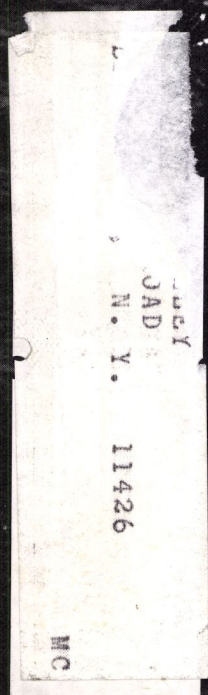


MARITIME REPORTER

AND
ENGINEERING NEWS



265,000-DWT Gulf Oil Tanker
American Independence Christened At
Bethlehem's Sparrows Point Shipyard

(SEE PAGE 7)

NOVEMBER 15, 1977

A Complete Line of
AMERICAN[®]
HEAVY DUTY MARINE ROPES

Manila • Polypropylene • Nylon
SSR-300 • SSR-200 • SSR-100
PNX[®] • Polyester • Sisal

ALL of our ropes are made in the U.S.A.



AMERICAN
MANUFACTURING COMPANY, INC.

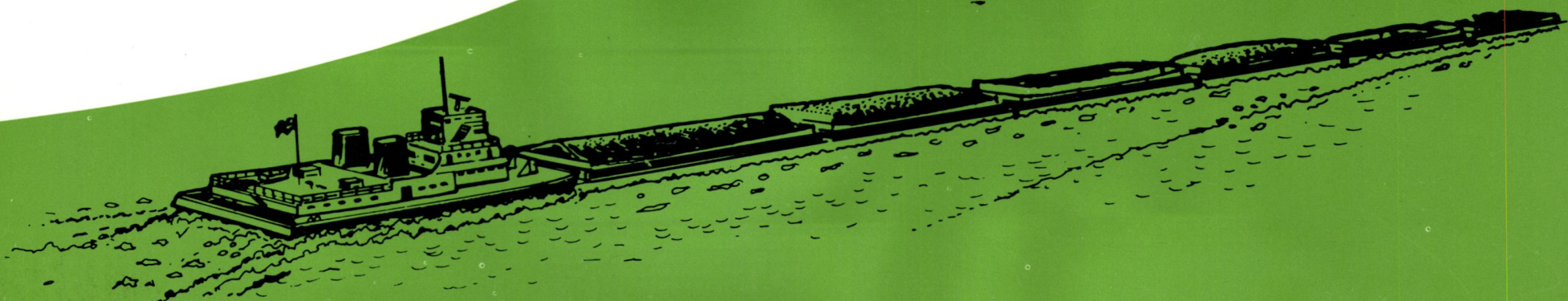
MANUFACTURING PLANTS

206 Willow Avenue
Honesdale, Pa. 18431
717/253-5860

200 Southpark Road
Lafayette, La. 70117
318/837-9241

Warehouses and Branches

ST. LOUIS • BOSTON • NEW YORK • PHILADELPHIA
JACKSONVILLE • NEW ORLEANS • HOUSTON • LOS ANGELES
EMERYVILLE • SEATTLE • CHICAGO • CLEVELAND



VERSATILITY



Photographic simulation of pilot house being elevated 28' height of eye to 45'.



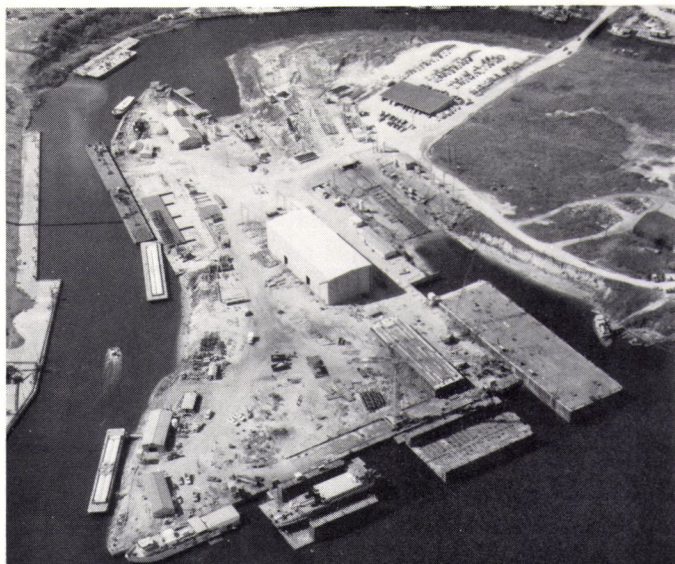
Tug Marjorie B. McAllister in notch of 18,000 ton/125,000 barrel barge.
Pilot house elevated to 45' height of eye.



Tug Marjorie B. McAllister with barge on hawser,
pilot house lowered to a conventional 28' height of eye.

McAllister Brothers, Inc. Towing and
transportation. 17 Battery Place,
New York, N.Y. 10004. (212) 269-3200.
Serving the ports of New York,
Norfolk, Philadelphia, and San Juan.

McAllister 



BLUDWORTH SHIPYARD In the Heart of Houston's Ship Channel

Bludworth specializes in marine repairs; sandblasting and painting; and construction of inland and offshore marine equipment.

Located on Brady Island on the Houston Ship Channel.

- Two (2) Drydocks: 1 - 1500 tons (76' x 150') 1 - 1200 tons (76' x 130')
- Three (3) Marine Railways: 1000 to 2000 tons
- Covered Fabrication Facilities • 4000 Feet of Water Frontage

Subsidiary of
Newpark Resources, Inc.

Bludworth shipyard, inc.

8502 Cypress Street/P. O. Box 5426/Houston, Texas 77012/(713) 928-5051

You have to ask for **CM AMERICAN** RATCHET TURNBUCKLES to get THE NO.1 PERFORMER

on barges
...towboats

Here's Why:

- SUPER SAFE... The only ratchet to have upset forged one piece barrels with tapered integral threads to prevent pull out.
- QUICK-ACTING... are of all precision forged construction
- RUGGED... have no welded insert or parts
- ECONOMIC-QUALITY... are built to a quality standard and not down to price.



Write today for complete information or phone: 412/771-4514

CM AMERICAN

DIVISION COLUMBUS McKINNON CORPORATION • P. O. BOX 74, McKees Rocks, PENNSYLVANIA 15136

ARINC Awarded \$117,000 MarAd Study Contract

The Maritime Administration has awarded a \$117,563 study contract to ARINC Research Corporation, Annapolis, Md., for development of an Automated Management Control System for U.S. public marine terminals.

The objectives of the 12-month study are to analyze the functional requirements of a public marine terminal, examine the cost benefits, and develop the concept design to meet the requirements. The contractor will examine cargo and equipment flow between the terminal's gates and the ship-to-apron transfer for potential areas for electronic or semi-automatic processing where it would contribute to management and control of terminals.

The study is designed to provide a program for the port and marine terminal industry whereby improved managerial capability will increase the productivity of terminals, enhance services provided to steamship operators, and improve the method of communicating cargo information to the landside customers receiving and delivering cargo to the terminal.

A small industry committee has been formed to advise and work with the contractor throughout the study.

NKK To Design Wooden Ship Repair Yard For Government Of Dubai

NKK (Nippon Kokan) of Japan has signed a contract with the Government of Dubai for a consultant service for the construction of a wooden ship repair yard.

Takeo Arakawa, NKK New York general manager, said that NKK would be in charge of basic survey, design, and installation management for the shipyard, which will be used for the repair of ships up to 45 meters (148 feet) long.

Scheduled for completion by summer 1978, the yard will have one Syncrolift and 30 repair berths. It will also be equipped with special conveyance equipment to transport the ships from their berths.

Equipment for the shipyard will be supplied by the firm of Okura Shoji Kaisha.

call **COMET** for **MARINE** **INSTRUMENTS**



- Pressure Gauges
- Thermometers
- Dial Thermometers
- Cargo Tank Thermometers
- Accessories & Fittings

ASHCROFT • DURO • JAY

MOELLER • PALMER

TAYLOR • WEKSLER

WESTON • U S AMTEK



Complete inventory for off-the-shelf service



**COMET MARINE
SUPPLY CO.**

157 PERRY STREET, NEW YORK, N.Y. 10014 • TEL. (212) 675-8776

On Board or Dock Side Look to Rapid for Power 3 KW to 3,000 KW

Rapid D.C. Power Supplies feature:

Low initial capital investment*; reduced power costs - 96% efficiency and high power factor; excellent reliability - hermetically sealed diodes non-aging for trouble-free operation; vacuum impregnated power transformers; solid state - completely static. Installation is simple - AC input connections to customer's power source - DC connections to load. Maintenance-free - self-lubricating fan - air cooled units. Diode protection is standard; thermal protection is standard; transient (surge) protection for both AC and DC are standard. Write for catalog M776. *When replacing M-G sets, these supplies pay for themselves within 1½ years.

Also available: Marine dry type transformers designed for shipboard use. Enclosures are weatherproof and the core and coils are braced for sea conditions. Transformers meet IEEE-45 and US CG Spec. CG-239 (Catalog T-1976). Look to Rapid for all your power requirements, AC or DC. Write or call today.



RAPID ELECTRIC CO., INC.
GRAYSBRIDGE ROAD, BROOKFIELD, CONN. 06804 (203) 775-0411 (212) 828-2200

**MARITIME
REPORTER**
AND
ENGINEERING NEWS

No. 22

Volume 39

107 EAST 31st STREET
NEW YORK, N. Y. 10016

(212) 689-3266, 3267,
3268, 3269

ESTABLISHED 1939

Maritime Reporter/Engineering News is published the 1st and 15th of each month by Maritime Activity Reports, Inc. Controlled Circulation postage paid at Waterbury, Connecticut 06701.

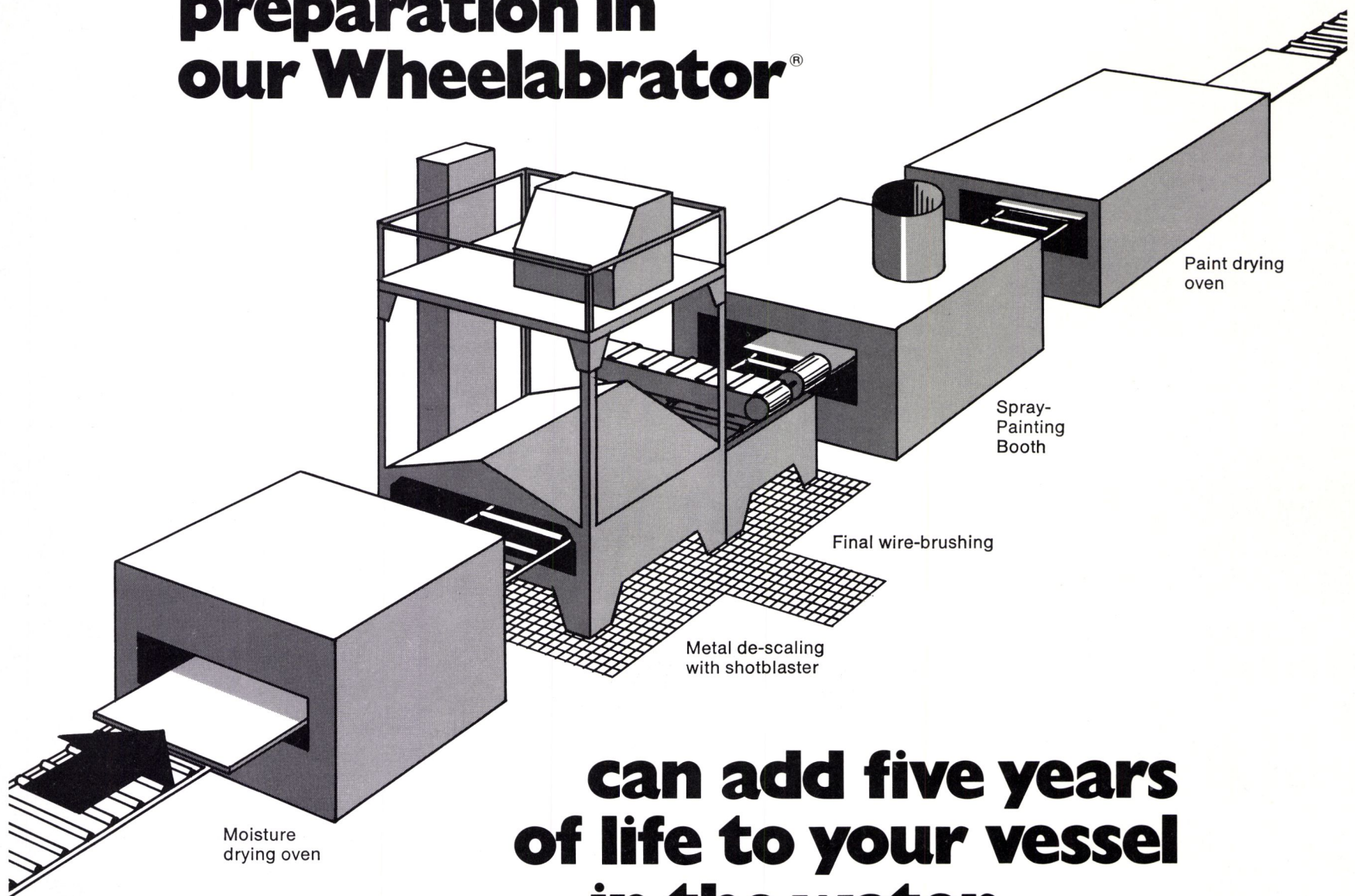
Postmaster send notification (Form 3579) regarding undeliverable magazines to Maritime Reporter/Engineering News, 107 East 31st Street, New York, N.Y. 10016.

Member

BPA

Business Publications
Audit of Circulation, Inc.

Five minutes of preparation in our Wheelabrator®



can add five years of life to your vessel in the water.

It takes just five minutes for a sheet of steel to pass through the Jeffboat Wheelabrator shotblaster, but when it comes out, it has five more years of life built into it.

Here's why.

It starts with the dryers. As steel plate is removed from the storage yard, it is run through a high-heat dryer to remove any trace of rust-producing moisture. Only after the plate is totally dry does it enter the shotblast area of the Wheelabrator.

Here, each square inch of plate is blasted with thirty-five ounces of hard-steel shot. Any rust, corrosion and mill scale that might have existed is simply pelted away.

Wirebrushing follows shotblasting after which the plate is coated with inorganic zinc—on one or both sides. This protects the integrity of the metal, prevents corrosion and can add up to five years on the life of the sheet. Finally, the plate passes through a second dryer to seal the coating.

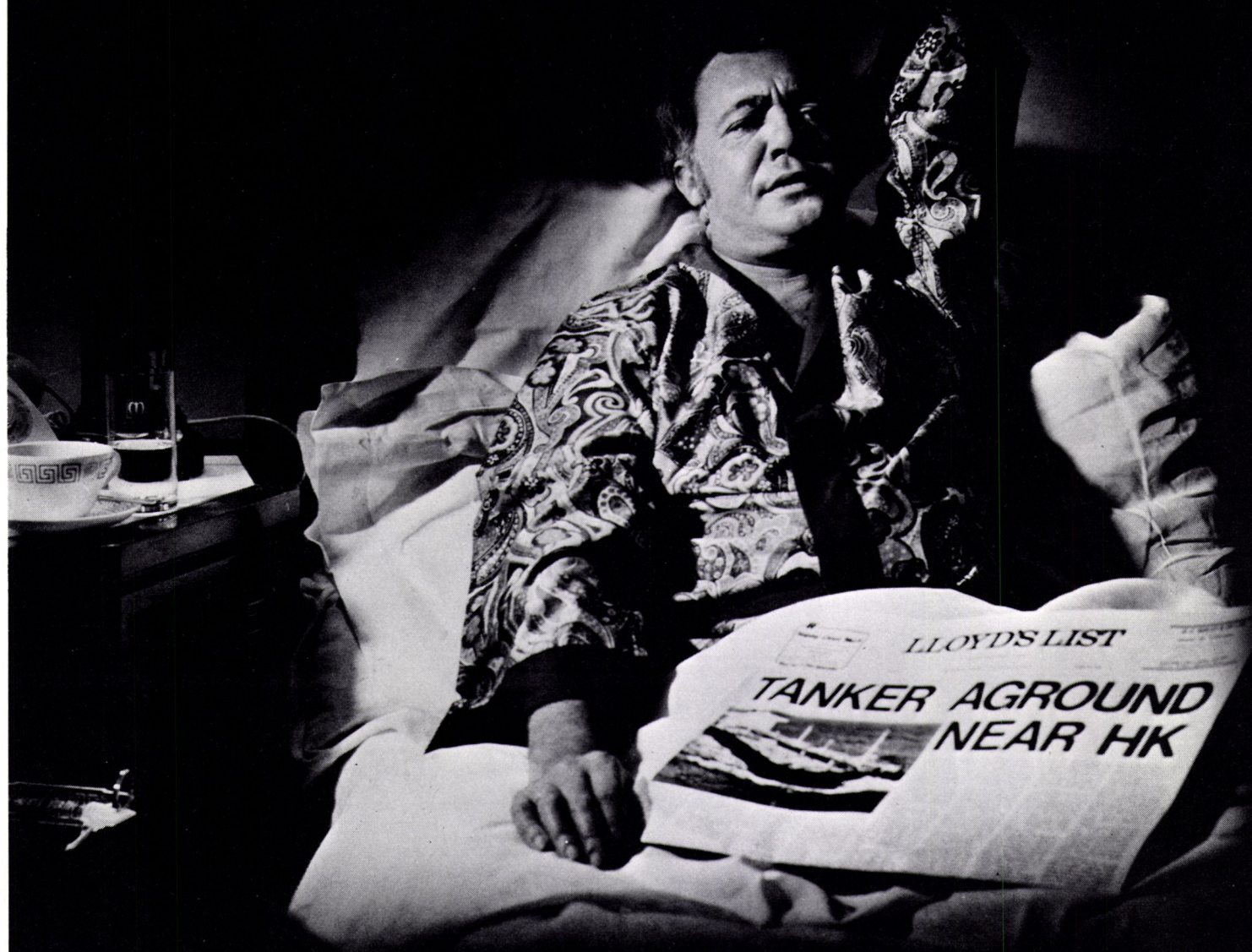
Twenty minutes of prevention for years of protection. It's just one of the reasons it makes sense to deal with America's largest inland shipbuilder—Jeffboat. If you'd like to know the other reasons, write: Jeffboat, Inc., Division of Texas Gas Transmission Corp., P.O. Box 610, Jeffersonville, Indiana 47130.

Ask for our brochures.

JEFFBOAT

America's largest inland shipbuilder.

**A Panamax ship
high and dry near Hong Kong
would give any ship owner nightmares.
~After March 1978 he'll sleep easy.**



Hongkong United Dockyards has been established throughout the shipping world, as a leading repair and conversion yard for over 120 years. This reputation has been built through progressive management thinking, a skilled and reliable labour force.

The new Panamax floating dock, coupled with the development of the new Tsing Yi repair yard in Victoria Harbour, gives us even greater capacity to service the needs of the shipping world.

Hongkong United Dockyards Ltd. Hung Hom Hong Kong Tel.: 3-334111 Telex: 73547HX



Second \$81-Million Gulf Oil Supertanker Christened At Bethlehem Sparrows Point



The 265,000-dwt tanker American Independence is the second of this class — the largest ever built in the U.S. — to be constructed for Gulf Oil, which operates the largest American-flag tanker fleet.

The American Independence, the second supertanker built by Bethlehem Steel Corporation for Gulf Oil Corporation, was christened October 18, 1977, at the steel company's Sparrows Point Yard. Mrs. James E. Lee, wife of Gulf's president, christened the vessel which was constructed at a base contract cost of approximately \$81.4 million.

The supertanker's sistership, the American Spirit, which sailed from the yard on July 1, made Gulf the No. 1 U.S.-flag tanker fleet in the country.

The keel for the American Independence was laid January 28, 1976. According to Richard I. Hoskins, Marine Operations vice president in Gulf Trading & Transportation Company, the supertanker was constructed in accordance with requirements of the American Bureau of Shipping, United States Coast Guard, United States Public Health Service, and the Federal Communications Commission.

The 1,100-foot tanker, when carrying 2,014,000 barrels of oil, representing 98 percent capacity, will travel at a speed of approximately 15 knots. She is one of Bethlehem's 265,000-deadweight-ton (dwt) class, the largest merchant vessels ever constructed in the United States.

The principal characteristics of the vessel include one complete deck with raised forecastle head, cylindrical bow, horn type rudder,

straight transom stern and an after-superstructure.

"Equipped with the latest navigational, safety, communications and antipollution aids," Mr. Hoskins explained, "the Independence was designed to meet the requirements of the October 1971 resolution of the Inter-Governmental Maritime Consultative Organization (IMCO) regarding maximum size of cargo tanks."

Clean discharge water will be assured through use of a slop tank system utilizing two of the cargo tanks and an oil/water separator. Instrumentation to detect oil in the ballast water being pumped overboard will give an audible and visual alarm, with automatic immediate shutdown capability.

An inert gas system will furnish protection in the cargo tanks by providing a constant nonexplosive atmosphere within them, Mr. Hoskins said.

A centralized cargo control system provides for remote tank level indication and remote control of all hydraulically operated tank and pump room valves, as well as remote control of three 24,000-gallons-per-minute cargo oil pumps and two 1,200-gallons-per-minute stripping pumps. A cargo tank high-level alarm and automatic shutdown system is provided to protect against inadvertent overflow while loading.

A sewage treatment plant and large sewage holding tank will

provide protection against water pollution when the vessel is in coastal waters or in port.

The breadth of the supertanker is 178 feet, and its depth is 86 feet. The summer deadweight is 262,376 long tons on a draft of 67 feet 1-13/16 inches. Loaded displacement is 305,317 tons.

Navigation equipment includes an echo depth sounding and recording system, a 10 CM radar, a 3.2 CM radar, and a collision avoidance system capable of operating with either radar. A radio direction finder, a Loran receiver and a satellite navigation receiver are also furnished, as well as the latest computer type Omega system.

Communication equipment on the Independence consists of the main and emergency telegraph console and is installed in the vessel's radio room. The supertanker also has a VHF radio-telephone and a single sideband radio transceiver system with operating capabilities from the pilothouse.

A VHF transceiver system for communication with the terminal during cargo-handling operation is installed in the cargo control room.

Clean ballast water capacity on the Independence in four tanks



Mrs. James E. Lee, wife of the president of Gulf Oil Corporation, breaks a bottle of champagne to christen the \$81-million American Independence.

is more than 32,000 tons, and the vessel's 11,950-ton fuel capacity provides a cruising range of 20,000 miles.

