think, to express ourselves, and to choose our individual destinies."

Announce Speakers For Liberty Corrosion Course

Participants in the marine seminars being given as part of the 19th annual Liberty Bell Corrosion Course were announced recently by conference organizers.

The course will be held September 28-30 at the Marriott Hotel, Philadelphia, Pa. In the marine seminars, featured participants in a segment entitled "Overview of Shipyard Activity" will be **H. Peck**, of Bethlehem Steel's Sparrows Point, Md., yard, **A. Richard** of Ingalls Shipbuilding Corp., Pascagoula, Miss., and **E. Geredian** of Bath Iron Works, Bath, Maine.

A seminar called "Overview of Exterior Marine Coatings" will feature sections on "Alkyds/Chlorinated Rubber Systems" by **J. Bendix** of Farboil Co. of Baltimore, Md.; "Vinyls/Urethanes" by **R. Sprout** of E.I. du Pont Co.; and "Epoxy/Coal Tar Epoxies: Interior/Exterior Coatings" by **J. White** of Devoe Marine Coatings Co., Louisville, Ky.

On the second day "An Overview of Organic and Inorganic Zinc Coatings" will be given by **N. Duvic** of Ameron PCD of Houston, Texas, and "Corrosion Control of Tanks Aboard Oil Tankers" will be presented by **W. Radut** of Exxon International, Florham Park, N.J. **H. Stoner** of Koppers Co., Newark, N.J. will present "Influence of Low Temperature on Solvent Release," and "Impact of Regulations" will be treated by **R. Groesbeck** of Sun Transportation, Chester, Pa. "An Overview of Antifoulings" will be given by **N. Grotland** of Jotun/B.C., PC of Baltimore, Md.

The program for the third day includes two overviews — one on "MarAd Funded Programs" by **J. Peart** of Avondale Shipyards, Inc., New Orleans, La., and the other, "Impressed Current Systems" by **F. Luciano** of Engelhard Industries. A film "Corrosion In Action" also will be shown.

For a copy of the complete program and registration and reservation information, write: 19th Annual Liberty Bell Corrosion Course, Attention **Bob Doyle**, Ameron, 275 Route 18, East Brunswick, N.J. 08816.

McMullen Associates Restructures Top Post

George R. Knight Jr. P. Thomas Diamant Richard W. Thorpe

Dr. **John J. McMullen**, chairman of the board of John J. McMullen Associates, New York-based naval architectural, marine engineering, and consulting firm, recently announced the establishment of an office of the chief executive in which all corporate management responsibilities formerly exercised by the company's president and CEO will be vested.

The office of the chief executive will be composed of **George R. Knight Jr.**, P. **Thomas Diamant**, and **Richard W. Thorpe**, all of whom are presently senior vice presidents of the company. Dr. **McMullen** stated that "The establishment of the new office provides an effective means of addressing the corporate management responsibility exercised by **George A. Sawyer** until his acceptance of the position of Assistant Secretary of the Navy for Shipbuilding and Logistics."

INTERNATIONAL SYMPOSIUM ON SHIP OPERATIONS

ISOSO '81

NOVEMBER 17, 18, 19, 1981 — NEW YORK CITY, USA

INTERNATIONAL SHIPPING POLICY ISSUES DAY (MONDAY, NOV. 16)

19 CONFERENCE SESSIONS IN THREE DAYS

IN-WATER DEMONSTRATIONS

PANELS ON VITAL TOPICS FOR TODAY

Partial List of Conference Topics . . .

NAVIGATION, COMMUNICATIONS, PLUS HYDROGRAPHICS AND WEATHER
- Auto Radar Plotting Aids
- G.P.S./NavStar
- Navigation Capability of InMarsat
- InMarsat and its Potential
- W.A.R.C., 1982
- Steering machinery of the future
- Future Maritime Global Safety and Distress System
- Hydrography and the Management of the International Trade Zones
- Future Global Maritime Distress and Safety System (IMCO)
- Status of Navigational Charts, World-Wide
- Computer-Microfilm Charts and Their Impact on the Mariner
- Application of G.P.S. Satellite Receivers on Maritime Operations
- Change-over of World-Wide buoy Systems and Their Impact at Sea
- Current Status of Weather Routing
- Heavy weather damage avoidance systems

ECONOMIES AND LOGISTICS OF VESSEL PROCUREMENT (PURCHASING AGENTS VIEWPOINT)
- Economies of Propulsion
- Fuel Consumption and Bunkers
- Inventory Control and Vessel Economics
- Problems with obsolete equipment
- Problems with Vessel Procurement

SHIP OPERATIONS AND MAINTENANCE
- General Purpose Crew Manning
- Unmanned Machinery Space Operations
- Hull cleaning-Drydock vs afloat
- Training: Use of Simulators, Current Status and Future Trends
- On-Board Training
- Cargo Loading Simulators - Bulk and Container