Following the christening, Donald T. Burkhardt, general manager of the yard, was the host at a luncheon in honor of the sponsor, Mrs. Lee.

Principal Characteristics

Summer deadweight:	262,376 long tons
Displacement:	305,317 long tons
Length:	1,100 feet overall 1,060 feet between perpendiculars
Breadth:	178 feet
Depth:	86 feet
Draft: (Summer)	67 feet 1-13/16 inches
Capacity:	2,014,000 barrels of oil at 98% capacity
Normal sea speed:	15 1/4 knots
Powerplant:	Double-reduction, gear steam turbines producing 35,000 maximum continuous shaft horsepower.
Cruising range:	20,000 miles based on 11,950 tons of fuel oil.
Centralized control from the wheelhouse of all forward and astern engine functions.	
Accommodations:	All in air-conditioned quarters in the after-superstructure house.
Cylindrical bow, straight transom stern, horn type rudder.	
Sewage treatment plant protects against water pollution in port or in coastal waters.	
Radar:	Three centimeter and ten centimeter systems, and a collision avoidance system capable of operating with either radar.
Loran C:	Automatic tracing system
Omega:	Determines vessel's position worldwide
Satellite navigation system:	Establishes ship's position, keeps continuous record of ship's course.
Gyrocompass:	Can control vessel through gyropilot and either of two steering engines.
Clean water discharge system:	Oil/water separator. Automatic immediate shut-down capability if instrumentation detects excess oil in water.
Inert gas system:	Provides a constant nonexplosive atmosphere in cargo tanks.
Centralized cargo controls:	Remote tank level indication. Remote control of cargo and stripping pumps and hydraulic-operated tank and pump room valves.

Veliotis To Manage Electric Boat Div.

General Dynamics Corporation has announced that **P. Takis Veliotis** has been named general manager of its Electric Boat Division, Groton, Conn., the company's largest operating component.

Gorden E. MacDonald, who has been serving as acting general

manager at Electric Boat, will return to the General Dynamics corporate office in St. Louis, Mo., where he will resume his regular duties as corporate executive vice president-finance.

Peter J. Gwyn, who has been assistant general manager at the Quincy Shipbuilding Division, will serve as acting general manager of the Quincy Division.

Mr. Veliotis, president and formerly general manager of the Quincy Shipbuilding Division (Quincy, Mass.) of General Dynamics Corporation, is a vice president of the corporation.

Prior to joining General Dynamics, **Mr. Veliotis** held the position of president and general manager of Davie Shipbuilding Ltd. in Quebec, Canada. Begin-

ning with Davie as an engineering draftsman, **Mr. Veliotis** held several key shipbuilding engineering and management positions and was responsible for the building of more than 70 ships, ranging from bulk carriers, tankers, freighters, drilling rigs, and icebreakers, to naval vessels.



P. Takis Veliotis

Mr. Veliotis was born in Greece and earned degrees at St. Pauls College, the Royal Naval College and the National University, Athens. During World War II, he served as an officer with H.M. Royal Navy, Middle East Fleet. At the end of the war, he was decorated in recognition of war services by the late King Paul and Queen Frederika of Greece.

Following his military service, **Mr. Veliotis** was employed as an engineer in his father's company, E.G. Veliotis, Shipowners Ltd. He is married to the former **Paulette Dupuis**, daughter of Col. **Alexander Dupuis**, and together with a son and daughter, they reside in Milton, Mass.

He is a member of the U.S. Naval Institute, the Navy League of the United States, American Bureau of Shipping, Lloyd's Register of Shipping, The Society of Naval Architects and Marine Engineers, The Propeller Club (Port of Boston), and the Shipbuilders Council of America, of which he is a director.

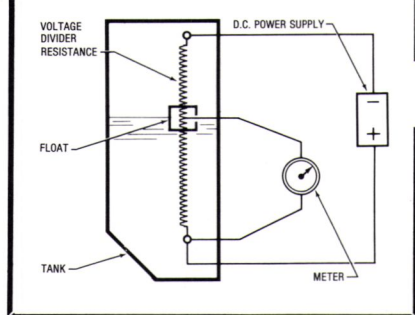
Transocean Contractors Appoints Executives

Transocean Contractors, Inc., Post Office Box 2352, Morgan City, La. 70380, have announced the following appointments.

Michael (Don) Eckert is the new projects engineer and will be assisting **Eugene Weber**, the executive vice president; **Danny Curtis** has been appointed as sales manager of their Lafayette, La., office; **Ivan Jones** has been appointed manager of the Anchor Handling Division; **Harold Trahan** holds the position of assistant manager of Anchor Handling, and **Don Holland** has been promoted to assistant manager of the Construction Division.

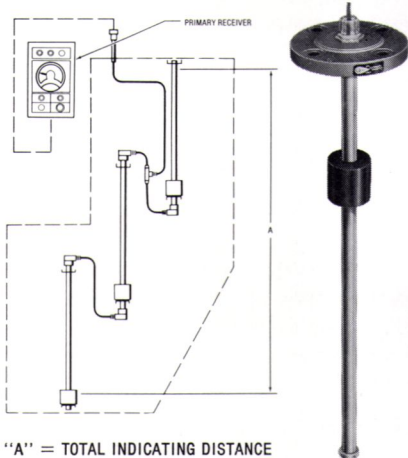
Transocean Contractors, Inc. capabilities include offshore pipeline installation and repair, salvage operations and general offshore work. Rig moves, mooring spreads, platform maintenance, overseas loadouts, and a host of other oil-field duties are within their realm of activities.

GEMS® MARINE TLI



A-FLOAT IN THE BEST SYSTEMS

The trouble-free simplicity of a magnetic float — transmitting continuous level "information" to a remote readout meter as it fluctuates with liquid level — is one very good reason to specify a dependable Gems Marine TLI System. Another is experience . . . more than two decades solving every known tank gauging problem afloat . . . on Flat Tops to Cruise Ships; Submarines to Super Tankers. Check these outstanding features, then contact us for a competitive quotation.



SKETCH SHOWS TYPICAL MULTI-TRANSMITTER INSTALLATION IN UNUSUAL TANK CONFIGURATION.

"A" = TOTAL INDICATING DISTANCE

- Single or multiple transmitters available to suit every tank configuration.
- System accuracy consistently within 1/2" of liquid level.
- Long operating life with minimal maintenance required.
- All systems are specific gravity compensated.
- Transmitter capable of two-liquid interface indication under MIL-L-23886A.
- Digital or dial receivers can be located up to 2000 feet from transmitter. No special or shielded cables required.
- Design simplicity minimizes malfunctions (float is only moving part).
- System accuracy and integrity checkable at the flip-of-a-switch. Installation is fast, simple, convenient; bracket or flange mounting.
- System calibration requires no special tools or test instruments.
- Adjustable independent alarms feature solid-state sensing for alarm and control functions.
- Quality control meets MIL-9858 requirements fully.

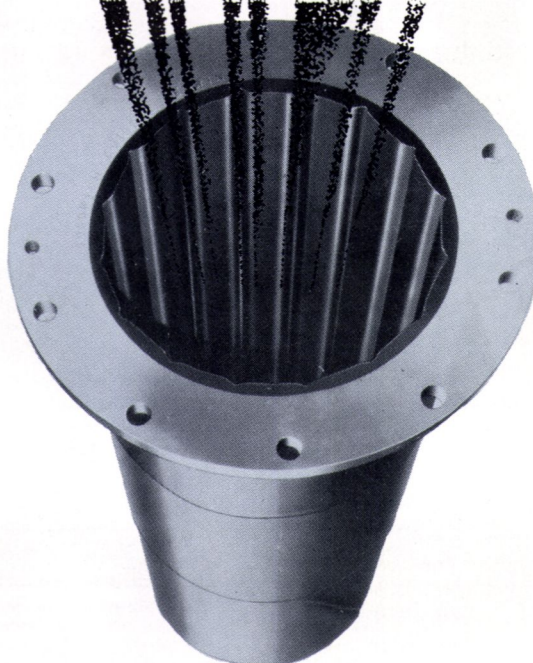
CLIP & MAIL
Please Send Free TLI Book To:

NAME _____
COMPANY _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____

DELAVAL TURBINE INC. GEMS SENSORS DIVISION
Farmington, Connecticut 06032
ATTN: Mel Brown

DELAVAL

GRITTY GRIMY SANDY WATER



CUTLESS BEARINGS KEEP ON PERFORMING.

With the Mississippi River at a low level, the river bottom gets closer to the hull. Boat propellers become agitators stirring up mud, silt and sand that scours propeller shaft bearings. Cutless rubber bearings were designed by Lucian Q. Moffitt, Inc. to take this kind of punishment. Exclusive water wedge design channels push a full flow of water between shaft and tough B.F. Goodrich rubber bearing liner. Sand and other abrasives are flushed through the Cutless bearing. Prevents heat build-up and wear to shaft and bearing. The closer you get to the river bottom the more important Cutless bearings are for protection against wear.

LUCIAN MOFFITT, INC.
NATIONAL and INTERNATIONAL DISTRIBUTORS
P.O. Box 1415, AKRON, OHIO 44309

Here is an easy way to retrofit your crude oil tanker for Inert Gas Operation

In order to meet A.B.S. safety regulations, Inert Gas Systems on crude oil tankers require flue gas containing under 5% oxygen. But the problem facing ship owner/operators is that, without major and very costly modifications, most marine boilers simply can't produce such low-oxygen flue gas . . . particularly when operating under varying or low-power demand conditions.

But now, there's an efficient, economical way for you to retrofit for compliance with Inert Gas requirements. How? By installing a Gaulin *Water-in-Fuel Emulsification System* in your boiler room. Gaulin calls it an "*F.E. System*". And it will help you achieve:

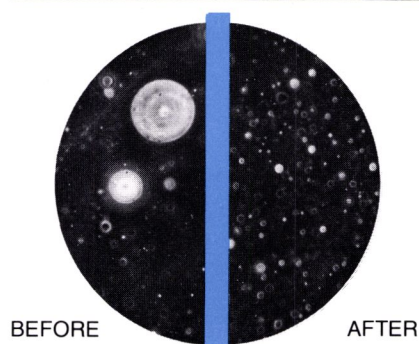
Low-oxygen flue gas — you'll get safe, low-oxygen flue gas, even at low power levels, without the need to redesign your boiler front or windbox. Or to change burners. And without complex, sensitive control systems.

Much cleaner flue gas — the lowered oxygen level will combine with reduced particulate emissions to dramatically cut back the soot loading to your scrubber. Your scrubber maintenance costs will be slashed and the service life of your scrubber system will be greatly extended.

Improved combustion — Gaulin's *F.E. System* shipboard installations to date have provided a number of ship owner/operators with overall boiler efficiency improvement and significant fuel savings.

The F.E. System and how it works.

Gaulin's high-energy *F.E. System* utilizes a high-pressure homogenizer to break down the normally large agglomerates present in the fuel oil. A very small percentage of water is added and emulsified as part of the fuel mixture during the high-energy homogenization process (much lower amounts of water concentration are used than with such methods as low-pressure ultrasonic or other light stirring or mixing techniques). The droplets of water become uniformly dispersed in the fuel and are essentially one-micron in size.

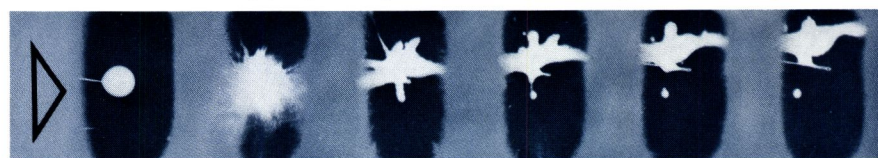


This before-and-after photomicrograph (1000X) graphically illustrates the superior effects achieved by Gaulin's *F.E. System*. The control sample (left), a pre-mix of 6% water in #6 fuel oil, is dramatically compared with a sample of the homogenized fuel emulsion.

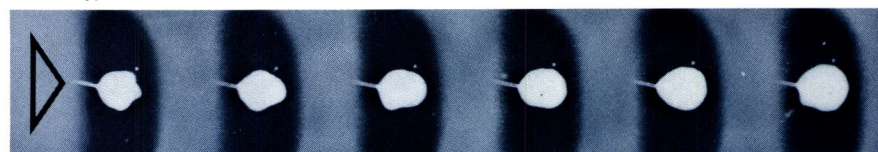
Micro-explosions achieved

After homogenization the Gaulin machine then delivers the completely emulsified water-in-fuel oil mixture to the boiler combustion chamber where the beneficial phenomenon known as "micro-explosions" occurs. The resulting secondary atomization produces an even better dispersion and mixing of the primary fuel spray.

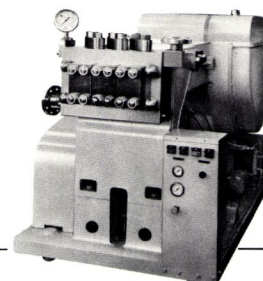
The results? Reduced excess air . . . low-oxygen flue gas . . . less soot loading to scrubbers and related piping . . . improved boiler efficiency . . . fuel savings.



A micro-graphic comparison of the burning of fuel droplets captured by sequential, high-speed, 16mm cinematography. The frames in the top sequence (5,000/sec.) resulted from burning a 350-micron droplet of water-in-Bunker C fuel oil emulsion. Those views in the lower series (4,000/sec.) record the combustion of a 450-micron droplet of neat Bunker C fuel. (Courtesy of Guggenheim Laboratories, Princeton University)



The Gaulin *F.E. System* — it can be retrofitted in your boiler system as a secondary fuel atomization process to help you economically produce low-oxygen, low-particulate flue gas from your boilers.



Learn the facts.

Get the full technical story about the Gaulin *F.E. System* and how it can help you simplify your Inert Gas retrofit project. Contact Gaulin at Garden Street, Everett, Mass. 02149. Telephone: (617) 387-9300, Telex: 094-9415.

Sun Shipbuilding Consolidates All Marketing Activities —Orth, Winstead And Hunt Named Department Heads



C. Richard Orth

J. Robert Winstead

Everett C. Hunt

Sun Shipbuilding and Dry Dock Co., Chester, Pa., has consolidated all its marketing activities into a single Marketing Department under **Joseph J. Kleschick**, vice president-marketing. This move brings together in one department all the marketing activities formerly associated with the shipyard's General Cargo Ship and Bulk Ship Product Groups, as well as the Ship Repair Sales and Industrial Products Sales Programs.

C. Richard Orth, **J. Robert Winstead**, and **Everett C. Hunt** have been named to head depart-

ments within the restructured Marketing Group.

Mr. Orth has been named general sales manager of the shipyard's Sales Department, with responsibility for Sun Ship's sales efforts in the New Ship, Ship Repair and Industrial Products areas.

Mr. Winstead has been named technical director for the Product Engineering Department and is responsible for the naval architecture and marine engineering for vessel concept and definition, construction specification, propo-

sition engineering and customer technical liaison.

Mr. Hunt has been named manager of the Business Development Department, with responsibility for market research and competitive analysis.

Mr. Orth is a 1960 graduate of the University of Delaware with a B.S. degree in mechanical engineering.

He worked for Wiley Manufacturing of Port Deposit, Md., from June 1965 to January 1975, with his last post being general sales manager.

He joined Sun Shipbuilding in February 1975 as marketing manager for the General Cargo Ship Product Group, with responsibility for the Group's transportation research, product service and financial analysis function.

Mr. Orth is a member of The Society of Naval Architects and Marine Engineers.

Mr. Winstead graduated from the University of Virginia in 1950 with a B.S. degree in mechanical engineering and attended the University of Michigan, Graduate School of Business Administration, Executive Development Program.

He joined Newport News Shipbuilding & Dry Dock Company in 1950 as a nonsupervisory engineer in the Engineering Technical Department. He was appointed supervisor, responsible for fluid system and component design in 1957. In August 1962, he was reassigned to the Engineering Technical Department and was responsible for all non-nuclear marine engineering work for the company. In July 1973, he was named director of engineering, Commercial Ship Division, responsible for all marine engineering, electrical, naval architecture and structural design for commercial contracts.

He joined Sun Shipbuilding in June 1975 as engineering manager for the Tanker Group, with responsibility for all the Group's engineering activity, including preliminary and contract design.

Mr. Winstead is a member of The Society of Naval Architects and Marine Engineers and The Propeller Club of the United States.

Mr. Hunt graduated from the U.S. Merchant Marine Academy in 1951 with a B.S. degree in engineering and received a graduate degree in management engineering from Rensselaer Polytechnic Institute and a graduate degree in engineering from Northeastern University.

Mr. Hunt served as an engineering officer in the U.S. Navy from December 1952 to February 1954.

Following the service, he was employed by General Electric, where he had various assignments in design, testing, marketing and installation, as well as experience with marine equipment, large steam turbines, nu-

clear propulsion and heat recovery steam generators. He was also the project manager for the development of the MST 14 Reheat Propulsion System. His last post with GE was manager of Quality Control and Test Facilities for the Marine Turbines and Gear Department at the General Electric plant in Lynn, Mass.

Mr. Hunt joined Sun in August 1975 as manager of Machinery Sciences, and was responsible for scientific and technological developments in ship design, shipbuilding and vessel operation in the areas of powerplant technology, automation, instrumentation and communications.

In April 1976, **Mr. Hunt** was named director, Shipbuilding Administrative Division, and was responsible for the company's Ship Repair Sales Department, for coordinating all sales activities of the Shipbuilding Administrative Division, and for the company's contracting group.

Mr. Hunt is a member of The Society of Naval Architects and Marine Engineers and the Institute of Marine Engineers (London).

Samson Ocean Systems Names John Williamson Regional Manager



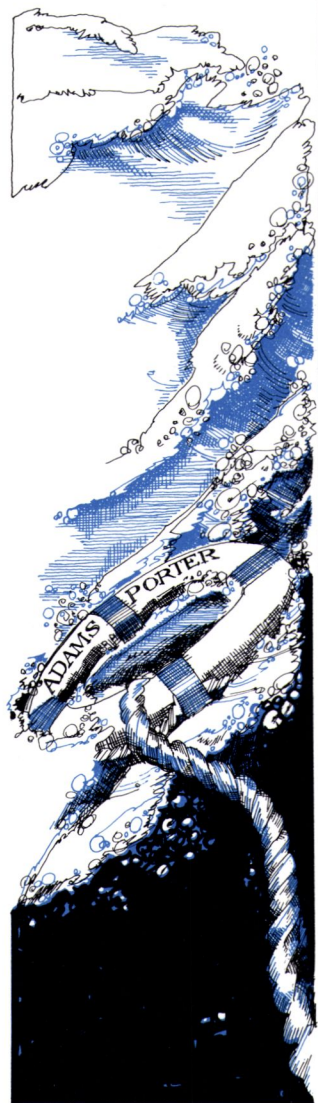
John Y. Williamson

John Y. Williamson has been named regional manager for Samson Ocean Systems, Inc., according to a recent announcement by **Jerry Jones**, president.

Mr. Williamson will be responsible for the sale of Samson rope systems and mooring systems for the heavy marine and industrial and the offshore markets. His territory will include the Southeastern United States, the Caribbean, Mexico, and South America. He will be based at the Houston, Texas, office of Samson Ocean Systems, Inc. **William Lindsey** continues as regional manager in the Southeast, specializing in Samson braided rope products for the utility, commercial fishing, and heavy marine and industrial markets.

Mr. Williamson attended the University of Houston, Texas, where he majored in petroleum-geological engineering. A student of naval architecture, he has designed several large sailboats. He also won the Texas ocean-racing series in 1968. Prior to his starting with Samson, **Mr. Williamson** was self-employed as a commercial photographer.

Don't go near the water without us.



If you're involved in marine operations, you need the kind of protection we can provide. Adams & Porter people speak your language—whether your business is ocean going vessels, cargoes, contract drilling, service vessels, tugboats or towboats.

Our knowledge of the worldwide insurance market helps us handle the most complex insurance problems immediately. You deal directly with the specialist in charge of your account. Never with a branch employee who may not have the authority or experience to cover your risk or expedite collection of your claim.

We've been protecting ocean, offshore and inland waterways operators for over 70 years. So, if you're having difficulty in obtaining the best advice, coverage and claim settlement at competitive prices, call Adams & Porter. Or write for a copy of our new capabilities brochure.



ADAMS & PORTER

Houston
1819 St. James Place
Houston, Texas 77056
Telephone: (713) 960-9990
Outside Texas Call Toll-Free (800) 231-3252

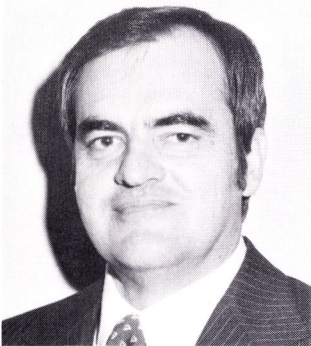
New York City
5 World Trade Center—Suite 6433
New York, N. Y. 10048
Telephone: (212) 432-0001

Hartzman To Retire— Bossier Slated For Avondale Presidency



Edwin Hartzman

It was announced by **M. Lee Rice**, president, Ogden Transportation Corporation, that effective January 1, 1978 several senior executive changes will become effective at Avondale Shipyards, Inc., a principal subsidiary of Ogden Corporation, New York, N.Y. On the cited date, **Edwin Hartzman** will retire as president and chief operating officer. He will be succeeded by **Albert Bossier**, presently executive vice president, production.



Albert Bossier



Richard Brunner

Richard Brunner, executive vice president, engineering and contract administration, will be promoted to a new executive post, senior operating officer. In this capacity, he will continue his present responsibilities, and will also be responsible for the management of the important Avondale divisions — Harvey Repair, Industrial, Service Foundry and Steel Sales. The Bayou Black Division will report directly to the president of Avondale.

Mr. Hartzman will become a consultant to Avondale, and will serve as chairman, Avondale board of directors. **Melton Garrett**, presently executive vice president, divisions, has decided to reduce the scope of his executive

responsibilities, but will continue to provide service to Avondale until normal retirement in areas of his particular expertise.

Mr. Bossier has been employed by Avondale in various positions since 1957. **Mr. Brunner** has been associated with Avondale for 35 years.

Mr. Rice said: "Avondale and Ogden are fortunate to have the continuing availability of **Ed Hartzman** and **Melton Garrett**,

and managers of the experience and competence of **Al Bossier** and **Dick Brunner**, to assume these important executive positions."

Mr. Hartzman stated that he is pleased to turn the active direction of the company over to such highly competent executives as Messrs. **Bossier** and **Brunner**, and that he looks forward to continued participation in company affairs as chairman of the Avondale board of directors.

Dravo SteelShip Awarded \$1.1-Million Contract For Two Towboats

Dravo SteelShip Corporation, Pine Bluff, Ark., has received a \$1,167,226 contract from the U.S. Army Corps of Engineers, Memphis, Tenn.