COMPLYING WITH NATIONAL AND INTERNATIONAL REGULATORY STANDARDS
- The Expanding Role of Port States
- Environmental
- Crude Oil Washing
- Safety

TRAINING AND CERTIFICATION
- Role of Simulator in the Training of Tug Personnel
- Engine Room Machinery Simulators as training aid
- Training needs of off-shore oil industry marine personnel
- The role and responsibility of organized maritime labor in training and education

SHIP OPERATIONS
- The Master as a ship manager
- Labor's role in shipboard management
- Ship management and crew reduction
- Economics of Traveling Maintenance crews
- Basic Components of today's wheelhouse - economics and skill demands
- General purpose crewing

SHIP PERFORMANCE
- Basic elements of energy conservation
- Economics of Propulsion
- Gear & Turbine vs diesel - economic update
- Fuel quality as a factor in ship performance

CARGO PROBLEMS
- Cargo damage aboard ship
- Cargo insurance

REGULATOR IMPACTS
- Import problems

Please rush all the details on attending ISOSO '81

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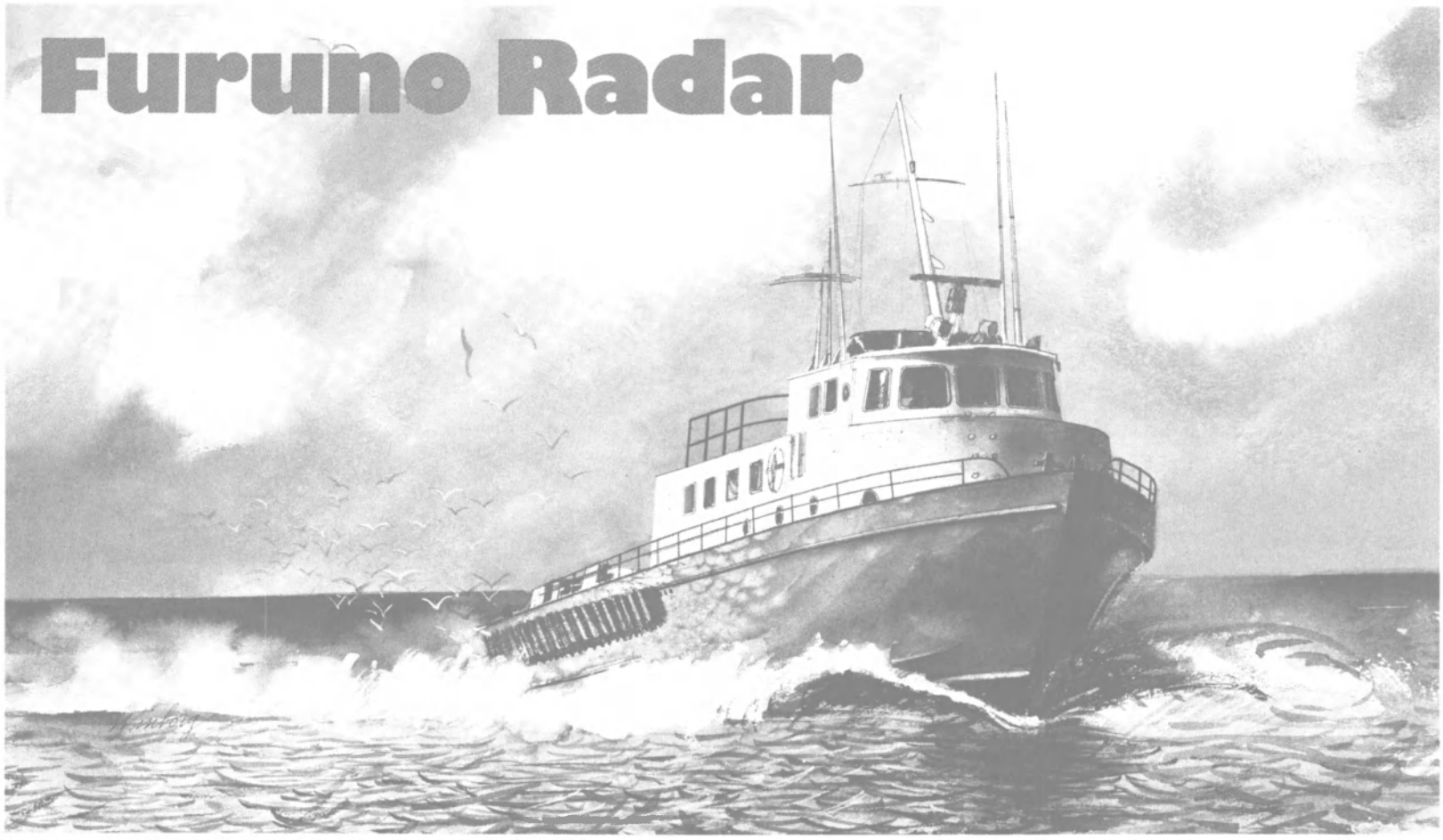
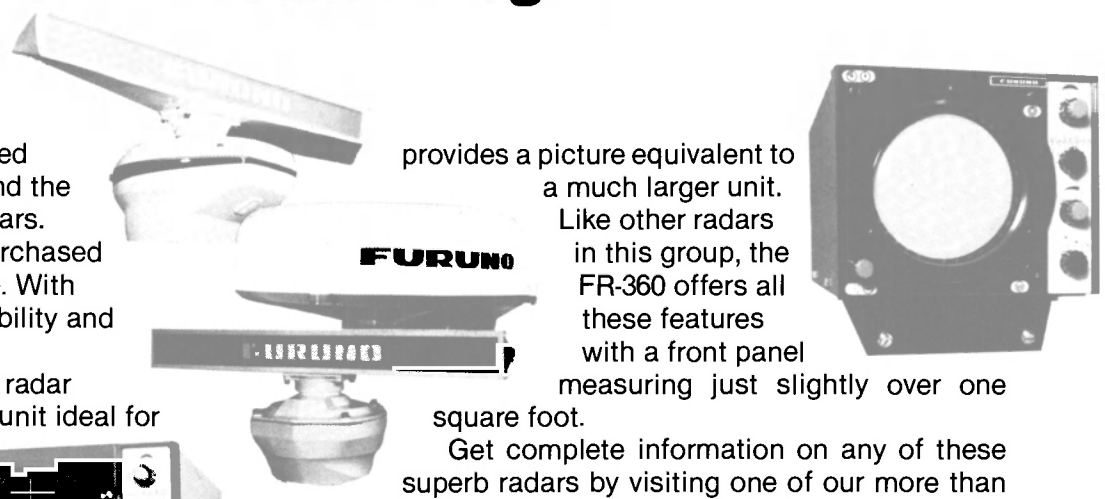
☐ We are a manufacturer/distributer of marine equipment. Rush complete details on exibiting at ISOSO '81