The contract covers the design and construction of two diesel-powered steel-hull towboats.



WHEN YOU WANT TO MOVE MOUNTAINS..



CALL JAMES HUGHES INC.

When you want to move mountains or bridges, oil rigs, tanks, pipes, locomotives, scrap—call James Hughes, Inc. for the marine equipment you need to move anything that's too big or heavy to go by rail or road.



JAMES HUGHES, INC.

17 Battery Place, New York, N.Y. 10004 (212) 425-2350

Specialists in Marine Transportation and Towing since 1894. I.C.C. W-463

This announcement appears as a matter of record only

\$28,000,000

Pacific Far East Line, Inc.

Containership Sale and Lease Financing

Funds were provided by:

CI Transportation Leasing Corporation

A subsidiary of Continental Illinois Leasing Corporation
Lead Owner Participant

Greyhound Leasing & Financial Corporation

MDFC Equipment Leasing Corporation

A subsidiary of McDonnell Douglas Finance Corporation

*We initiated this transaction and acted as financial advisor to
Pacific Far East Line, Inc.*

Warburg Paribas Becker Incorporated

October, 1977

This announcement appears as a matter of record only.

\$16,053,000

IOT Corporation

through its wholly owned subsidiaries
Interstate Marine Transport Co. and Interstate Towing Co.

United States Government Guaranteed Ship Financing Bonds

**Sinking Fund Bonds
due 1982, 1985, 1987 & 1992**

*We have arranged the placement of these securities with
institutional investors to assist in the financing
of four tugboats and three tank barges.*

Warburg Paribas Becker Incorporated

September, 1977



CONGRESSMAN MURPHY HONORED — Robert J. Hughes, left, chairman of the board of The New York Towboat & Harbor Carriers Association, is shown presenting a testimonial gavel plaque to Congressman John M. Murphy, right, Chairman of the Merchant Marine & Fisheries Committee of the House of Representatives, at a recent luncheon tendered by the Association to Congressman Murphy, as Harold A. Reinauer, center, chairman of the Luncheon Committee, looks on.

New England Section Hears Paper On Propeller Design

After a social hour and dinner, the first meeting of the fall technical program of the New England Section of The Society of Naval Architects and Marine Engineers was called to order by Section chairman Harry Jackson. He announced the formation of the first student section of SNAME, located at the U.S. Coast Guard Academy, New London, Conn., and introduced the chairman of the student section, Cadet 1/C Kevin Nugent.



The author, Michael Triantafyllou (center), discusses his paper with Harry Jackson, Section chairman (left), and Bob Mende, SNAME secretary.

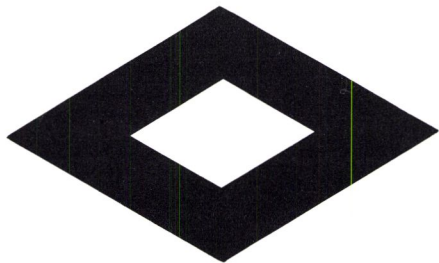
Robert G. Mende, national secretary of SNAME, and Keatinge Keys, chairman for the 1978 Spring Meeting, addressed the section on the plans and progress of the 1978 Spring Meeting, to be held at the U.S. Coast Guard Academy.

The technical paper for the evening was then presented by Michael S. Triantafyllou, a graduate student at M.I.T. He presented a paper entitled "Computer Aided Preliminary Propeller Design, Using the B-Series." A particularly interesting feature of his work was the method for calculating the optimum pitch ratio for a propeller, including consideration of shipping routes and expected weather conditions. Furthermore, the calculations included corrections for laminar flow effects encountered when predicting full-scale performance from model test data.

Copies of the paper are available from Lt. Comdr. James A. Sanial (USCG), Department of Engineering, U.S. Coast Guard Academy, New London, Conn. 06370.

Maritime Reporter/Engineering News

THERE IS A DIFFERENCE IN TUGBOAT COMPANIES.



**Curtis Bay
Towing Company**

Over 65 years of service.

Philadelphia • Baltimore • Hampton Roads

- ◆ The largest and most powerful fleet of tugs.
- ◆ Eleven new tugs in ten years.
- ◆ More tugs in planning.
- ◆ Skilled Personnel.

- ◆ Seven twin-screw tugs of more than 3000 hp.
- ◆ 3 port communications.
- ◆ 24 hours a day operation.
- ◆ Experienced, dedicated shoreside staff.



Docking the 76,361 gross tonnage M.S. YEMANJA
on her maiden voyage to Baltimore.

Ocean Orders Five More Ships

Following on Ocean's announcement of an order for three 20,000-dwt cargoliner to be built at Scott Lithgow's yard on the Clyde, Ocean Transport & Trading Limited, India Buildings, Liverpool L2 ORB, England, recently announced further details of its retonnaging program for the liner trades.

Two multipurpose ro/ro ships are being ordered from Mitsubishi Heavy Industries (MHI) of Nagasaki, Japan, for delivery in early 1979.

In addition, three semicontainer/multipurpose cargoliner are being purchased from the West German shipowner and shipbroker H. Schuldt of Hamburg, for delivery in late 1978 and early 1979.

The 32,200-dwt ro/ro ships will have stern ramps and will be suitable for worldwide trading. They will be capable of carrying containers, general cargoes, vehicles, forest products and heavy loads. They will be suitable for operation with forklift trucks, trailers and other wheeled cargoes.

Speaking about the ro/ro ships, C.D. Lenox-Conyngham, Ocean's executive director responsible for liner trades, said: "It is likely that we will use them in the Barber Blue Sea Line Service. This is a trade which increasingly is being served by larger and more sophisticated ships, and therefore it was important to obtain early delivery dates for these vessels. Mitsubishi was able to offer us competitively priced ships for prompt delivery, since the shipyard was already building a series of vessels of similar design."

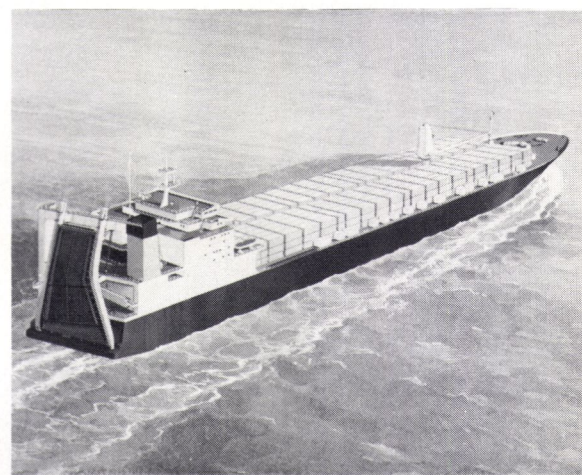
Barber Blue Sea currently operates services between the United States, Canada, South America, Panama and the Far East.

The three semicontainer/multipurpose 12,000-dwt cargoliner being purchased from H. Schuldt are likely to operate primarily in Elder Dempster's West African trades. The ships are similar in design to the two "S"-Class cargoliner Shonga and Sherbro, which have been operated very successfully by Elder Dempster in the UKWAL Express Service from London/Liverpool to Lagos in Nigeria, since their entry into service in 1974. The ships are being built in the Szczecin Shipyard in Poland for H. Schuldt.

Technical Details Of The Multipurpose Ro/Ro Vessels

The multipurpose ro/ro vessels will have a slow-speed diesel main engine with a maximum power rating of 30,150 bhp. The engine room will be designed for unattended operation with Lloyd's Register UMS classification.

Cargo spaces will be divided by three continuous decks, with a deck height of about 21 feet in the two 'tween decks and a height of about 10 feet in the lower hold.



Artist's impression of one of the ro/ro ships Ocean ordered from Japan.

A hoistable cardeck will be installed under the main deck. Deck access will be mainly by fixed ramps, and movable ramp covers will be fitted in order to make maximum use of the deck area.

The accommodation will be raised above the weather deck so that underneath there will be room for two tiers of containers.

The ships will be fitted with a deck crane with a lifting capacity of 40 tons, which is being installed to facilitate the handling of 40-foot containers.

The stern ramp will be the largest of its type currently constructed. It will be approximately 164 feet long and have a minimum clear width of about 39 feet.

Technical Details Of The Multipurpose Cargoliner

The semicontainer/multipurpose cargoliner will be capable of carrying up to 410 twenty-foot containers, or a combination of containers and general cargo.

They will be 12,000-dwt vessels fitted with a Sulzer main engine developing 9,900 bhp, and giving a service speed of about 18 knots.

A bow thrust unit will be fitted together with a variable pitch propeller, which is operated from the bridge. A flume tank stabilization system will be fitted.

The new ships will have uprated derricks compared with Shonga and Sherbro. They will be fitted with six 36-ton derricks.

The hatch arrangement on these ships has also been modified to allow them to carry a larger number of 40-foot containers.

WRITE FOR FREE CATALOG



BELLS • BUZZERS CONTACT MAKERS SWITCHES

Our newest catalog No. B-761, covers a full line of U.S.C.G. Accepted bells and switching equipment. A wide range of styles and voltages are available to meet stringent requirements for shipboard GENERAL ALARM—FIRE ALARM—CALL BELL systems.

Bell housings are available with aluminum or bronze housings. Gongs are furnished in steel (cadmium plated, yellow iridized) or brass.

Cowbells and buzzers are available offering distinctive tones for special applications.

To complete the line, contact makers are designed for bulkhead, flush or break-glass. Should a visual indicator be required, the rotating beacon light can complement the system with watertight and explosion proof models.

Write today for a free copy of Catalog B-761

Name _____

Company Name _____

Street _____

City _____ State _____ Zip _____



HOSE McCANN TELEPHONE CO., INC.

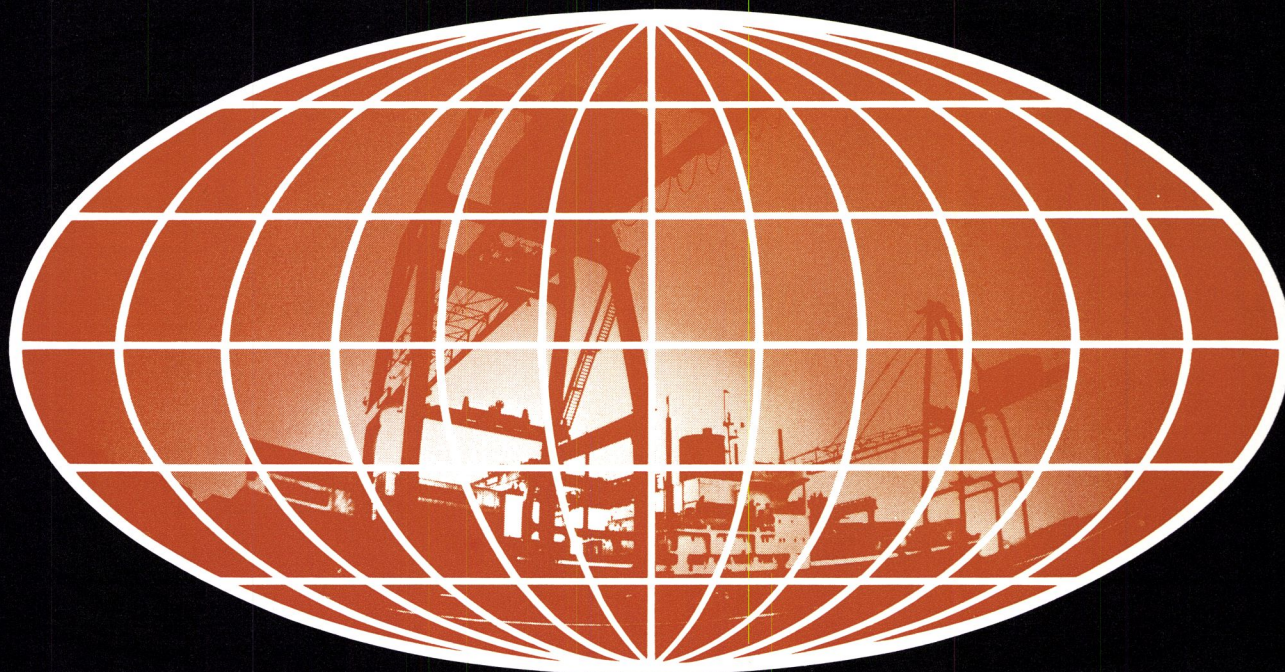
524 WEST 23rd STREET NEW YORK, N. Y. 10011

(212) 989-7920 (Cable) CYBERNETIC NEWYORK

ORIGINATORS AND PIONEERS OF SOUND POWERED TELEPHONES FOR MARINE USE

Representatives in principal domestic and foreign seaports

PACECO IS A WORLD OF EXPERIENCE



- ☐ Over 225 Portainer® container cranes in 94 ports world-wide
- ☐ Many, many times more than any other make
- ☐ Portainers in service since 1958
- ☐ Continuing repeat orders as ports expand; acceptance by shipping lines enthusiastic
- ☐ Quality design and construction assuring years of trouble-free performance
- ☐ Economy model for feeder, inland ports
- ☐ Lowest operating cost per container handled through latest crane system technology
- ☐ MACH cranes (Modular Automated Container Handling) are designed for totally-automated container handling.
- ☐ Models available for your special requirements: A-frame, low-profile, single-and twin-lift, long span, long back reach.
- ☐ 11 licensees; world-wide sales and service

Put our world of experience to work for you.



PACECO, INC.

The Only Manufacturer Offering A Complete Line Of Container Handling Systems And Equipment With World-Wide Sales And Service.



Contact PACECO or the office nearest you. Headquarters Office—PACECO, Dept.10-K, Alameda, CA 94501, (415) 522-6100, Telex 335-399 • New York Representative—ROBERT MOORE CORP., 350 Main St., Port Washington, N.Y. 11050 • PACECO European Sales Office—PACECO INTERNATIONAL LIMITED, London, Tel: 01-681-3031/4 • PACECO Licensees: Australia—VICKERS HOSKINS DIVISION, Perth. Brazil—MECHANICA PESADA S.A., Rio de Janeiro. Canada—DOMINION BRIDGE COMPANY LIMITED, Montreal. France—ATELIERS ET CHANTIERS DE BRETAGNE, Paris. India—BRAITHWAITE & CO., LIMITED, Calcutta. Italy—REGGIANE O.M.I. S.p.A., Reggio Emilia. Japan—MITSUI ENGINEERING & SHIPBUILDING CO., LTD, Tokyo. Korea—HYUNDAI INTERNATIONAL, INC., Seoul. South Africa—DORMAN LONG VANDERBIJL CORPORATION LIMITED, Johannesburg. Spain—FRUEHAUF S.A., Madrid. United Kingdom—VICKERS ENGINEERING GROUP LIMITED, South Marston, Swindon, Wiltshire.

Build in top performance. Specify Contromatics marine valves.

Critical shipboard valve and actuator applications demand top performance. But if you're not specifying Contromatics, you're paying too much. Or settling for second best.

Because no other line of fluid control products gives you more performance for your dollar in so many marine applications.

Contromatics marine valves have earned a reputation for top performance in submarines, destroyers, carriers, and many other Navy and Coast Guard vessels. As well as in commercial cargo ships, tankers, hospital ships, dockside test facilities, and offshore drilling rigs.

Contromatics marine valves and actuators meet the required military and commercial specifications for shipboard service with fresh or salt water, oil, gas, air, low pressure steam, sewage, and various shipboard chemicals.

Here's a quick look at the Contromatics line of top performers.

CONTRO-SEAL BUTTERFLY VALVES

Contro-Seal is the high performance butterfly valve that combines superior design, easy installation, and smooth, economical operation in a single fluid control package.

Ideal for many ballast, hydrocarbon, and refrigeration system applications, Contro-Seal offers the economy and performance of a butterfly valve with the application flexibility of a ball valve.

The compact design and light weight of Contro-Seal valves reduce space requirements and make installation quick and easy. Seat replacement is simple, too, since no special tools are needed, and removal of the shaft and disc are not required.

Bubble-tight shut-off in both directions, a seat that's self-compensating for wear, and excellent flow and throttling characteristics are some of the other features that make Contro-Seal's sea-going performance superior to that of other wafer-type valves.

Contro-Seal valves are available from 3" to 24" (larger on application), for pressures to 720 psi and temperatures to 425°F. And they can be fabricated from a variety of materials to meet application requirements.

VALVE ACTUATORS

All Contromatics valves can be fully automated with Contromatics double-acting or spring return pneumatic actuators for reliable remote operation.

Available in aluminum, ductile iron, bronze, and stainless steel, Contromatics actuators offer a wide torque range (87 to 60,230 in. lbs.) and a complete accessory line so you can choose the right actuator for every application.

BALL VALVES

Contromatics ball valve line includes sizes from 1/2" through 8". Screwed, welded, and flanged ends. Standard and full port. Two-way and three-way. In all popular materials and body styles. For pressures to 4,000 psi and temperatures to 550°F.

The compact design, long life, and quick 1/4-turn action of Contromatics ball valves make their performance superior to gate valves in many marine applications. Engine cooling and compressed air systems, for example.

Contromatics ball valves incorporate a pressure-seated, blow-out-proof stem arrangement that uses line fluid flow to ensure maximum sealing action. And a locked-in, one-piece seat and body seal that prevents cold flow. Features that make Contromatics better suited than most other ball valves for fuel oil and fresh water systems.

Plus, Contromatics three-piece design makes installation and in-line maintenance quick and easy.

**For more information, fill out this coupon and mail to
Contromatics Marine Sales Manager**

John LeProhon
Contromatics Division Litton Industrial Products, Inc.
222 Roberts Street
East Hartford, CT 06108

Name: _____ Title: _____
Company: _____
Address: _____
City: _____ State: _____ ZIP: _____



CONTROMATICS

Marine Boiler Reliability

John R. Brinser and Carl F. Horlitz Jr.*

During the past 15 to 20 years, the shipbuilding industry has placed increasing demands upon the manufacturers of main steam propulsion machinery to produce equipment of increasing reliability and efficiency. During this time period, the plant power requirements have steadily increased, machinery space available has steadily decreased, cycle conditions have become more extreme, bunkering fuels have been gradually deteriorating in quality and, with the emergency of the energy crunch a few years ago, a renewed emphasis has been placed upon high efficiencies. These requirements have placed an increasing burden on the already harsh environment typical of the firesides and watersides of marine steam propulsion boilers.

To investigate the phenomena which affect boiler reliability, the Maritime Administration in early 1975 funded the first phase of a program entitled "Improved Marine Boiler Reliability." The objective of this initial effort was to investigate the main problem areas encountered in the design and operation of a marine boiler and, through an investigation of recent technical papers, ships' operating records, boiler design parameters, and fuel-oil analyses, to identify and research certain basic concepts and parameters and to explore their effect upon boiler reliability. This phase was completed in April 1976.

As a result of the investigations carried out in the initial phase, several items relating to specific areas of marine boiler reliability were chosen for laboratory-type testing both on board ship and in land-based facilities. This second phase also was funded by the Maritime Administration and began in July 1976 and will continue until early 1978. Items under investigation in this second phase include high- and low-temperature corrosion rates of various superheater and economizer heat-transfer surfaces, investigation of superheater steam flow patterns, and analysis of marine boiler stack gas.

Superheater

The primary cause of superheater tubing failure is high-temperature corrosion which is preceded by the formation of complex vanadium-based slags on tubing surfaces.

Consideration of the factors contributing to high-temperature slag corrosion of superheaters allows several recommendations to increase marine boiler superheater reliability. The objective for ships presently in service is to minimize the problems within the boiler operating and design constraints, whereas the objective for future installations could include design features, material selections and component configurations which may minimize the causes of the problem. There is no single optimum solution to the high-temperature slag corrosion problem; however, the first steps must include the specification of the superheater tubing environment and reliability requirements by the boiler purchaser. The environment is specified by the quality of fuel available in the ship's operating area and the excess air level, both of which are ship-owner inputs and superheater configuration and material selections by the boiler manufacturer to suit reliability requirements.

Particular attention should be given to the maintenance of excess air level in accordance with the operation and design requirements of marine boilers presently in service. Design and testing programs in the area of low excess air combustion equipment should continue and boiler designs should incorporate this equipment.

Superheater tubing material selection should be determined by the environment and reliability requirements of the purchaser. Although the use of more exotic materials enhances superheater reliability, their use may not be cost effective due to significant higher initial costs and generally longer material and fabrication lead times.

Superheater reliability also can be improved through configuration modifications or "over design." Configuration modifications include the installation of additional screen rows and the selection of multistage superheaters. The first alternative reduces the radiant heat input to the superheater and results in minor reductions of maximum tube metal temperatures; selection of this alternative might be warranted if the use of

very poor quality fuels is anticipated and if the boiler envelope will tolerate the coincident increase in superheater size. The orientation of the superheater elements themselves has a significant effect on superheater reliability. Vertically oriented superheaters have been proven to be less susceptible to slagging and therefore are affected to a lesser degree by high-temperature corrosion than a horizontally configured arrangement. Superheater slagging also is directly affected by soot blower orientation, and in this regard it is important to have soot blower lance configured in a perpendicular fashion to the axis of the superheater elements.

The utilization of fuel-oil additives is the one remaining choice to be considered for superheater reliability improvement. Although the use of fuel-oil additives has been shown to be effective in reducing the formation of highly corrosive slags and, hence, in reducing high-temperature corrosion, an important consideration prior to their widespread acceptance and application is that of fireside cleanliness. Experience has shown that the use of fuel-oil additives greatly increases the solids burden of the flue gases. It is recommended that sufficient sootblowing capacity be proved through testing prior to the endorsement of the fuel-oil additive technique to reduce high-temperature corrosion. Additionally, it is recommended that chemical additives be tested to determine which ones of those presently available and advertised commercially are the most beneficial.

Superheater material corrosion rates are presently being determined through the exposure of two multimaterial controlled-temperature corrosion probes located in the port boiler of the Stonewall Jackson, a Waterman Steamship Company LASH vessel. The high-temperature corrosion probes will be removed for analysis at six-month intervals.

At the present time, the authors' company is designing and constructing a superheater air-flow model. The model will be tested to provide quantitative data on superheater steam-side flow distribution for various modeled steaming loads and superheater configurations. The major variables include location of the saturated-steam inlet, superheater pass size, desuperheater location and model flow rates.

During model flow tests, superheater element flow distribution will be monitored by pressure transducers and continuously recorded. Results of the testing program will be used to formulate a computer-based mathematical flow model whose validity will be checked by flow model testing. After the satisfactory mathematical flow model has been developed, existing heat-transfer and tube-material temperature calculation programs will be used to establish correlations among tube metal temperatures, superheater flow distribution and boiler loadings for allowable superheater tubing materials.