Furuno Radar

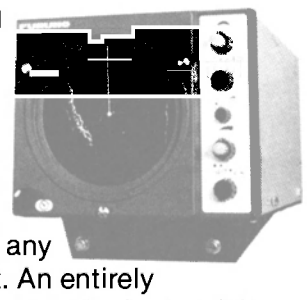


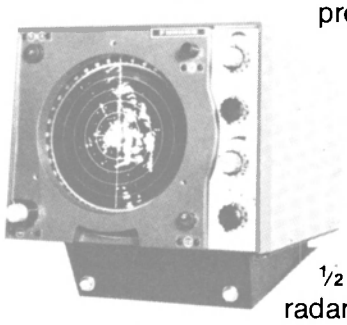
Quick, reliable relief from rain or fog or dark of night.



Furuno is one of the most respected names in marine electronics around the world, and has been for over 30 years. In fact, more Furuno radars are purchased in this country than any other type. With Furuno you get performance, reliability and service second to none.

MODEL 1600 is the first Furuno radar offered with a dome-type scanner unit ideal for larger sailboats and cruising auxiliaries. The compact display features a 7″ CRT (equivalent to 12″ with integral standard magnifier), 6 range scales from ½ to 16 n.mi., dual pulselength for optimum target definition at any range and a full 3 kW output. An entirely new integrated circuit front end eliminates failure-prone crystals and diodes, providing system performance equal to a unit having much higher output power.





FR-240 MKII radar is the workhorse of the Furuno line. A compact 3 kW unit with 7″ CRT and six range scales from ½ to 24 n.mi., thousands of these radars are used daily aboard yachts, workboats and commercial fishing vessels around the world.

FR-360 is the "big brother" radar with seven range scales from ½ to 36 n.mi. A 7″ CRT with integral magnifier and newly designed electronic front end provides a picture equivalent to a much larger unit. Like other radars in this group, the FR-360 offers all these features with a front panel measuring just slightly over one square foot.

Get complete information on any of these superb radars by visiting one of our more than 200 authorized Furuno dealer outlets, or by simply returning the coupon below.

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☐ **Model 1600** ☐ **FR-240 MkII** ☐ **FR-360**

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City _____ State _____ Zip _____

Type of vessel owned _____

☐ *The illustration above is one in a series of 12 by artist Larry Winborg that are now being offered in three sets of 4 prints each, reproduced in brown sepia tone on 17″x22″ heavy white art stock suitable for framing. Order any one or all sets directly from Furuno U.S.A. Just mark your choice below and enclose $5.00 per set for postage and handling.*

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When fog obscured her light, she blared a warning heard for miles.

And in 1912, ships began to home in on her radio beacon, the first in the world to operate successfully.

You can board the original Ambrose at New York's South Street Seaport Museum. The less romantic, but more efficient tower above now stands where she rode at anchor, a welcome sight (or sound) to seamen inward bound.

New York. Still another port where you'll find premium Gulf marine lubricants like Gulf Veritas Cyloils.

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