Stack Gas Testing

In order to define more clearly a typical corrosion environment for cold-end heat exchangers, a program of stack-gas analysis was undertaken on an operating LASH vessel. The major thrust of this investigation was to obtain sufficient information to permit the calculation of sulfuric acid dewpoints at various boiler loadings and excess-air levels. In order to accomplish this, tests for sulfur dioxide, sulfur trioxide, oxygen, and water-vapor concentration in the stack gas were conducted over a wide range of boiler loadings and excess-air levels. The boiler used for the test was a Combustion Engineering V2M8 welded-wall boiler equipped with two downward-firing steam-atomizing marine oil burners, a steam air heater, and an economizer.

Over the course of five days, extensive testing and shipboard analyses were conducted at a variety of boiler loads and excess air levels, including a series of tests during minimum load conditions in port. Two representatives from Combustion Engineering's Field Testing and Performance Results Group performed the highly specialized gas analysis tests. A third technical representative coordinated the test program with the ship's engineering staff and maintained boiler performance records.

While the dewpoint temperature of sulfuric acid vapor may be an important parameter in determining the temperature below which condensation of acid is expected to occur, the most significant factor determining the service life of heat-recovery equipment is the rate of corrosion of the heat-exchanger surface.

There are, however, no accepted methods for predicting by calculation (continued on page 18)

*Mr. Brinser, project engineer, and Mr. Horlitz, assistant manager, Combustion Engineering, Inc., C-E Marine Power Systems, Windsor, Conn., presented the paper abstracted here before the recent Annual Meeting of The Society of Naval Architects and Marine Engineers. A complete copy of the paper may be obtained from the Society, One World Trade Center, Suite 1369, New York, N.Y. 10048.

Marine Boiler Reliability

(continued from page 17)

lation the lifetime of particular materials in corrosive flue-gas atmosphere. Information of this nature can be derived only by experience with the particular material within an environment which closely approximates actual operating conditions. This portion of the R&D effort involved first investigating published data dealing with the corrosion of various

materials in an industrial or utility boiler environment. In the second phase, corrosion rates are currently being investigated on an actual operating marine boiler in order to obtain data to compare with current published information.

Design Considerations

Unlike the other portions of our boiler reliability investigations, this area of consideration represents a survey of present and past practices associated with

the design of fuel-oil burners and associated combustion-chamber characteristics. Adherence to general guidelines, supplemented by certain analytical procedures and tests, has been the design approach utilized when dealing with an area as technically complex as oil-burner performance and furnace design.

The design of burners and their component parts has been a product of theoretical studies, empirical testing and operating results.

It is generally difficult to predict how a newly designed burner will operate and only testing and actual use of the burner can prove its merits. Since a burner is basically a combination of three major components—the fuel atomizer, the diffuser, and the burner throat—the design of each must be given careful consideration.

The configuration of marine-boiler furnaces has changed over the years from a refractory-lined box, used with the earliest coal-fired watertube boilers, to furnaces which are virtually all water cooled.

Bunker C Fuels

The bunker C fuel used in marine boilers is a nonspecification fuel composed primarily of residuum, a substance left from various refinery processes and distillate to obtain a blend reasonably similar in characteristics to No. 6 specification fuel. Because bunker C fuels are made up from the residue of refining processes, they are inherently varied in chemical makeup due not only to the geographic sources of the crudes from which they are derived but also to the cracking process used.

There is a paucity of published information on sulfur and trace metals content of bunker C fuels available in bunkering ports. Although ships collect fuel samples during bunkering, very few samples are tested unless a serious problem occurs. Consideration of the need for this information in boiler reliability predictions of superheater and cold-end heat-recovery equipment resulted in a bunker C fuel sample collection and analysis program.

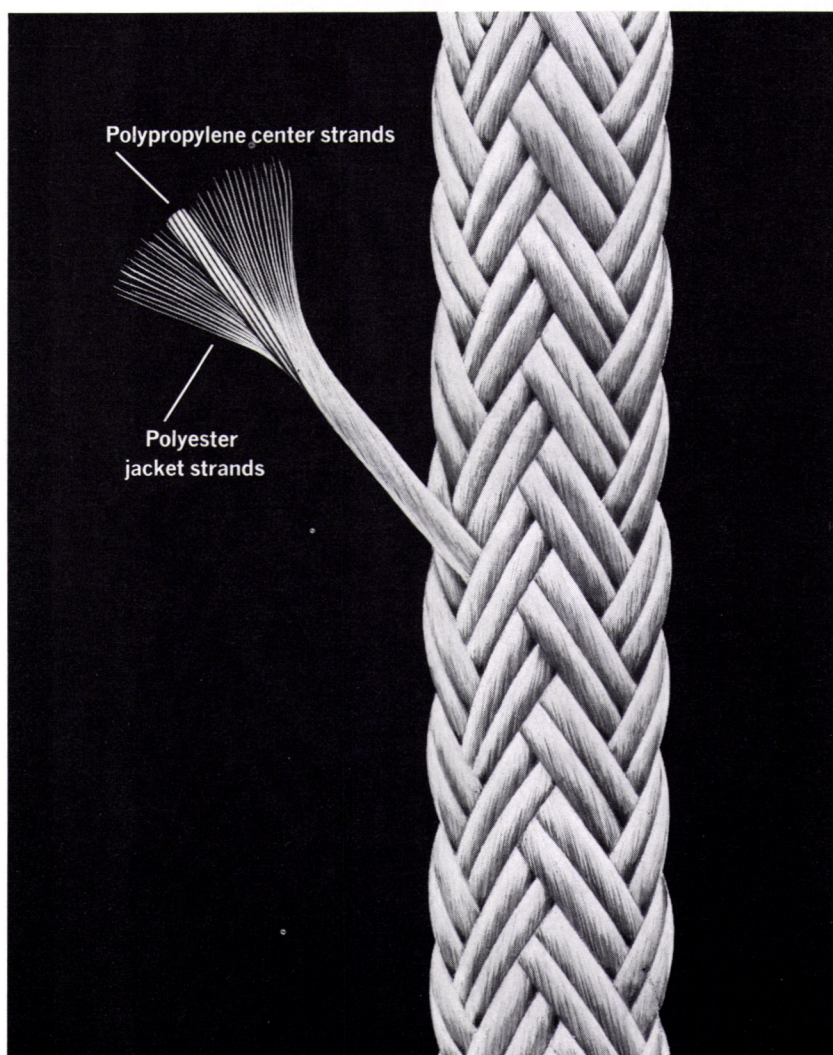
It is recommended that ship operators and the marine industry monitor fuel quality so that suitable equipment procurements may be made to accommodate this condition.

Summary

The objective of this paper has been to examine several parameters dealing with boiler design, materials selection and operating environment which have a significant effect on overall marine boiler reliability and to present the R&D effort that is currently underway. The ultimate aim of this effort is to present information which will allow the purchaser of steam generating equipment to specify certain design and material features in a marine boiler which should enable the boiler operator to obtain a higher degree of boiler reliability, thereby reducing unscheduled outages and decreasing maintenance costs.

The ongoing shipboard and laboratory testing described should produce information of the same type and caliber which deals specifically with marine components and operating environment as is available to shoreside operators. Results of these investigations will be made available periodically during the next two years through the Maritime Administration.

New Dura-Plex Barge Line has the guts to outlast all others.



Built-in abrasion resistance enables Samson Dura-Plex Braid to stand up to chafing, scraping, and rubbing longer than any other barge line you can use.

Dura-Plex has the guts because it's a 12-strand braid with each strand having a tough polyester jacket over a polypropylene center. These "composite" strands are then braided together using Samson's exclusive patented Parallay™ construction.

Result: Dura-Plex is an ex-

tremely durable and strong rope. Stronger, size for size, than 3-strand Manila, polypropylene, or other synthetic blends, Dura-Plex can handle significantly higher working loads.

Samson Dura-Plex also provides four other important features for barge lines. It has lower stretch than other ropes, which means low snapback. Firm, round construction holds better on bitts and cleats.

Torque-free and non-kinking

makes it safer and easier to handle. And it's the fastest splicing of any rope.

Dura-Plex is extremely cost effective for tie-up, breast, lock, and mooring lines. Sizes from 1/4" to 4" diameter; tensiles from 1,940, to 337,000 lbs.

For complete data, including comparative tensile strengths, write Samson Ocean Systems, Inc., 99 High St., Boston, MA. 02110. In Canada, contact Canada Ropes Limited, Richmond, B.C.



SAMSON OCEAN SYSTEMS, INC.

Navy Awards Boeing \$178 Million To Build Missile Firing Boats

Boeing Marine Systems (BMS), Renton, Wash., has announced the signing of a \$178-million U.S. Navy contract for production of five Patrol Hydrofoil Missiles (PHMs). Work will begin immediately on the scheduled five-year program.

Boeing Marine Systems, a division of The Boeing Company, delivered the prototype ship Pegasus (PHM-1) to the Navy for commissioning in July, following successful test and evaluation of this compact weapons system over the last two years.

The Pentagon announced in August that Secretary of Defense Harold Brown had released \$272.7 million in previously appropriated funds for the procurement of five more of these high-speed patrol craft. The production program will require a very gradual build-up to about 1,450 additional employees at BMS in Seattle at peak of production in early 1979. Initial work will focus on engineering and tool design.

During extensive testing by the Navy, Pegasus operated in a wide spectrum of sea conditions, demonstrating capabilities usually afforded only larger ships, while allowing the significantly lower costs and high maneuverability associated with smaller ships.

Boeing's commercial hydrofoil, Jetfoil, exhibited unique seakeeping ability earlier this year on a 7,500-nautical-mile demonstration tour of six northern European countries on the Baltic and North Seas. That tour included the record crossing of the North Sea from Stavanger, Norway, to Aberdeen, Scotland, a distance of 260 nautical miles, in 6 hours 11 minutes.

Both the commercial and military versions of the automatically controlled craft offer the great advantage of a smooth ride in rough water, ensuring passenger comfort and enabling efficient performance of assigned missions. Both PHM and Jetfoil operate on fully submerged foils.

Capable of speeds in excess of 40 knots, PHM is ideally suited for area surveillance in support of task force operations. Design flexibility in the 131-foot-long, 230-ton hydrofoil includes weight and space reserves to permit expansion of operational roles to antisubmarine (ASW) and anti-air warfare (AAW). PHM can be easily adapted for minelaying tasks.

Requiring a crew of only 21, the PHM combines unique seakeeping ability with a compact but powerful weapons system. Pegasus is equipped with eight Harpoon missiles, a 76-mm dual-purpose gun and MK-94 fire-control system.

Variation in armament may include ASW, AAW, mine warfare,

and use as a helicopter platform. Standard design permits multinational use.

PHM is also ideal for nonmilitary missions, such as fisheries law enforcement, protection of offshore resources, and search and rescue. BMS is presently conducting a study for the Ministry of Defense of the United Kingdom on a military hydrofoil concept to perform offshore protection missions as set forth in requirements by the Royal Navy.

Stabilimenti Navali SpA Appoints MAREPCON For United States And Canada

Frederick A. Ganter, vice president, Marine Repair and Construction Corporation-International (MAREPCON), 17 Battery Place, New York, N.Y. 10004, has announced that Stabilimenti Navali SpA of Taranto, Italy, has appointed MAREPCON Corporation-International their sole sales rep-

resentatives in the United States and Canada.

Representation is in addition to the sole sales activity carried out by MAREPCON in behalf of Societa Esercizio Bacini Napoletani SpA. MAREPCON has represented SEBN for the past two years.

The shipyards are associated with each other, and this appointment should prove to be a benefit to all of MAREPCON's customers.

You'd expect to find nothing but shade-free mechanics in Savannah.



Arthur Waters is proof that Savannah can grow its own first-class ship-repair talent.

Besides talent, Arthur has some qualities you might not find in the big city. He's reliable, straightforward, and persistent. He'll stick with your job to be sure that you and the regulatory folks are satisfied.

At the Savannah Yard that's the attitude everyone has. We have to have it. Because we know you won't come to Savannah just for our cranes, drydocks and specialized shops.

You'll come because you've heard about guys like Arthur Waters. And our prices. And our speed. And our professionalism.

Savannah Machine and Shipyard Company.

We do scheduled drydocking, voyage repairs, and major conversions.

Check us out. And remember this. Before all those hotshots moved to the big city they were grown in places like Savannah.

The Savannah Yard.

Savannah Machine and Shipyard Co.

P.O. Box 787, Savannah, Ga. 31402

Tele. (912) 233-6621

74 Trinity Place, Suite 1800

New York, N.Y. 10006, Tele. (212) 432-0350

Plan To Convert Three Vessels At Estimated Cost Of \$12.8 Million

Bulk Food Carriers, Inc., 425 California Street, San Francisco, Calif., has applied for Title XI guarantees to aid in financing the conversion of the dry bulk carriers S/S Tex and S/S Flor, and the oceangoing barge Burke F to carry oil products.

The Tex and Flor were both built in 1948 at Bethlehem Steel Corporation's Sparrows Point (Md.) shipyard. They will be converted to 25,500-dwt liquid petroleum carrying tankers, and are intended to be used in the carriage of oil and other liquid cargoes in the U.S. coastwise and nearby foreign trade under five-year time charters.

The conversion work will be

performed by an East Coast shipyard to be determined. The combined estimated cost of conversion is \$11.3 million for the two vessels.

The flatdeck oceangoing barge Burke F was delivered by Sea-train Shipbuilding Corporation in 1976. The nonself-propelled vessel will be converted to a 2,229-gross-ton oil-carrier. It is intended to be used in the carriage of oil and

other liquid cargoes in the southern California area between Los Angeles, San Diego, and Port Hueneme under a two-year af-freightment contract. It also will provide oil lightering services in the Los Angeles area.

The reconstruction work will be performed by a West Coast shipyard to be determined. Estimated cost of conversion is \$1.5 million.

Kleschick Elected To Sun Ship Board Of Directors



Joseph J. Kleschick

Sun Shipbuilding and Dry Dock Co., Chester, Pa., has announced that **Joseph J. Kleschick** was elected to the Sun Ship board of directors. Mr. Kleschick is Sun Ship's vice president-marketing.

Mr. Kleschick is a 1951 graduate of Villanova University with a Bachelor of Electrical Engineering degree.

He served in various field engineering and sales engineering posts with General Electric from 1951 to 1972, with his last post being area sales manager for marine and defense industries.

He joined Sun Ship in September 1972 as marketing manager in the General Cargo Ship Product Group. In November 1974, he was named vice president of this Product Group, with responsibility for implementing Sun Ship's program for all high-speed vessels carrying primarily unitized cargo.

Mr. Kleschick served with the U.S. Army from 1954 to 1956. He is a member of the Institute of Electrical and Electronic Engineers, The Society of Naval Architects and Marine Engineers, and the Port of Philadelphia Maritime Society.

General Electric Receives \$219,968 Contract From MarAd

The Department of Commerce has awarded a contract in support of the Maritime Administration's Shipping Operations Information System (SOIS). General Electric Company, New York, N.Y., was awarded a \$219,968 contract involving the conversion of six high-interest modules to operate on an international time-sharing computer network for purposes of demonstration and evaluation of the SOIS capabilities for U.S.-flag shipping.

OPERATING ROOM

... means flexibility and fast service for your vessel in Seattle. There may be jobs too big for our drydocks but no job too big for our people — they know their operations.

LOCKHEED
SHIPBUILDING AND
CONSTRUCTION COMPANY
2929 16th AVE. S.W., SEATTLE, WASH. 98134
PHONE 206-292-5656 • CABLE LOCKSHIP

3 floating drydocks to 18000 tons
Shipways to 100 x 700 feet • Piers to 1100 feet

Protect shafts from abrasion with long-life Morse Marine Bearings

Morse Marine Bearings offer a fluted liner of Neolastic™ rubber that lasts 10 times longer than hard bearing surfaces. It rejects abrasive materials and allows lubricating water to flush them out through grooved channels. Sizes for shafts from 3/4" to 15" Available from stock through your nearest Morse Service Center: Aurora, Ill.; Hasbrouck Hts., N.J.; Atlanta, Ga.; Dallas, Tex.; Los Angeles, Calif.; Toronto, Ont., and Vancouver, B.C. Morse Chain, Div. of Borg-Warner Corp., Ithaca, N.Y.

MORSE BORG-WARNER

HERE'S AN OMEGA YOU CAN UNDERSTAND!

DYNELL'S AUTOMATIC OMEGA 400 FEATURES:

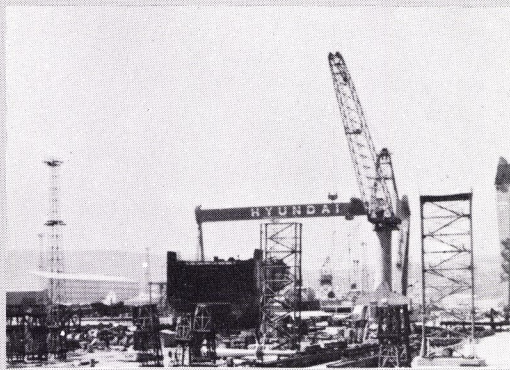
- Direct latitude/longitude readout
- Easy to operate, no need for special charts and tables
- Highly accurate GMT and date display
- Dynell Omega 300's can be easily converted to latitude/longitude at low cost

THE GLOBAL NAVIGATION SYSTEM YOU NEED, AT A PRICE YOU CAN AFFORD...

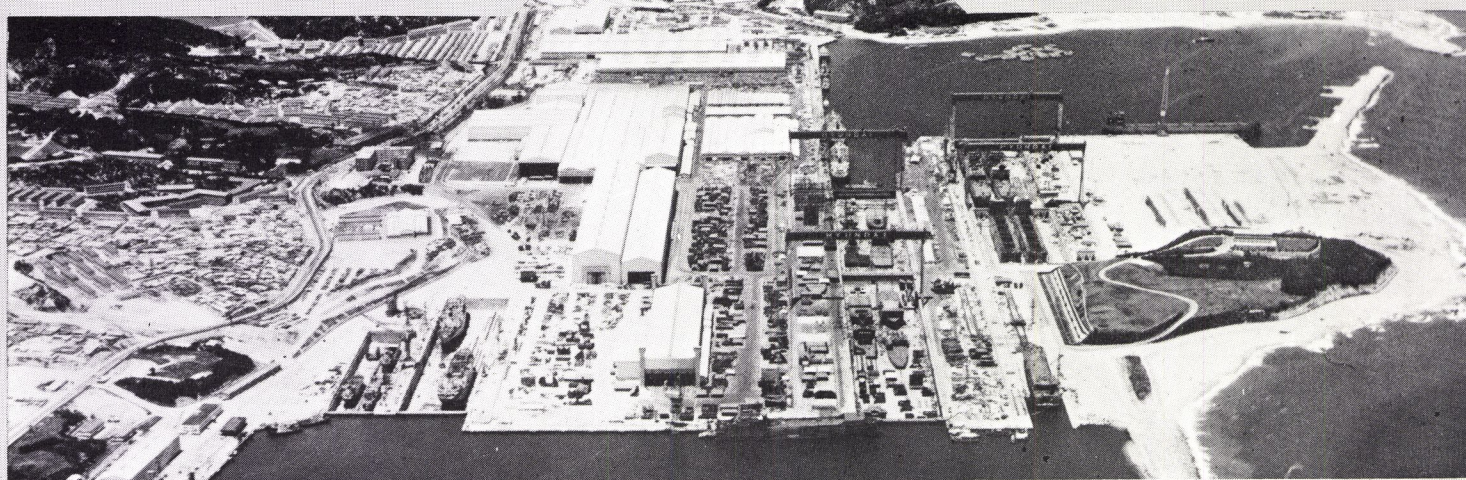
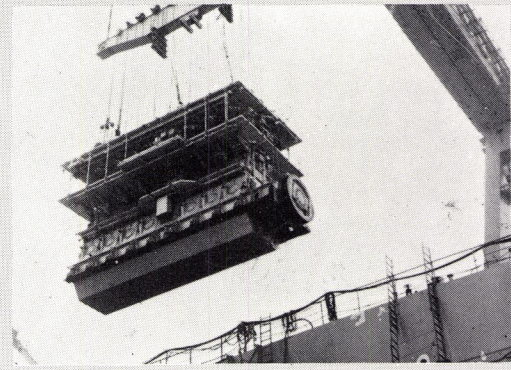
DE **FOR INFORMATION CONTACT WALTER PERLOWSKI**

DYNELL ELECTRONICS CORP

536 Broadhollow Road, Melville, N.Y. 11746
(516) 694-8910 TWX 510-224-6533



HYUNDAI



A QUALITY VESSEL IS THE VERY SHIP YOU ARE LOOKING FOR

And you know you can do it if you think twice.

With the introduction and presentation of computerized system, Hyundai Shipyard always continues scientific method in building the quality vessels. In addition, its skilled labors and most up-to-date facilities will guarantee your investment.

All the leading men in the shipping world come to recognize well the performance of the ships built by Hyundai Shipyard. Your judgement will bring a reliable and profitable ship.

For more information, please contact:

SEOUL MAIN OFFICE: 178, Sejongro, Jongro-ku., Seoul, Korea Tel: 70-7711/20, Telex: K28361
OVERSEAS OFFICES: London (Tel: 01-235-1266), Oslo (Tel: 02-415086), Hamburg (Tel: [040] 346819),
Piraeus (Tel: 4511968), New York (Tel: [212] 775-1200/2), Tokyo (Tel: 03-211-
1960), Hong Kong (Tel: 5-446493), and Kuwait (Tel: 540787).

GOOD SHIPS FROM A GOOD SHIPYARD

 **HYUNDAI SHIPBUILDING &
HEAVY INDUSTRIES CO., LTD.**

Norshipco Adopts New Corporate Logo

Norfolk Shipbuilding & Drydock Corporation (Norshipco), Norfolk, Va., has adopted a new corporate logo. The announcement was made by **John L. Roper III**, president and chief executive officer of Norshipco.

The new logo is circular in design, and depicts a ship in drydock, with sunlight overhead.

This is symbolic of the fact that in Norfolk, the average amount of sunlight is 60 percent of all sunlight available. This is a very favorable climatic condition for shipyard operations.

Below the design is the new name "Norshipco," in italicized lettering, symbolic of a sense of urgency and action. "We hope the use of the new name will help minimize confusion caused by so many shipyards in the Norfolk

area having similar names," said Mr. Roper. "We think our new logo well represents the forward thrust our company is taking with its new expansion program."

The shipyard is currently expanding its Berkley Plant, with the addition of a new 1,030-foot-long pier, now in operation, and a giant steel floating drydock, capable of lifting ships of up to 150,000 deadweight tons, now under construction in Brazil.

Cayman Energy Ltd. Reports On Activities

One of the world's largest "ship-to-ship" operators, Cayman Energy Ltd., reports that since the beginning of its operations in August in the Cayman Islands, they are now averaging 4 million barrels per month of crude oil transfers and expect this amount to increase substantially in the next few months.

In the period since August, they have handled 25 tankers, including a ULCC (ultra large crude carrier) and several VLCCs (very large crude carrier). As of mid-October, five tankers were at anchor off Little Cayman and Cayman Brac, awaiting shuttle vessels.

The company also has future commitments for a number of other tankers for ship-to-ship transfer. To date, the oil companies they have been working with are Occidental Petroleum, Cities Service, Phillips Petroleum, and Ashland Oil, and negotiations are underway with many others.

According to **T. Clyde Smith**, vice president of Transportation Concepts and Techniques, Inc., as agents for Cayman Energy Ltd., the company has become one of the world's largest ship-to-ship operators, and still on the increase.

For further information, contact Transportation Concepts and Techniques, Inc. at 551 Fifth Avenue, New York, N.Y. 10017.

Samson Sells Marine Survey Division To Local Management

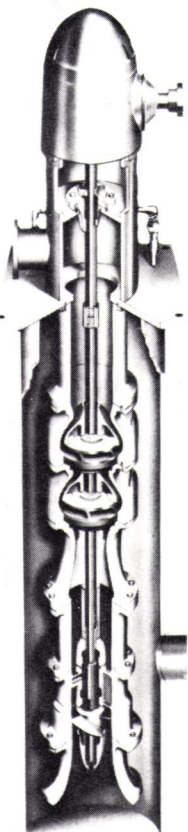
Samson Ocean Systems, Inc., 99 High Street, Boston, Mass. 02110, rope systems and undersea services company, has sold its Marine Survey Division, it has been announced by **Jerry J. Jones**, president. The new company, Ocean Surveys, Inc., has been purchased for an undisclosed price by the former technical, financial, and marketing management of the division. Officers are **Alan Bieber**, president; **Seville Simonds**, vice president and general manager, and **David Bell**, vice president, marketing.

Mr. Jones noted the decision is in keeping with Samson's policy of concentrating its business on mooring systems and undersea services, including commercial diving. In contrast, the business of the Marine Survey Division had been the gathering of engineering site information for marine construction.

Ocean Surveys, Inc. will continue to operate from its present location in Old Saybrook, Conn. The new company will acquire all the division's ongoing business, assets, equipment, and personnel from Samson Ocean Systems, Inc.

Ocean Surveys, Inc. is presently involved in several projects in the Middle East, Latin America, the Caribbean, and the United States.

Let us pump new life into your old Deepwell pumps



Official Johnston
Deepwell pump
repair station

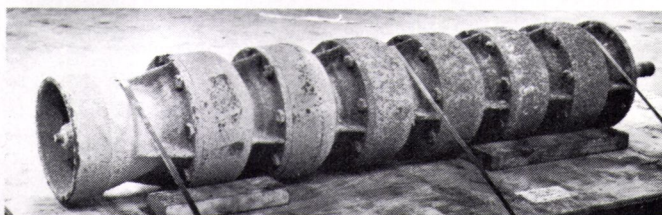
Johnston vertical
pumps require

- less space
- less installation time
- less maintenance time
- less power consumption

Model JS



Johnston Pumps



Sales & Service

Hoffert Marine will also sell you a new Johnston pump. We cover the waterfront, representing Johnston vertical pumps on the East & Gulf coasts. We are also suppliers of Naval and merchant marine deck and engine equipment and solve marine problems in any port on the seven seas.

HOFFERT MARINE, INC.

1700 East Church Street — Jacksonville, Florida 32202 904-354-8242

Toll Free Phone 1-800-874-8368

New York: 212-571-0430 Houston: 713-644-4443 Norfolk: 804-622-9571
201-997-3332 Telex 056-377

we build, repair, overhaul and convert.



This modern shipyard is located on a 40 acre site in the Port of Vancouver, Canada's gateway to the Pacific.

Our Pearlson "Syncrolift" all tide marine elevator can handle vessels up to 300 feet long (91.44 m), 68 feet beam (20.73 m) and 1,500 long tons displacement. We can build and sidelaunch vessels up to 550 feet long (167.64 m) and 100 feet beam (30.48 m).

In addition to repairs, overhauls and conversions, we in-

vite enquiries for construction of all types of vessels including jack-up and semi-submersible drill rigs, drill ships, working platforms and supply vessels.

Our expertise and full range of services are available 24 hours a day. Call us anytime.

VANCOUVER SHIPYARDS CO. LTD.

50 Pemberton Avenue, North Vancouver, B.C., Canada V7P 2R2
Phone: (604) 988-6361 Telex: 04-352532



Ed Toale Joins Bailey Sales Staff



Ed Toale

Sigurd Nilsen, executive vice president of Bailey Refrigeration Co., Inc., has announced the appointment of **Ed Toale** to their sales staff. Mr. Toale's sales and service background in the marine refrigeration and air-conditioning field spans a period of more than 20 years. He will handle worldwide sales involving installation of new systems, conversions, alterations and repairs to shipbuilders and companies that operate tankers, cargo ships, oceanliners, and all types of river and harbor vessels.

Bailey, with headquarters at 74 Sullivan Street, Brooklyn, N.Y., maintains branches and warehouses in Avenel, N.J., New Orleans, La., and North Miami, Fla. In addition, three other companies of the Bailey Group cater to marine demands, which include sales and service of refrigeration and air-conditioning equipment and spare parts, insulation of hulls and of compartments for refrigerated cargoes and stores, and voyage repairs; and a complete line of marine furniture.

Breit And Garcia Awarded MarAd Study Contract

The Maritime Administration has awarded a \$58,600 contract to Breit and Garcia, New Orleans, La., to determine the cost/benefit ratio of a steering control system for tows on the inland waterways.

The research and development effort under this contract will be aimed at defining the factors that affect the maneuverability of towing vessels and associated tows. The basic project will consist of in-service performance testing, using existing technology, of two different types of bow boats.

In addition, this study will analyze the effects of various channel configurations and water depths, as well as the direction of tow movements (upstream or downstream). The results of the study should lead to a more fuel-efficient operation, while increasing marine and environmental safety.

The contract is on a cost-shared basis with Dixie Carriers, Inc. of Houston, Texas, which will provide the towboat, barges, bow boats and operating personnel. The study, "Influence of Bow Boats on Inland River Towboats and Barges," is expected to be completed in six months.

Marine Firms Attend Hoffert Marine Seminar

Representatives of the U.S. Navy, Jacksonville Shipyards, estimators and production personnel of various marine firms attended an Electroplating Seminar held at the Jacksonville, Fla., headquarters of Hoffert Marine, Inc.

The Hoffert firm is the authorized U.S. Navy job shop for the East and Gulf Coasts. The

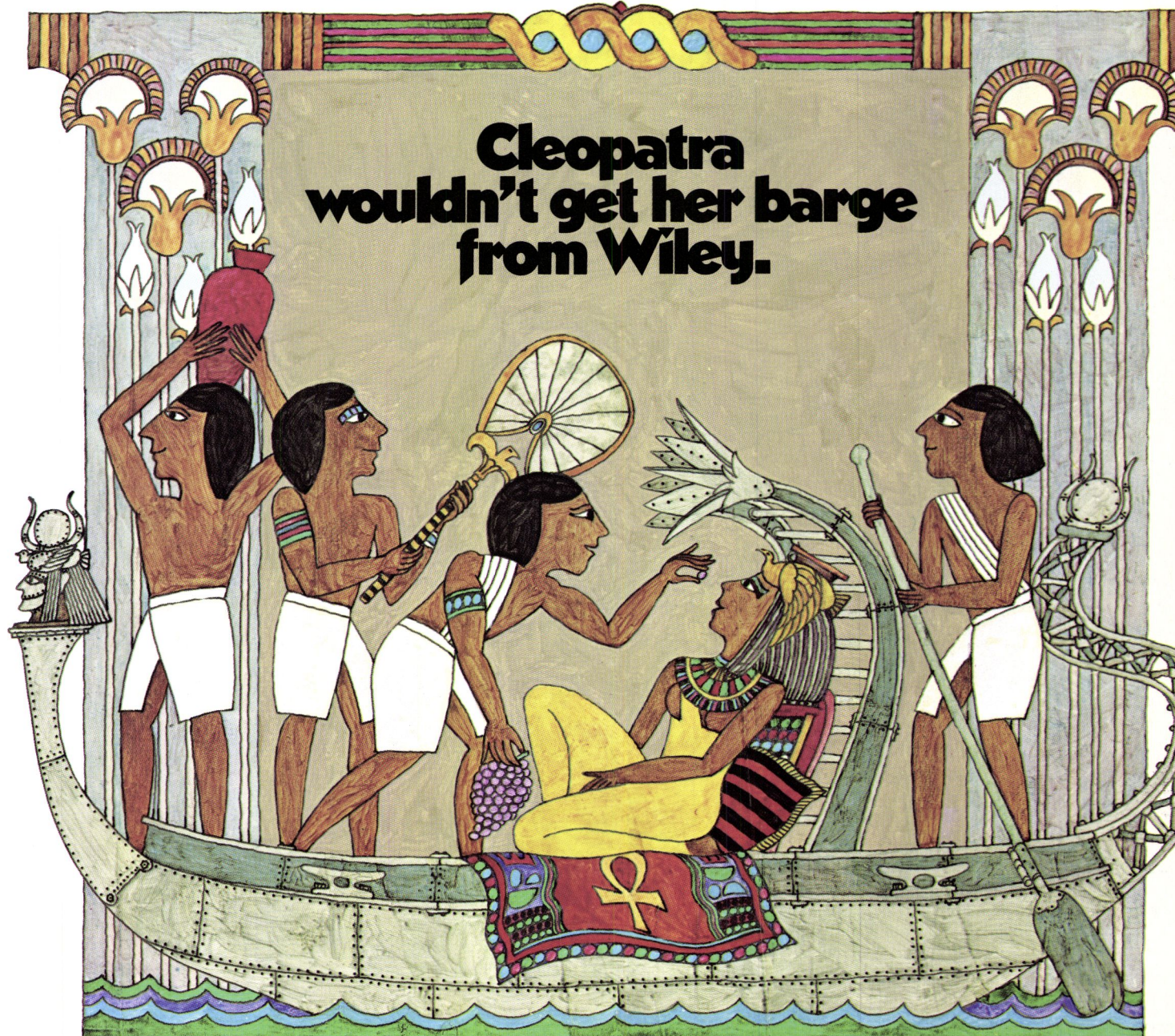
group was welcomed to the one-day meeting by **Paul E. Hoffert**, president of Hoffert Marine.

Demonstrations of the Selectron 500, the largest electroplating machine, were made by **David Rose** of Selectrons, Ltd., New York. Mr. Rose pointed out that the electroplating machine has a variety of applications for both marine and industrial use.

The machine can replace metal

on any type surface, inside or outside diameter, repair babitted bearings, printers rolls, special dyes, gold and silver contacts, large industrial shafts, pump sleeves, rotors, impellers, and most types of machinery.

In appearance, the Selectron Process works like an arc welder but has fewer problems. There is no heat distortion, no generating of internal stresses and generally no need for final remachining.



**Cleopatra
wouldn't get her barge
from Wiley.**

Which is precisely why you should.

One of the cruelest ironies of history is that everyone has heard of Cleopatra's Barge, while some people still don't know about Wiley's barges.

Allow us to set the record straight. What Cleopatra had was a mere pleasure boat, with queenly appointments and slaves pulling at the oars. It was probably nice to look at, perfect for outings on the Nile.

But barges have grown up a lot in 20 centuries. Today, a barge has to work for a living. And the barges Wiley builds are working class vessels, from stem to stern.

Wiley makes cargo barges, hopper barges, tank barges and special-purpose barges up to 425 feet long.

Wiley makes more than barges, of course.

We're one of the nation's leading marine fabricators, with 400 employees filling our 13½-acre yard with tunnel tubes, ship mid-bodies, workboats, pier forms, hatch covers and custom works.

We're in a great location, too, near the mouth of the Susquehanna River. We're 150 miles from the Baltimore Canyon, 350 miles from Boston, 750 miles from Jacksonville, and about 6,000 miles from the Nile.

For more information contact:

WILEY MFG

A unit of AMCA International Corporation
Suite 200/Stockton Building/University Office Plaza
Newark, Delaware 19702/(302) 738-5100

\$3-Million Surface Effect Ship Award To Philadelphia Gear

Philadelphia Gear of King of Prussia, Pa. 19406, has been chosen to design, manufacture and test the propulsor reduction gearbox for the 3,000-ton Surface Effect Ship (3KSES). The planned cost for this effort through de-

sign, development, test and delivery of one ship set of four propulsor reduction gearboxes, plus one development propulsor, will exceed \$3,000,000 in the next four years.

An SES is a marine vessel that operates on a cushion of air to significantly reduce its drag. As a result of the reduced drag, a large SES can be propelled at speeds ranging up to 100 knots.

By comparison, conventional ships have maximum speed limitations, depending on size, mission, hull configuration, etc., of less than half that of the SES.

The Navy's 3,000-ton Surface Effect Ship Program represents the culmination of 15 years of research and development to produce an oceangoing operational surface effect ship prototype. Advanced ships of this type are

capable of extraordinarily high speeds, since they ride over the water on a cushion of air contained under the ship.

The 3KSES design has an approximate length of 270 feet, a maximum beam of about 105 feet, and a cushion height of 18 feet. The ship will be able to carry a crew of 125 men at speeds three times that of conventional ships. For propulsion, General Electric LM 2500 gas turbine engines will drive four Aerojet waterjet propulsors. Cushion air will be provided by six Aerojet centrifugal fans powered by two LM 2500 gas turbine engines. The ship will be equipped with helicopters and/or V/STOL aircraft, as well as weapons and sensors for test purposes.

Philadelphia Gear was selected because of its experience in large marine gearbox fabrication for the U.S. Navy and shipbuilders throughout the world. Their experience includes fabrication of supercavitating propellers used on the U.S. Navy 100-ton Surface Effect Ship that recently set a speed record of 103 mph. The award is by the Aerojet Liquid Rocket Company of Sacramento, Calif., under a subcontract from Rohr Marine Incorporated, a subsidiary of Rohr Industries, Inc. of Chula Vista, Calif.

Jonathan Feffer Named President SSI Navigation

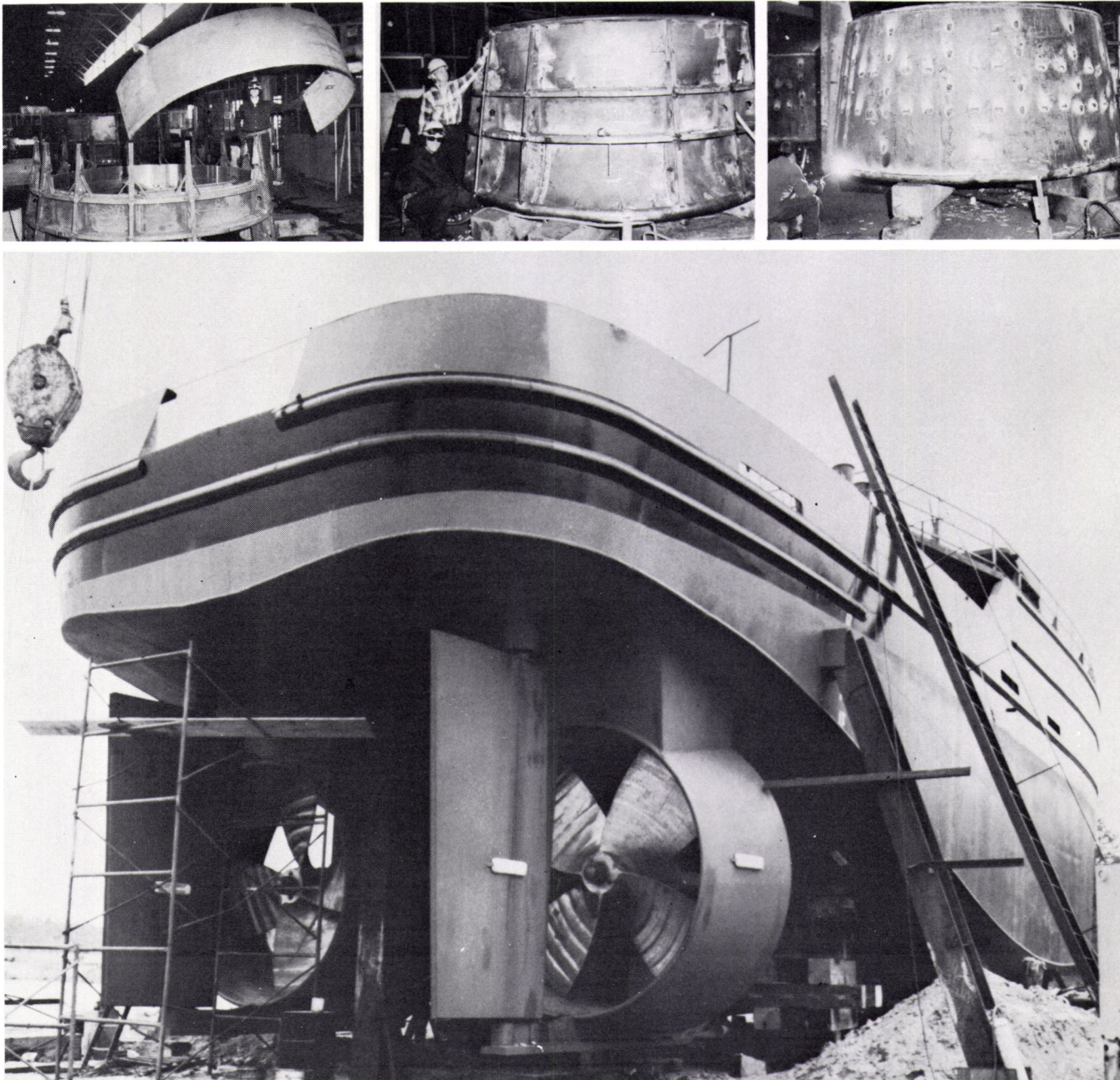
Thomas S. Tan, president of Itel Corporation's Transportation Services Group, has announced the appointment of **Jonathan Feffer** to president of SSI Navigation.

SSI Navigation is engaged in the chartering of ships for the transportation of dry and liquid bulk commodities. The company owns and operates a fleet of eight vessels, with four additional vessels on order to be delivered in 1978.

Mr. Feffer joined SSI from Maritime Overseas Corporation, Agents & Brokers for Overseas Shipholding Group (NYSE). He will be headquartered in SSI Navigation's New York headquarters. He received his A.B. degree from New York University.

The Transportation Services Group of Itel Corporation is one of the world's largest lessors of diversified transportation equipment. Its operations include SSI Container and SSI Rail, as well as SSI Navigation. By the end of 1978, it is expected that Itel's Transportation Services Group will have a fleet of equipment in excess of \$700 million.

Itel Corporation, San Francisco, Calif., markets and leases capital equipment and provides related services. Itel concentrates its efforts in two of the largest categories of capital equipment—transportation and computer equipment.



Fabrication: an Avondale kort nozzle takes shape

The Harvey plant, like all of Avondale, is well versed in fabrication. Here you see a 10 foot diameter kort nozzle undergoing the varied steps from shapeless steel plate to a functioning member of a tug.

It's nice to know there's a place that takes every type of steel fabrication in its stride. Kort nozzles, rudders, stern rollers, deck houses, dredge ladders, marine tanks . . . you name it.

That place is the Harvey Quick Repair Division of Avondale Shipyards . . . "The Around the Clock Marine Service."



HARVEY
QUICK REPAIR DIVISION

Avondale Shipyards, Inc.

A SUBSIDIARY OF OGDEN CORPORATION
Post Office Box 116 • Harvey, Louisiana 70059
(504) 341-4211



Shell's *Caprinus R* Oil guards towboat EMD's against corrosive wear of rings and liners.

The switch is on!

Here's why over 40 towboats are now using Shell's high-alkalinity *Caprinus R* Oil 40.

We were proud to introduce *Caprinus*[®] T Oil a few years ago and delighted with its performance on the waterways. *Caprinus* T is a hard act to follow. But *Caprinus*^{*} R Oil 40 is a significant step ahead. Towboat operators agree and are now using this premium lubricant in over 40 EMD-powered motor vessels.

Caprinus R Oil 40 is higher in initial alkalinity than *Caprinus*^{*} T Oil (10.2 TBN-E compared to 7.5) and *retains* effective alkalinity in extended high-stress service.

That means *Caprinus* R Oil can continue to neutralize combustion acids and guard against corrosive wear of rings and liners

over long periods. It helps prevent corrosive wear caused by high-sulfur fuels.

Maximum filter service life

The dispersant additive system in *Caprinus* R Oil helps keep insolubles in suspension to promote engine cleanliness. Results: In some installations it has been possible to extend filter service life *to the limit* of filter element durability—an important maintenance saving.

And what engineer wouldn't like the long oil service life of *Caprinus* R Oil! It offers high oxidation stability, high detergency to meet the needs of the latest-design diesels with up to 250 hp per cylinder. Fights thickening

and deterioration over the long haul, too.

Caprinus R Oil has all the properties to do the job and keep at it!

Workhorse *Tornus*[®] Oil will still be available

For many years, Shell's *Tornus*^{*} Oil has worked its way in and across ports, harbors and the inland waterways of the U.S., delivering good performance in high-horsepower diesels. Its alkalinity level is considerably lower than that of *Caprinus* R Oil (TBN 5.7 compared to 10.2). But it does provide good wear protection, helps keep engines clean and gives good oil and oil filter life in moderate service.

Shell will continue to offer *Tornus* Oil but encourages a change to *Caprinus* R Oil 40 to meet the demanding requirements of modern engines and high-sulfur fuels.

Send for full details — we'll be glad to send you our technical bulletin on *Caprinus* R Oil — its properties and applications in marine power plants. Just write: Shell Oil Company, Manager, Commercial Communications, One Shell Plaza, Houston, Texas 77002.



**Come to
Shell for answers**

*This is a trademark for the product indicated above and is used as such in this writing.

Navy Adds \$4.2 Million To Tracor Contract

The Naval Sea Systems Command, Department of the Navy, Washington, D.C., has increased an existing Tracor, Inc. contract by \$4.2 million to continue its support program of coordinating design, production, installation, and operational phases of sonar, command and control, and fire control systems; and acoustic trans-

ducers and test instrumentation for the Navy's nuclear submarines, Trident submarines, and surface ships.

William C. Moyer, Ph.D., vice president for Tracor Applied Sciences, explains that approximately 150 Tracor sonar scientists, engineers, and managers located in Maryland, Virginia, Connecticut, and Texas are involved in the program, providing engineering analysis and tech-

nical engineering in support of these systems. The contract consolidates work in 23 different technical programs, all administered by the Naval Sea Systems Command.

As each program proceeds, Tracor scientists assist in assuring the most advanced techniques are utilized, providing the Navy with design and production specifications, as well as assistance in

program management and production and installation planning.

Headquarters for the contract work is Tracor's facility in Rockville, Md., under the general management of **William F. Thompson**, division vice president and manager of the Systems Technology Division. Reporting to Mr. Thompson on the program is **Robert G. Jackson**, director, Submarine Systems Department.

Primary responsibility for the management of this contract is with **Edgar V. Davis**, Navy support program manager, who reports to Mr. Jackson. Assisting Mr. Davis and Mr. Jackson with a major portion of the work on this contract is **M.P. Hall**, manager of Tracor's Groton, Conn., facility, and **J.D. Morell**, manager of ASW programs.

Tracor, Inc., headquartered in Austin, Texas, is an international technological products and services company with operations in 11 states, two United States territories, and five foreign countries.

C.F. Bean Corp. Names Charles R. Barron VP



Charles R. Barron

The board of directors, C.F. Bean Corporation, One Shell Square, New Orleans, La. 70139, has named **Charles R. (Yogi) Barron**, vice president, Bean International Corporation, a wholly owned subsidiary of C.F. Bean Corporation.

Mr. Barron will be responsible for Bean's international dredging operations, which include projects in Puerto Rico and Saudi Arabia.

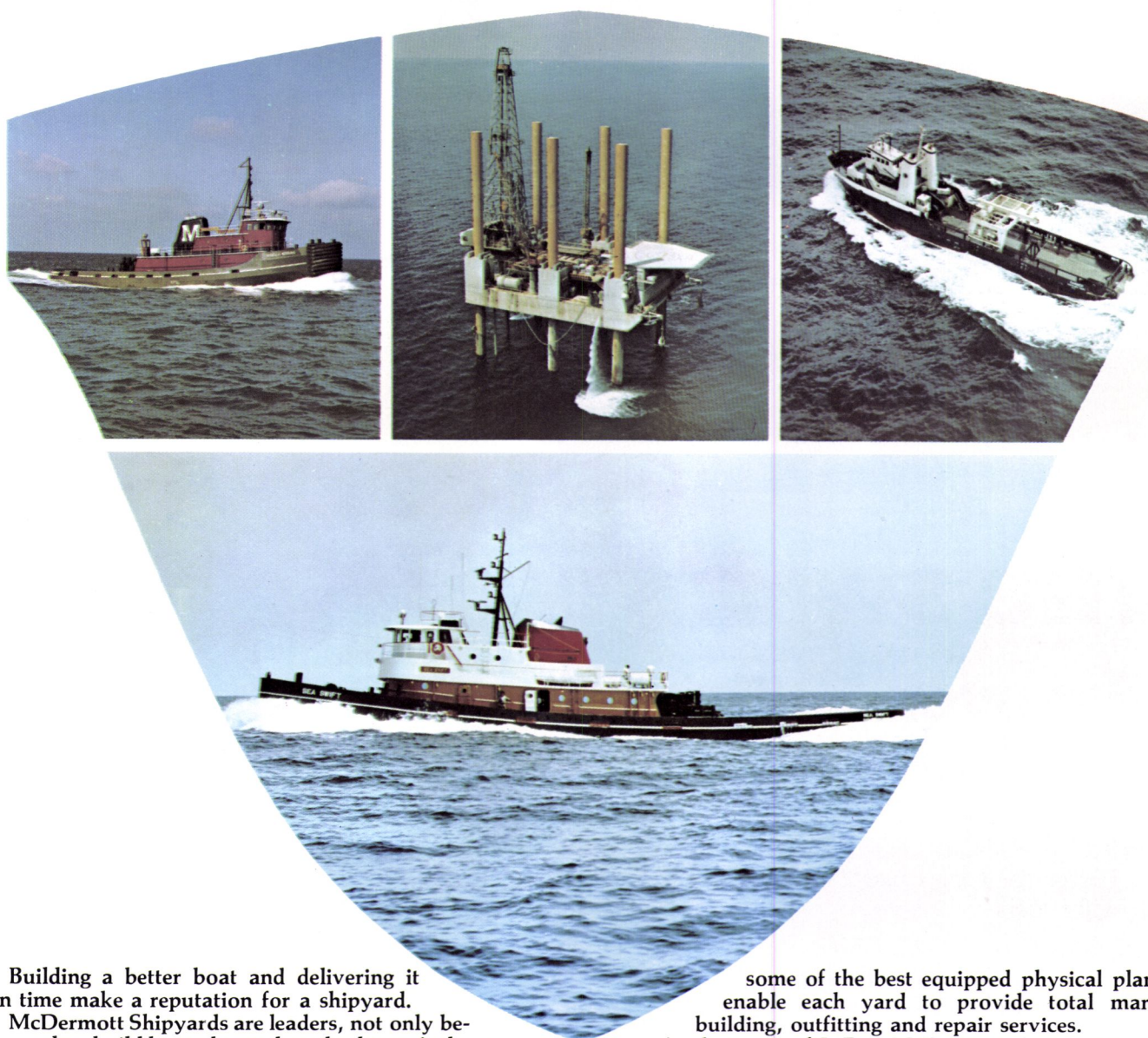
A graduate of Texas A&M's School of Civil Engineering, Mr. Barron joined Bean in 1972 as project manager.

He was promoted to senior project manager in 1974 and moved to Bean International in 1975, taking charge of the construction of a new port at Jubail, Saudi Arabia.

Prior to joining Bean, Mr. Barron was with the U.S. Corps of Engineers in Galveston and Corpus Christi, where he was area engineer responsible for marine construction, navigation and flood control.

Bean International is responsible for marine construction outside the continental United States. Its experience includes work in Nigeria, Barbados, Puerto Rico, Trinidad, and Saudi Arabia.

McDERMOTT SHIPYARDS



Building a better boat and delivering it on time make a reputation for a shipyard.

McDermott Shipyards are leaders, not only because they build better boats, but also better jack-ups, package rigs, dredges, oceanographic research and ocean going work vessels. And they deliver them on time.

Complete, modern facilities are located on 81 acres at Morgan City and 150 acres at New Iberia, Louisiana. Individual engineering and drafting departments, under roof fabrication, modular construction techniques, and

some of the best equipped physical plants, enable each yard to provide total marine building, outfitting and repair services.

As divisions of J. Ray McDermott & Co., Inc., the shipyards are capable of drawing on vast capital, equipment and personnel resources to meet any situation or requirement.

A better boat, on time, has helped make McDermott Shipyards leaders in their field. They can make you a leader on the ocean. Write for an illustrated brochure.



McDermott Shipyard Group
Morgan City • New Iberia

P.O. Box 188 Morgan City, LA 70380 • 504/631-2561 • P.O. Box 128 New Iberia, LA 70560 • 318/365-8121

Argo International And Sealol Join Forces

John Calicchio, chief executive officer of Argo International Corp., has announced that Argo Marine has been named national distributor for Sealol (formerly Chempro) mechanical seals and mechanical packings. Argo will stock these products in their nationwide distribution and warehouse network.

As the authorized distributor for Sealol, Inc., Argo inventories an extensive selection, ranging from the simplest mechanical seals and packings to the most sophisticated. These products have a broad range of marine and industrial applications, ranging from process and pollution control to compressors and pumps.

Sealol is well-known for its work during the 1950s in pioneering the design and development of welded metal bellows seals. The first bellows seals were used to seal high temperature oils (500 degrees F and above) in the then emerging jet engines. Since then, bellows seals have found their way into a wide range of applications, including pumps, compressors, agitators, mixers, and in virtually any device where a rotating shaft must be securely sealed.

The Argo/Sealol team provides their customers with an important double advantage: (1) Precision-engineered mechanical seals and packings, readily available for immediate off-the-shelf delivery, and (2) Technical expertise for providing specialized sealing solutions.

To help customers minimize costly downtime of vital equipment, Argo has ensured fast delivery by integrating Sealol products into its nationwide distribution network. Orders received at a distant Argo facility will be shipped from the Argo warehouse closest to its destination point.

Argo is headquartered at 140 Franklin Street, New York, N.Y. 10013. Information on Sealol mechanical seals and mechanical packings can be obtained by writing to Argo headquarters.

Space-Age Insulation Approved By Lloyd's

Lloyd's Register of Shipping has given approval in principle to the Gaz-Transport/McDonnell Douglas Corporation's LNG containment system. This combines Gaz-Transport's flat 36 percent nickel-iron alloy-membrane and an improved version of the McDonnell Douglas Corporation's three-dimensionally reinforced polyurethane foam developed for the U.S. Apollo/Saturn Lunar Exploration Program.

The Hull Structures and Refrigeration Departments have reviewed the physical strength and thermal properties of the system and recommended that this ap-

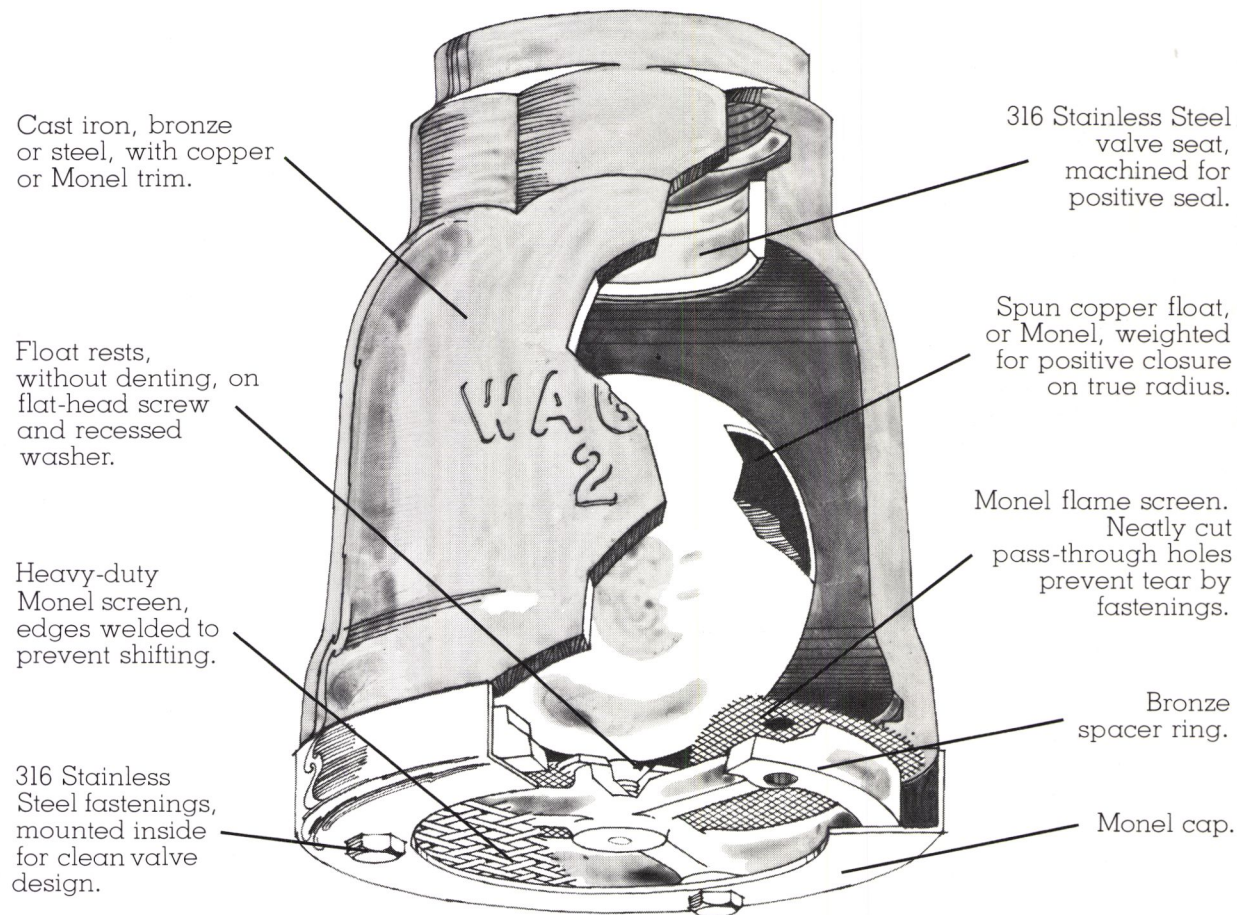
proval be given subject to certain conditions, including the usual one that detailed plans are to be submitted showing the configuration of the system when it is applied to a particular ship building to Lloyd's Register class.

The system consists of two layers of three-dimensionally reinforced polyurethane panels which are designed to be bonded to each other and directly to the inner hull in bricklaying fashion. Alternatively, the polyurethane

panels are bonded to plywood panels which are located by studs and supported via a network of epoxy mastic beads by the inner hull. The combined GT/MDC system is formed by applying the flat, automatically welded membrane of low thermal expansion nickel steel, over the 3D insulation. The primary metal membrane used in the current, proven Gaz-Transport design is retained in detail in the new GT/MDC system—including the capability

of transmitting membrane and thermal loads into specially designed corner couplers and then to the ship's hull. The method of attaching the membrane to the insulation in the new design is also similar to the original Gaz-Transport system. The secondary barrier function is provided by the two layers of three-dimensional reinforced polyurethane insulation with an intermediate liner of glass fiber cloth bonded between layers.

The Best Vent Valves in The Business Period.



The Wager Inverted Vent Check Valve
Sizes 1½" to large 12"
Also supplied with covers.

You can see for yourself: we have given our vent valves everything—not just to meet (actually exceed) every marine spec in the book, but to give you a vent valve that is neat and clean in design, one of rugged components and good workmanship that will stand up, dependably and with long life, under the most punishing marine service you can give it.

No one comes even close in design, materials and workmanship—yet you can have Wager valves and pay about the same, sometimes surprisingly less than you might spend elsewhere.

This is the innovative "ball float" vent valve that Wager originated, perfected by us over the years. These Wager valves meet or exceed current ABS, USCG and NAVY specs.

Hundreds of thousands are in service—more going into service every day. Promptly shipped from stock inventory—by air to answer critical needs.

Once you install a Wager valve, you'll never touch another. These are the best vent valves in the business. Period.



ROBERT H. WAGER CO., INC.
Passaic Avenue
Chatham, New Jersey 07928 USA
Tel: (201) 635-9200

Write us for spec sheets. No obligation.

Raytheon Promotes A. Newell Garden



A. Newell Garden

A. Newell Garden has been promoted to director of public relations of Raytheon Company, Lexington, Mass. His responsibilities will include both external publicity and press relations, and internal editorial services.

Mr. Garden joined the diversified electronics company in 1953, and has held a series of publications and public relations posts. Most recently, he was public relations manager, corporate and commercial.

Before joining Raytheon, he served for three years as public information officer for the U.S. Coast Guard in New York City. Earlier, he served as a line officer aboard cutters in the Arctic and North Atlantic.

He received a B.S. degree in naval engineering from the U.S. Coast Guard Academy in 1946, and has done graduate work in public relations at Boston University. He is a graduate of Raytheon's Advanced Management Program.

Mr. Garden is a corporator of the West Newton Savings Bank and a trustee of Newton-Wellesley Hospital. He is a member of the Public Relations Society of America, the Publicity Club of Boston, The American Society of Naval Engineers, and the Institute of Navigation. Active in boating safety, he is chairman of the Safe Boating Committee of the New England Marine Trade Association, and is a founding director of the New England Safe Boating Council.

National Steel And Shipbuilding Delivers Second Of Four 90,000-Ton Tankers To OSG



The Overseas Ohio incorporates special pollution abatement and related safety features and is of the maximum size that can transit the Panama Canal.

The 90,000-deadweight-ton S/S Overseas Ohio, the second of four San Clemente-Class tankers ordered for subsidiaries of Overseas Shipholding Group, Inc. (OSG), was delivered on October 20 to its owner by National Steel and Shipbuilding Co., San Diego, Calif.

The ships were contracted for in 1973 in anticipation of the completion of the Trans-Alaska Pipeline, and are being built without Federal construction differential subsidies.

The NASSCO-designed San Clemente-Class tankers incorporate special pollution abatement and related safety features, including double bottoms, inert gas systems, anticollision radar, high-capacity clean ballast systems, and sewage treatment plants. They are 894 feet long, have beams of 105 feet, and depths of 64 feet, and are of the maximum size that can transit the Panama

Canal. The latest in automation has been designed in the ship's operational controls.

OSG is the only publicly owned company engaged exclusively in the ocean transportation of bulk commodities in both the worldwide and U.S. shipping markets. OSG is the largest independent owner of unsubsidized U.S.-flag tankers.

The name Overseas Ohio is in honor of the Standard Ohio Company (Ohio) which has chartered all four of the new tankers. The first one, Overseas Chicago, is now in service. The other two sisterships, named Overseas New York and Overseas Washington, are scheduled for delivery this month and February 1978.

National Steel and Shipbuilding Company is equally owned by Kaiser Industries Corporation and Morrison-Knudsen Company, Inc.

Chotin makes sure what you ship is what they get.

Your company works hard to produce the finest product available and expends thousands of dollars assuring that the quality of your chemicals or petroleum products is maintained at a high level.

All the money spent on quality control is wasted if the liquids you produce are contaminated when they're barged in outdated, outmoded and poorly maintained equipment. And the real problem is you generally never know . . . until it's too late.

At Chotin we maintain the most up to date fleet of towboats and barges in the United States. The fear of contamination from other liquids in the same barge or from water seepage that is common with older, poorly maintained equipment is eliminated when you ship with Chotin.

Chotin provides *reliable, safe, uncontaminated delivery* of your chemical or petroleum cargo anywhere along the inland waterway system, Gulf of Mexico or east coast.

Chotin makes sure that what you ship is what they get. Call us for your next shipment (504) 581-4666.

We're the experts



Chotin

Chotin Transportation, Inc.
1414 One Shell Square,
New Orleans, La. 70139
(504) 581-4666

Oceaneering Int'l To Centralize Management In Santa Barbara, Calif.

Oceaneering International, Inc. (OCER), 10575 Katy Freeway, Houston, Texas 77024, has announced that as an integral part of its plan to bring together its management functions into one central location, it will establish an executive headquarters at Santa Barbara, Calif. Most of the corporate executives presently located in Houston, and some who have been on foreign assignments around the world, will be relocated to Santa Barbara. A substantial sales and purchasing staff will remain in the Houston office, which will continue to function as a major U.S. representation office of Oceaneering.

Management believes that the cost of the move will not have a material adverse effect on Oceaneering's financial position and, moreover, that the benefits of the centralization will more than outweigh the initial costs and temporary disruption which may result.

Bids Requested To Construct 200-Foot Double-End Ferry

The Virginia Department of Highways and Transportation is seeking bids for the construction of one 200-foot by 64-foot by 16-foot all-steel double-end passenger/vehicle ferry. The vessel, designed by Coast Engineering Company, 711 West Twenty-First Street, Norfolk, Va. 23517, will operate between Jamestown and Scotland, Va., on the James River.

The designed capacity of the ferry is 52 autos and 350 passengers, at a draft of 9 feet 0 inches (\pm). Propulsion will be by a single diesel engine connected through a double reverse/reduction gear to shafts turning propellers at each end of the vessel.

Copies of the plans, specifications and bidding documents may be obtained by interested bidders from Department of Highways and Transportation, 310 Old Highway Building, 1221 East Broad Street, Richmond, Va., Attention: T. Ashby Newby, Purchasing Agent.

W.A. Whitney Corp. Introduces New 28XX Tooling Catalog

W.A. Whitney Corp., Rockford, Ill., an Esterline Company (NYSE), the leading manufacturer of metal fabricating machinery and the originator of 28XX style tooling, recently introduced a new combination catalog and price list on their 28XX style punches and dies. These punches and dies are used in W.A. Whitney panelmasters, duplicators and scale gaging presses.

This new catalog, PD-77, describes in detail the different styles of 28XX tooling available, as well as prices of each in an easy-to-use fashion. Prices of standard round, square, rectangle and obround punches are listed alongside each punch size for easy reference. Dies are treated in like manner, with five sizes of clearance available for each punch size listed.

Also included are many special application tooling sets such as radius corner, louvre, keyhole, electrical knockout, corner notching, countersinking and many others. The catalog also contains a die clearance chart, as well as other engineering information to aid the fabricator in the selection and use of his tooling.

PD-77 explains W.A. Whitney's Punch and Die Division, which is set up specifically for the manufacturing of tooling. Separate production and inspection departments are employed, and the division has its own engineering staff.

For your free copy of PD-77, write to **Harry Conn**, Punch and Die Division, W.A. Whitney Corp., P.O. Box 958, Department 682, Rockford, Ill. 61105.

Maritime Transport Overseas Appoints Reil And Tonnesen

Maritime Transport Overseas Inc. (MTO), 2100 Travis, Suite 1207, Houston, Texas 77002, has announced the appointment of **John W. Reil** as sales and marketing representative. Mr. Reil has been active in ocean transportation for over six years, and his responsibilities will cover the company's sales activities with both U.S. shippers and freight forwarders.

Also announced was the appointment of **Ivar Tonnesen** as chartering manager whose broad responsibilities will include vessel chartering, as well as single voyage and contract chartering of the bottom cargoes for MTO's worldwide shipping operations. Mr. Tonnesen's extensive background began in Europe in the shipping and chartering industry there, and has been active in the United States for the last four years.

Swan Hunter To Build Vessel To Transport Spent Nuclear Fuels

Swan Hunter Shipbuilders Limited of Great Britain have received an order to build a specialized vessel costing approximately \$8,750,000 to carry spent nuclear fuel from Japan to France and the United Kingdom.

The ship has been ordered by Pacific Nuclear Transport, a sub-

siary of British Nuclear Fuels Limited.

Believed to be the world's first purpose-built nuclear waste carrier, the 3,200-dwt twin-screw vessel is scheduled for delivery toward the end of 1978. To meet the many stringent safety regulations involved, it will be of specialized construction, with double-skinned holds and additional navigational and firefighting equipment.

The approximate dimensions of

the vessel are: length overall, 338 feet; molded breadth, 53 feet, and molded depth, 31 feet. The main propulsion machinery will consist of British manufactured diesel engines.

Pacific Nuclear Transport has a contract worth about \$262,500,000 to ship spent fuel from Japan to France and the United Kingdom. The new vessel will carry the spent fuel from Japan to France, discharging at Cap Le Havre.



Choose International Marine Coatings and the sea of confusion calms down.

The how, when and where of protecting your ships becomes as clear as day... once you specify International Marine Coatings.

Whatever the operation — construction or maintenance — your inquiry will bring our experts to any site, from Singapore to Aberdeen.

International Marine Coatings consultants are ready to set up and keep maintenance schedules, as well as resolve any coatings problem for you. And they work with the effectiveness that comes from being the most experienced specialists in the field.

All this plus tough, long-lasting coatings for every requirement, above and below the waterline. Delivered promptly, from in-stock, through a distribution system that extends from sea to shining sea. International Marine Coatings. Call us soon.



International Marine Coatings International Paint Company, Inc.

Executive Sales Office: 17 Battery Place North, New York, NY 10004, (212) 825-0800
3915 Louisa Street, P.O. Box 26069, New Orleans, LA 70186, (504) 943-8871
220 South Linden Avenue, South San Francisco, CA 94080, (415) 761-0420

T-2 EQUIPMENT

Selected Items Listed

UNUSED G.E. MAIN PROPULSION STATOR

Type ATB-2 — serial No. 6978272. 2300/2370 volts — 60/62 cycles — 3 phase — 3600/3720 RPM — amps armature 1237/1315 — 4925/5400 KW — 1.0 P.F.

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

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

WESTINGHOUSE MAIN PROPULSION STEAM TURBINES

1 unit shrouded
WILL SELL ROTOR SEPARATELY

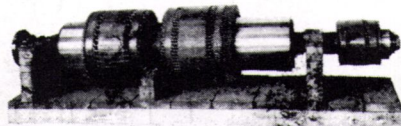
WESTINGHOUSE MAIN PROPULSION GENERATOR STATOR

From Ex-Pecos — in like-new condition. With A.B.S.

COMPLETE WESTINGHOUSE 538 KW TURBO GENERATORS

Complete steam end, reduction gear, electrical end.
Some units recently overhauled for U.S. Government.

WESTINGHOUSE 538 KW AUX. GENERATOR EXCITER ARMATURE



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

SPECIAL OFFER T-2 AUXILIARY GENERATOR ROTORS

G.E. AUX. TURBINE ROTORS
DORV-325M — 5645 RPM
For G.E. 525 KW TURBO GENERATOR SETS



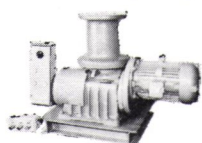
Very little use. In like-new condition. Balanced, and with A.B.S. Certificate.

STATIONARY BLADING AVAILABLE

WESTINGHOUSE 538 KW TURBINE ROTORS

NEW DOCKSIDE OR SHIPBOARD MOORING CAPSTANS — REVERSING

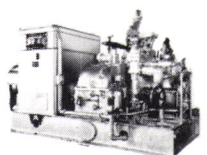
Duty 10,000 lbs @ 60 FPM



MOTOR: 10 HP—totally enclosed—fan cooled—continuous duty—horiz. flange mounted—special shaft & oil seal fitted—440/3/60—1760 RPM. CONTROL: Marine type watertight pushbutton—forward/reverse/stop—watertight starter box. DIMENSIONS: Barrel 10" diam.—top flange 14½" diam.—bottom flange 16½" diam.—ht. of spool 16"—approx. 26" wide & 36" long.

IMMEDIATE DELIVERY FROM STOCK

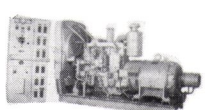
G.E. 600 KW GEARED TURBO GENs.



450/3/60/1200 RPM—961 amps—type AT1—0.8 PF. TURBINE: FSN-FN-20 6-stage — 525 lbs/825°F—superheat 355°/371°F. GEAR: 10033/1200—RPM 1033 — total — 6390 lbs. steam/hr. steam flow.

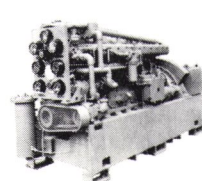
75 KW CUMMINS EMERGENCY DIESEL GENERATOR SET

as removed from
U.S.N. Ship "Pecos"



ENGINE: Electric starting 6-cylinder Cummins, radiator cooled, with alarms. GENERATOR: 75 KW — 93.8 KVA — 440/3/60 — 1200 RPM — 120 amps. Field circuit 125 volts — 15.4 amps — with free-standing switchgear.

100 KW GBD-8 DIESEL GENs.



From LST vessels. 120/240 VDC — 417 amps — stab shunt — 1200 RPM — Delco gen.—self-excited. ENGINE: Superior GBD-8 — 8 cyl — 5½x7 — 150 HP — 30 volt electric starting. Reconditioned to ABS. Dry wt 10,000 lbs — DAL 124" — 65-11/16" high — 42" wide. Ht necessary to pull piston 68". Fuel consumption 0.620 lbs/hr

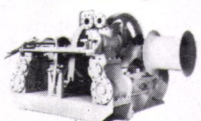
9 x 12 2-SPEED ALL-STEEL

STEAM WINCHES

for use as

MOORING WINCHES OR GENERAL USE

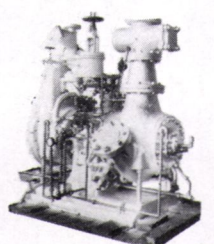
20,000 LBS @ 110 FPM — 7450 LBS @ 250 FPM



DRUM CAPACITY: 1250' of 1" wire in 9 layers or 2200' of 3/4" in 12 layers. Weight 11,300 lbs. DRUM DIMENSIONS: 22" diameter—20" between flanges; flange diameter 40"; two 16" gypsies.

Drum brake—contracting band type—asbestos lining—foot operated. WINCH DIMENSIONS: 12' long—8' wide — 5' 10" high. Reconditioned by U.S. Navy. Equal to new.

COFFIN FEED PUMPS — ALL SIZES — TYPE DE



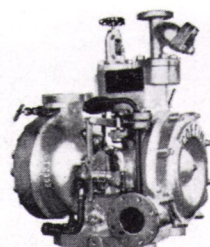
3 TYPE DE-2

540 GPM 1870' NET HEAD

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

2 TYPE DE-B 214 GPM 2070' NET HEAD

7040 RPM — 241 HP. Steam pressure 597 PSI — superheat 100°-300°F. Typical serial No. DEB 1-25-37



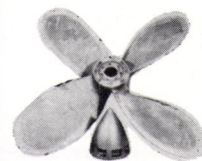
TYPE CG

2 TYPE CG 350 GPM 1880' NET HEAD

7220 RPM — 311 HP. Steam pressure 580 PSIG — 0°-100° superheat. Exhaust 15 lbs — typical serial #5437-CG-8-8-33

FOR LST VESSELS

• PROPELLERS — Port & Starboard

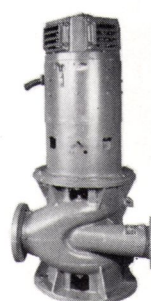


Also for tugs & motor vessels having LST propellers. 7.0' Diameter — 4.583' pitch. Weight 1820 lbs. Available: 2 Starboard (reconditioned) 2 port (reconditioned) 1 port (new). Bronze.

• FIRE & BILGE PUMPS

Manufactured by Gould — horizontal centrifugal — bronze. 4" Suction—3" discharge—250 GPM @ 100 PSI—2200 RPM—30 HP 230 VDC motor with magnetic starter.

• BALLAST PUMPS



Gardner-Denver — bronze — vertical — total suction lift 15' — 8" suction — 6" discharge — 1500 GPM @ 25 lbs — 1750 RPM. MOTOR: 30 HP — 230 VDC — 112 amps — made by Century.

• ANCHOR WINDLASS MOTORS

Vertical — 20 HP — 230 volts D.C.

• RAMP WINCH MOTOR

20 H.P. gearhead deck ramp winch motor.

MATCHED PAIR

12-278A G.M. ENGINES

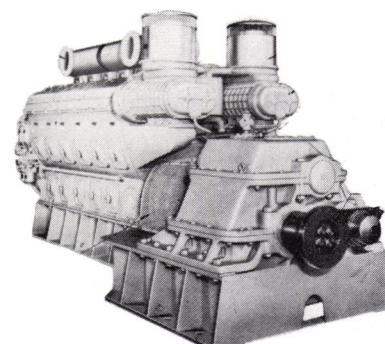
900 HP @ 744 RPM — 8¾" x 10½" — 12 cylinders — VEE type on common base with reduction gear — 2.48:1—Falk—port & starboard. Will sell separately.

• MISCELLANEOUS

- Bronze Triplex Strainers
- Pneumatic Control Stands
- Combination Lube Oil & Fresh Water Pump for Reduction Gear
- 35000 CFM Fans

MATCHED PAIR 900 H.P. G.M. 12-567A DIESEL ENGINES

with Falk reverse and
reduction gears



ENGINE: 12-567A — 8½x10 — VEE type — 2-cycle — 747 RPM—electric starting—serial Nos. 1041 & 1060. GEAR: Falk Air Flex—reverse and reduction—2.48:1 forward—2.52:1 reverse.



THE BOST

313 E. BALTIMORE

Main Office: (301)

ROSS COOLERS

ALL EX-LST UNITS—FORMERLY USED
WITH 12-278A & 12-567A ENGINES



TYPE 1460 — 160 SQ. FT.

2-Pass — 15" diameter — 80" overall — 5" seawater inlet — 3" oil inlet — 5/8" tubes. Centers of oil inlets 49 1/4". Copper shell.

TYPE 848 — 75 SQ. FT.

Single pass — copper shell — 8" diameter — oil inlet & outlet 1 1/2" — overall length 60".

DOUBLE-DRUM

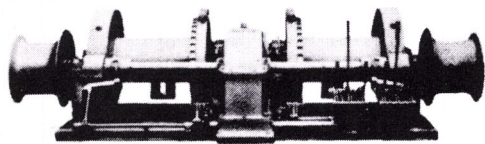
TOWING-MOORING-UTILITY WINCHES

DUTY:

30,000 LBS @ 50 FPM

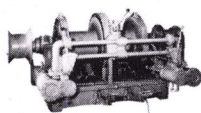
15,000 LBS EACH DRUM

USING BOTH DRUMS SIMULTANEOUSLY



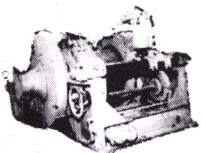
DRUM: 22" diameter — 36" face — 2500 feet of 1 1/4" wire. Equipped with spooling device. MOTOR: 75 HP — 230 VDC — under-deck mounted — 262 amps — 1140 RPM. Complete with all controls — mfg by Commercial Iron Works. Winch heads declutchable. OAW 16'9" — OAH 57" OA Depth 7'7".

7 x 10 CLYDE DOUBLE DRUM WINCH



Drum 8500 lbs. @ not less than 120 FPM; 13,000 lbs. at no specified speed. Gypsy head 22,500 lbs. static pull. Foot brake to hold 17,000 lb. pull. Steam cylinders with standard 250 P.S.I. DIMENSIONS: 9' 5 3/4" wide over winch heads—5' 10 1/2" wide over bedplate—4' 1" deep over bedplate—6' 5" overall (brake pedal, etc.)—2" steam—2 1/2" exhaust. Drums 16" diameter—20" wide—33 3/16" over flanges. Rebuilt by U.S.N. equal to new.

100,000 lb. Almon Johnson Constant Tension Mooring Winches



1 Available. In very good condition. Series 232 mooring & anchoring winches — automatic self-tensioning. Wide range from 100,000 lb line pull at 10 FPM to 26,000 lbs at 400 FPM. Gypsy line pull 12,000 lbs at 125 FPM. Drum declutchable through spiral jaw clutch for free spooling.

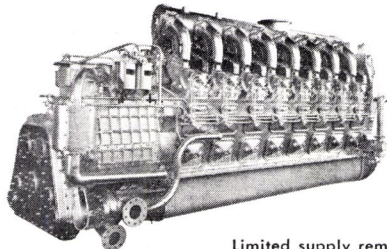
Driven by 50 HP — 230 VDC motors — Westinghouse CK — 575 RPM — 1/2 hour — 75°C rise — stab. shunt — 181 amps — max. RPM 1900. Cutler-Hammer brake — 18" — type NM.

C4-S-A1 KAISER VESSEL

Formerly Operated by Bethlehem Steel Co.

- 3 Worthington-Moore 400 KW aux turbine rotors — seven stage — 6097 RPM — form S6
- Two main stop valves — bolier) — 600 series — 5" Crane
- Lube oil transfer pump & motor with Foote Bros. gear

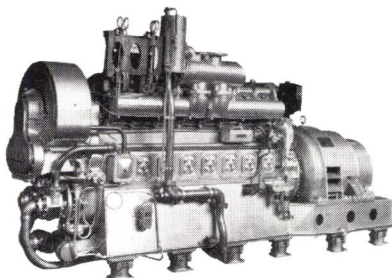
G. M. 16-278A 1700 H. P. DIESEL ENGINES



Limited supply remaining

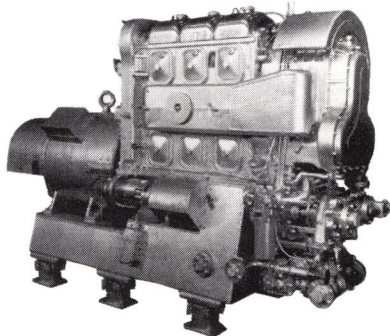
Complete, clean and in very good condition. As removed from U.S. Naval vessels. 1700 HP @ 750 R.P.M. Your inspection invited.

G. M. 8-268A 200 KW A.C. DIESEL GENERATOR SETS



ENGINE: 8-268A — 6 1/2" bore — 7" stroke — 1200 RPM — driving Westinghouse generator — 200 KW — 440 volts — 3-phase — 60 cycle — 321 amps — 80% power factor at 1200 RPM. Switchgear available.

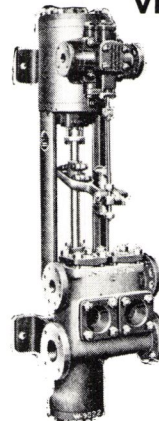
G. M. 3-268A 100 KW A.C. DIESEL GENERATOR SETS



ENGINE: GM 3-268A — 6 1/2 x 7 — 1200 RPM — 80% power factor — electric starting. GENERATOR: 100 KW — 440/3/60/1200 RPM — 161 amps. Dripproof — open — self-ventilated. (Class "A" insulation stator — Class "B" insulation on field). EXCITATION: 2 KW DC unit — 9' 1 3/4" long — 37" wide.

PUMPS

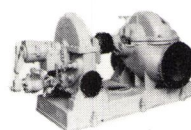
UNUSED WORTHINGTON VERTICAL SIMPLEX PUMPS



7 1/2 x 4 x 10 — 3" suction — 2" discharge — 1 1/4" steam — 1 1/2" exhaust. OAH 5'2"; OA depth 23"; OAW over air dome 2'2". Weight about 800#. Suitable for Liberty Ships EC-2 & Victory Ships VC2, AP2 & AP3. (Fuel oil service) Liquid capacity from 8 to 20 GPM — up to 350#. Also suitable for small boiler feed service. Steam WP 220# and 10# exhaust.

\$795

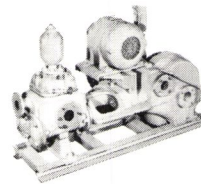
TURBINE-DRIVEN CIRCULATOR



6300 GPM at 25' or 4000 GPM at 35'. Pump — 12 x 14 — 75 HP turbine — 600 lbs — 5 lbs back pressure — 1200 RPM. Turbine manufactured by Whiten

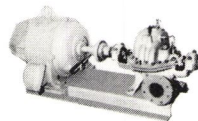
— type B.K.S. Pump manufactured by Lawrence

MOTOR DRIVEN GARDNER-DENVER RECIPROCATING BILGE PUMP



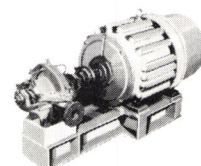
50 GPM — 150 PSI — Model ALAXE — Serial No. 106335. 3 3/4" Bore — 4" stroke — 2 1/2" suction — 2" discharge. 51" long — 21" wide — 21" high. Weight 750 lbs. MOTOR: Diehl — 2.5 HP — 440/3/60 — 1750 RPM — 3.53 amps.

GOULD FIRE & BILGE PUMP



EX-LST — horizontal centrifugal — bronze. 4" Suction — 3" discharge — 250 GPM @ 100 PSI — 2200 RPM. MOTOR: 30 HP — 230 VDC — with magnetic starter.

AURORA HEAVY-DUTY BRONZE FIRE SERVICE PUMP

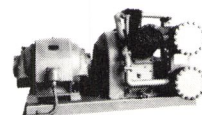


Single stage — 2 1/2" suction — 2" discharge. 3000 RPM — 250 GPM — 100 lb. head. Impeller diameter 9 1/2". MOTOR: air cooled heavy duty 25 HP Reliance T type ON-2S-2 1/2 230 VDC — 110 amps — stab. shunt.

2000 GPM PUMP

Practically new — bronze construction. 2000 GPM — 337' head — bottom suction — side discharge. 8" Suction — 8" discharge. With coupling. Manufactured by Frederick Pump Co.

AIR-COOLED NAVY AIR COMPRESSOR



DIRECT
CONNECTED

Manufactured by LeRoi — model M25105 — 100 lbs. at 100 C.F.M. — 875 RPM. Height 45" — width 48" — length 73". Driven by G.E. 28 H.P. motor — 440/3/60 — 876 RPM — 38.2 amps — type K.F. — frame 4405Y.

n METALS CO.

ST. • BALTIMORE, MD. 21202

1900 Marine Dept.: (301) 355-5050

INQUIRE ABOUT ANY ITEMS YOU NEED!

MARITIME REPORTER ANNOUNCES ANOTHER REQUESTED ... BY OVER THOUSANDS MORE THAN ANY

**OVER 17,000 MARINE MANAGEMENT MEN
HAVE REQUESTED MARITIME REPORTER...
IN WRITING**

**THIS IS A WORLDWIDE RECORD...THOUSANDS MORE THAN ANY OTHER
MARINE MAGAZINE IN THE ENTIRE WORLD INCLUDING...**

**MARINE ENGINEERING/LOG • MOTOR SHIP • OCEAN INDUSTRY • MARINE EQUIPMENT NEWS •
OFFSHORE • SEATRADE • SEA TECHNOLOGY • WATERWAYS JOURNAL • WORK BOAT •
WORLD DREDGING & MARINE CONSTRUCTION • ETC.**

MARITIME REPORTER/Engineering News

TOTAL WORLD WIDE BUYING POWER

(Non-buyers removed)

**BUYING
POWER**

SHIPBUILDING, BOATBUILDING, AND REPAIR COMPANIES:

(Commercial, U.S. Navy and U.S. Coast Guard):
Companies, directors, owners, presidents,
vice presidents, secretaries, treasurers,
superintendents, managers and purchasing agents
Naval architects, engineers and
chief draftsmen

5,896

VESSEL OPERATING COMPANIES, OCEAN, INLAND, HARBORS, OFFSHORE OIL DRILLING, PORT AUTHORITIES:

(Owners, Agencies and brokers)
Companies, directors, owners, agents,
presidents, vice-presidents, managers,
secretaries and treasurers
Port engineers, superintendents, purchasing
agents, port captains, port stewards,
naval architects and engineers shoreside

9,282

PROFESSIONAL MEN:

Naval architects, engineers and
consultants shoreside

2,312

WORLD WIDE BUYING POWER TOTAL

17,490

TWICE EACH MONTH...OVER 34,000 COPIES TO BUYERS EVERY MONTH

TOTAL CIRCULATION OVER 98% REQUESTED...IN WRITING...BY EACH INDIVIDUAL READER

RECORD INCREASE IN CIRCULATION TO BUYERS

17,000 MARINE BUYERS OTHER MARINE MAGAZINE

EXCLUSIVE BONUS

**FOR ADVERTISERS IN
MARITIME REPORTER/ENGINEERING NEWS**

400,000

**FREE DIRECTORY LISTINGS
TO BUYERS**



As a service to readers, MARITIME REPORTER includes a Buyers Directory section in every issue.

Advertisers placing a series of display advertisements in MARITIME REPORTER within one year receive, at no cost, a listing in the BUYERS DIRECTORY in all 24 issues of MARITIME REPORTER during that same year.

The advertiser's company name and address appears under the appropriate product or service heading in the Directory in every issue whether an ad appears in every issue or not.

MARITIME REPORTER has a worldwide circulation to 17,490 marine buyers...TWICE each month. This means over 34,000 copies of MARITIME REPORTER are mailed to buyers every month. This gives each advertiser over 400,000 free directory listings to marine buyers in one year...in addition to the advertising.

No other marine magazine provides this service.

The exposure advertisers receive with marine buyers in MARITIME REPORTER is overwhelmingly superior to anything offered by any other marine magazine in the entire world.

IMPORTANT

Other marine magazines mail thousands of free copies indiscriminately to names taken from directories of recipients who have never requested the magazines. Demand to see the official circulation statements...check for non-requested free copies...be sure the readers want the magazine carrying your marine advertising.

ADVERTISING GETS RESULTS

**MARITIME
REPORTER**
AND
ENGINEERING NEWS

IN THE REQUESTED MAGAZINE

107 EAST 31st STREET
NEW YORK, N. Y. 10016
Murray Hill 9-3266 • 7 • 8 • 9

Floating Oil Storage Better Prospects For The Unemployed?

Since the start of the tanker crisis at the end of 1973, many ideas have been suggested for mopping up the large volume of tanker tonnage which is now surplus to requirements. One of these ideas is the use of tankers for oil storage. For some time (even before the tanker crisis broke), tankers have been used for storage at offshore oil production sites where it was not feasible to lay a pipeline to shore. However, the idea of using tankers for storing oil in the oil importing areas is a comparatively new one. Various international organizations have considered the idea, such as IMCO, INTER-TANKO, and IMIF. In addition, certain countries have examined the idea, notably the United States and Japan.

In the United States, there is a Strategic Petroleum Reserve Plan, the aim of which is to build up a store of 500 million barrels of crude oil by the end of 1980 to be used as a strategic reserve. As part of this plan, the Federal Energy Administration (FEA) examined the possible use of tankers for storing these reserves. The FEA's conclusion was that the use of tankers in this way would involve severe environmental hazards, liability to sabotage, and major operational requirements. Furthermore, the FEA concluded that the cost of storing oil in tankers would be much greater than the cost of storage in salt-domes and existing mines. For these reasons, floating oil storage does not form part of the Strategic Petroleum Reserve Plan of the United States.

Japan does not have the same access to underground storage, and there is concern over the availability of suitable land sites for the storage of increasing oil stocks. For this reason, as well as the fact that there are a large number of Japanese-flag VLCCs having difficulty in finding employment, floating oil storage is seen in a more favorable light than in the U.S. The Japanese Shipowner's Association (JSA) has submitted an outline of an oil storage plan using tankers to the Ministry of Transport, the Ministry of International Trade and Industry (MITI), and the ruling Liberal Democratic Party. At the end of September, it was reported in the "Kaiji" that the Liberal Democratic Party has adopted a policy to support the use of tankers as floating oil

storage, and last month a Japanese VLCC obtained a five-year charter for storage.

In 1976, MITI estimated the annual cost of floating oil storage to be 7,000 yen per kiloliter (about \$22 per ton), compared with only 5,500 yen per kiloliter (a little over \$17 per ton) for land storage. In the JSA plan submitted to MITI, a charter rate of 400 yen per DWT/month was suggested for VLCCs to be used as floating storage. This is equivalent to a little under \$1.50 per DWT/month, or about \$19 per ton per year. This is still apparently more expensive than land storage, even before allowing for any other costs beyond the hire rate for the tanker. It may be that the plan is being seriously considered, because the annual cost of providing additional land storage would be higher than the \$17 per ton indicated in the 1976 analysis.

In fact, some tankers have already been used as floating oil storage. Whereas the JSA plan is for tankers to be used for long-term strategic storage, the recent charters are either (1) to solve a specific short-term problem such as the charter of the "British Resolution" to provide transshipment at Balboa at the western entrance to the Panama Canal, or (2) to provide short-term storage at a time when land-based tanks are full.

Charters have been fixed for periods ranging from 30 days to two years and on both a time-charter and a daily basis. Charters for short periods have recently been fixed at a rate of about \$10,000 per day for VLCCs. This represents an annual storage cost of less than \$16 per ton, which appears to be competitive with the estimated cost of land storage (apart from where salt-domes are used), and less than the rate suggested by the JSA.

Ships chartered for storage on a longer-term basis have received a time-charter rate of about \$0.75 per dwt per month. VLCCs fixed for longer periods on a daily basis have tended to obtain slightly more than the \$10,000 per day for short period fixtures, and by comparing daily rates with time-charter rates it can be estimated that the cost of using a VLCC for storage at today's charter rates would consist of about \$6,000 per day for hire, to cover crew and insurance, etc., as well as capital, and about \$4,000 per day for other costs (fuel, etc.).

At today's spot rates of about Worldscale 22, an owner's total daily revenue would be about \$13,200. His voyage costs (for fuel and port charges) would be about \$11,200, assuming that the ship was not slow steaming. Thus, on the spot market the owner's net revenue to cover operating and capital costs would be about \$2,000 per day. From a short-term charter of a VLCC for storage, on the other hand, the owner's net revenue would appear to be about \$6,000 per day. Thus, floating oil storage would appear to offer tanker owners the more profitable method of employment for their ships.

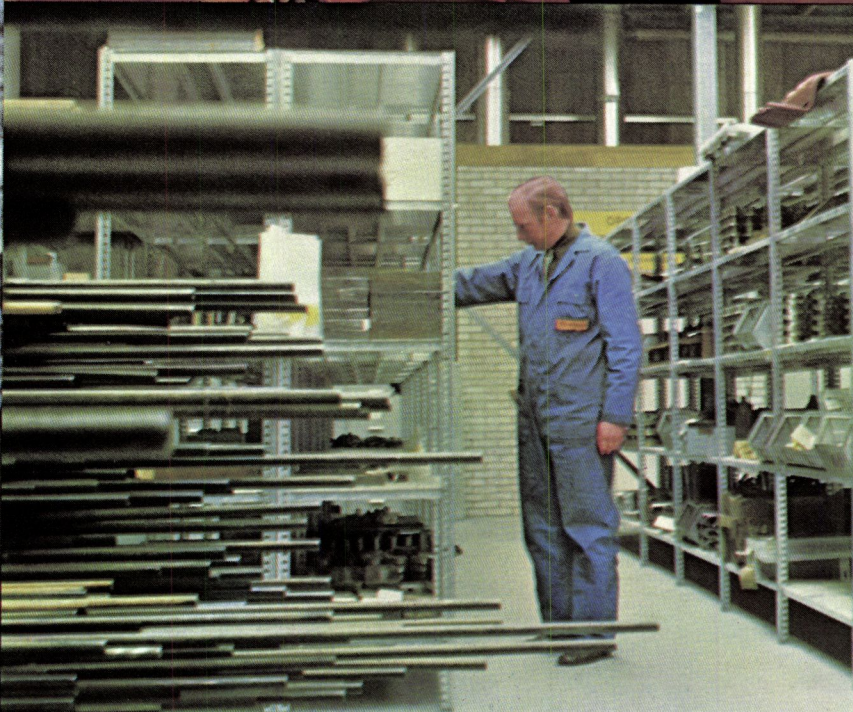
In most of the developed economies throughout the world, there are plans to increase the level of oil stocks for security reasons. At the same time, the availability of conventional land oil storage is either limited or is becoming expensive. The plight of the world's shipowners is well-known, with many of them having large numbers of VLCCs for which they are unable to find

profitable employment. The use of tankers as floating oil storage would appear to offer advantages for both the oil importing nations and the distressed tanker owners. For the former, tankers would provide increased storage capacity fairly quickly and at economic costs, and for the latter the use of tankers as floating oil storage would provide more profitable employment than the traditional tanker market.

However, whether or not part of the existing tanker surplus can be absorbed in this way may not depend solely on economic considerations. The FEA study pointed out some of the hazards which may be associated with floating oil storage, and indeed the JSA plan recognizes these, and recommends certain precautions which should be taken and certain operational methods which should be adopted when using tankers for storage. There may be environmental dangers to the sea through spillage and to the atmosphere through gas venting. However, it would not seem unreasonable to assume that if tankers are suitably sited and properly operated, these dangers can be avoided.

For additional information on floating oil storage, write to A.B. Carpenter, H.P. Drewry (Shipping Consultants) Limited, 34 Brook Street, Mayfair, London W1Y 2LL, England.





MacGregor service is never far away!

After sales back-up is an essential part of the MacGregor service. We have over 60 service stations throughout the world's major ports.

Add to this MacGregor's 'flying squads' – the service teams which can be deployed to carry out routine maintenance and repairs while a vessel is at sea – and you have the world's most comprehensive service organisation for cargo

access and transfer equipment.

Shipowners have come to appreciate that *servicing of MacGregor by MacGregor* makes sound economic sense – as dramatically illustrated when a major overhaul of MacGregor equipment can be completed without a day's run being lost and with minimal interruptions to cargo handling operations.

The entire resources of the International MacGregor Organisation are available to the U.S. maritime industry through:
MacGregor Comarain Inc, 135 Dermody Street, Cranford N.J. 07016

Tel: (201) 2728440 Telex: 138618

MacGREGOR
Cargo transfer and access equipment

Alaska Maritime Names William Lorch Valdez Port Manager

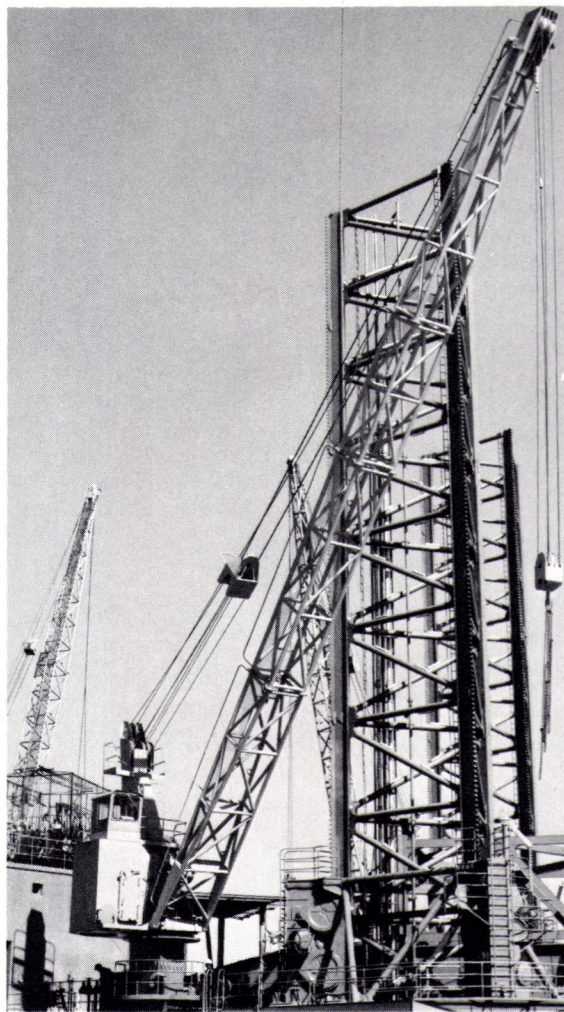
William C. Lorch has joined Alaska Maritime Agencies, Inc., as Valdez port manager, according to an announcement by David R. Enroth, general manager of the Seattle, Wash.-based steamship agency. Mr. Lorch served previously with Cascade Shipping Company in various managerial capacities.

In his new position, Mr. Lorch will have complete responsibility for the company's new branch headquarters at Valdez, Alaska. Mr. Lorch holds a Bachelor of Science degree from the U.S. Merchant Marine Academy at Kings Point, and a Master of Arts degree from the University of Washington. Mr. Lorch also sailed as a licensed deck officer for Sealand Service, Inc.

Mr. Lorch is joined at Valdez

by Lee R. Doering, Dennis P. Clark, and Patrick G. Tobin. Mr. Doering is a former Coast Guard officer, and a deck watch officer with the National Oceanic and Atmospheric Administration. Mr. Clark was formerly associated with the Furness Inter-ocean Corporation of San Francisco. Mr. Tobin joins Alaska Maritime from the operating staff of Kerr Steamship Company, Inc., and prior to that worked in the Far East for an extended period of time.

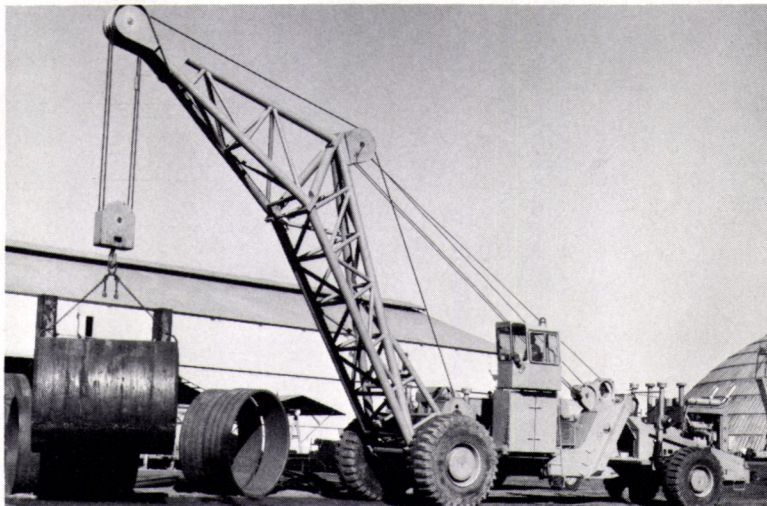
The LeTourneau Difference: Total Crane Ability.



LeTourneau PCM-120 AS

LeTourneau PCM-120 AS Rugged, dependable variable radius pedestal crane. Handles materiel, cargo, construction and operational lifts for offshore and other marine operations. 1200 Ft. Tons capacity. Optional boom length 60' to 120' (18288mm to 36576mm). All-electric. Optional central cab on machinery house or remote control. Minimum tail swing.

LeTourneau LeTro-Pik Lift, travel, steer simultaneously. Combines capacity of heavy-duty stationary crane with maneuverability of a yard crane. Load capacity 87,000 lbs. at four feet clear reach (39455kg at 1219 mm).



LeTourneau LeTro-Pik



LeTourneau PCM-80

LeTourneau PCM-80 Adaptable, high capacity, full revolving pedestal crane. Specially developed to handle materiel, cargo, construction and operational lifts for offshore and other marine operations. Remote or machinery house-mounted controls. Optional boom length 50' to 100' (15240 mm and 30480 mm). Capacity 50,000 lbs. (22680 Kg).

LeTourneau PCM-350 Heavy lift 3500 Ft. Tons capacity. Variable radius pedestal or barge crane mount. 120,000 lbs. at 58' (54432kg at 17678mm). Boom length to 125' (38100mm). Two and one half revolutions limit to limit or 1 1/4 revolutions either direction.



LeTourneau PCM-350

Capability. No other crane manufacturer offers you the experience and diversity of products that LeTourneau offers you. From the design, engineering and manufacturing of entire systems, to the sale of special equipment for specific needs, our 'crane ability' has been proven over and over again on hundreds of installations.



So whatever your needs may be — offshore or onshore, high or low capacity, stationary, swing or moveable — contact the people who know the difference. Write or call: Marathon LeTourneau Company, P. O. Box 2307, Longview, Texas 75601 (214) 753-4411. Subsidiary of Marathon Manufacturing Company.

Alaska Maritime has been handling tankers that call at the Alyeska Marine Terminal since the first Prudhoe Bay crude oil arrived at Port Valdez on July 28, 1977. In addition, they had responsibility to the Standard Oil Company of Ohio for the pilot training program, which qualified more than 60 shipmasters for pilotage from Cape Hinchinbrook to Rocky Point.

No. New England Section Of ASNE Reports On Two Technical Sessions

The American Society of Naval Engineers (ASNE), Northern New England Section, had their September dinner meeting at the Officer's Club, Portsmouth Naval Shipyard.

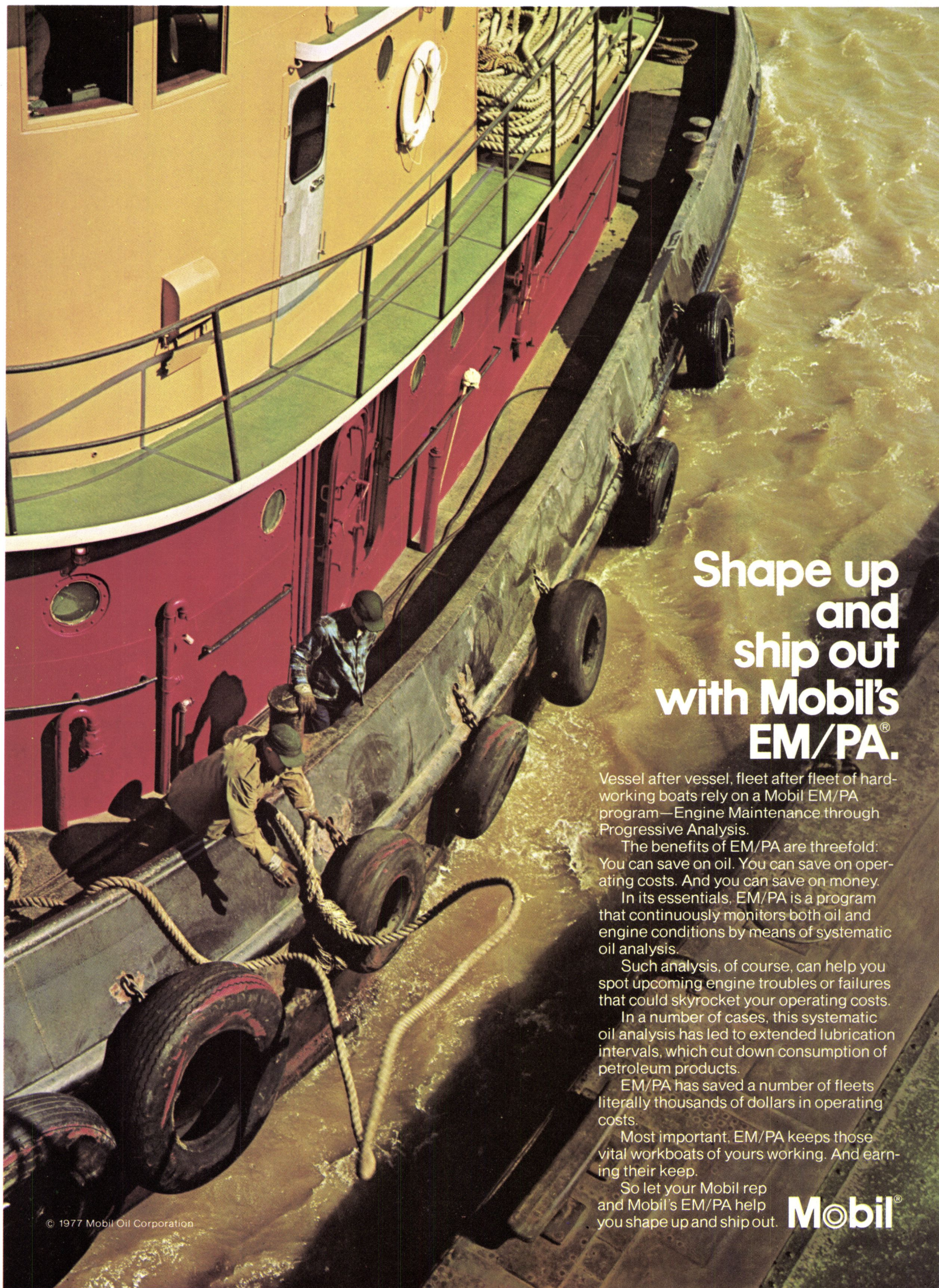


Pictured above during the September meeting, left to right: ASNE Program chairman Comdr. Peter T. Tarpgaard; guest speaker Comdr. T. Martin, Commanding Officer of USS Constitution, and ASNE chairman Harold Neville.

Guest speaker for the meeting was Comdr. T. Martin, USN, 57th Commanding Officer of the USS Constitution. Commander Martin spoke of the recent restoration of his ship "Old Ironsides," which was accomplished during his command and under his direction. The restoration was the fifth in the long career of the Constitution and took 39 months to complete at a cost of \$4.4 million. Commander Martin had slides showing the various stages of the ship's overhaul and spoke of the problems encountered, some not very common in today's modern Navy. Restoration was completed on June 30, 1976, ensuring the continued presence of the Constitution for future generations.

For the October meeting, ASNE had the honor of having Capt. Harry Jackson, USN (ret.), who spoke on the "Development of the Design for the SSBN," a very interesting topic.

Captain Jackson, former Design Superintendent and Planning Officer at Portsmouth, had a distinguished career in the field of submarine design which spanned one of the most dynamic and creative periods in the history of shipbuilding. He actively participated in all phases of the evolution of the submarine from the fleet type to the modern nuclear submarine of today. One of the most important of these projects was the design of the Ballistic Missile Submarine. The group heard a first-hand account of the development of the SSBN design, from the earliest studies to the 16-missile design.



Shape up and ship out with Mobil's EM/PA.[®]

Vessel after vessel, fleet after fleet of hard-working boats rely on a Mobil EM/PA program—Engine Maintenance through Progressive Analysis.

The benefits of EM/PA are threefold: You can save on oil. You can save on operating costs. And you can save on money.

In its essentials, EM/PA is a program that continuously monitors both oil and engine conditions by means of systematic oil analysis.

Such analysis, of course, can help you spot upcoming engine troubles or failures that could skyrocket your operating costs.

In a number of cases, this systematic oil analysis has led to extended lubrication intervals, which cut down consumption of petroleum products.

EM/PA has saved a number of fleets literally thousands of dollars in operating costs.

Most important, EM/PA keeps those vital workboats of yours working. And earning their keep.

So let your Mobil rep and Mobil's EM/PA help you shape up and ship out.

Mobil[®]

© 1977 Mobil Oil Corporation

**Moran-Thibodeaux
Names Captain North
Vice President-Sales**

Capt. C.R. North has been appointed vice president-sales of Moran-Thibodeaux Shipping Agencies, Inc., it was announced by F. Robert Black, president and chairman of the board. Captain North will be headquartered in the World Trade Building in

Houston, Texas, with sales responsibilities covering the Texas and Gulf Coast areas. Moran Shipping Agencies, Inc., headquartered in Providence, R.I., is the principal owner of Moran-Thibodeaux Shipping Agencies of Houston, a principal of Kurz-Moran Shipping Agencies of New York City, and manages operations for both of these agencies.

Captain North rose to the position of director, U.S. operations,

Marine Department, Gulf Trading and Transportation Company, having begun his career as a seaman on tankers early in World War II. Before the end of the war, he had become a licensed officer, and by 1963 held an unlimited master mariner's license. His 21 years of sea duty was followed by 14 years of shoreside experience in marine operations.

According to Mr. Black: "Captain North's 35 years of experi-

ence in the tanker trade, together with his service on the Industry Committee of the American Institute of Merchant Shipping, extensive committee activities with the American Petroleum Institute, and the Oil Companies Institute for Marine Pollution Compensation, will provide invaluable assets to the Moran Companies in our continuing expansion program."



Capt. C.R. North

Captain North also is the immediate past national president of The Propeller Club of the United States, which covers almost 100 ports with a membership of over 14,000.

Of significant importance is Captain North's "pilots endorsement" for Aransas, Corpus Christi, Texas; for Sabine, Bar and Main Ship Channel to Port Arthur, Texas; for Port St. Joseph, Fla., and for Charleston, S.C. In addition to extensive studies in courses related to many phases of marine operations, Captain North is a graduate of the Gulf Management Course.

**Diamond Manufacturing
Building Ro/Ro Dock
For Port Of Tampa**

Construction of a new roll-on/roll-off dock for the Port of Tampa, Fla., will begin in December under a \$658,000 contract awarded by the Tampa Port Authority.

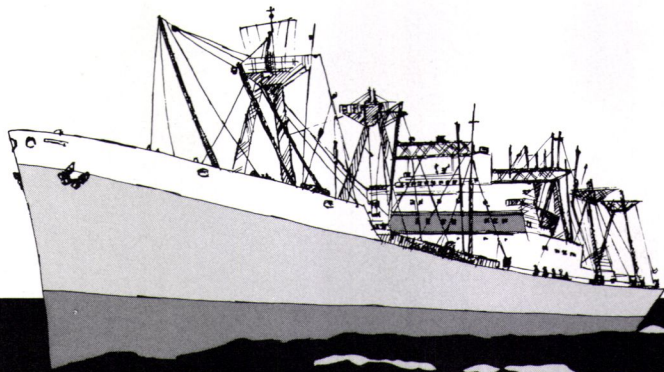
The facility, which will be adjacent to Public Berth 202 at the Holland Terminal, will fill an important need at the port, according to port director Guy N. Verger.

Construction contract was awarded to Diamond Manufacturing Co. of Savannah, Ga., the low bidder.

The 15,400-square-foot platform will be of concrete construction supported by concrete piles, and will be capable of accommodating the newest generation of ro/ro vessels and those to be built in the future.

Approximately 20 acres of open storage area is available in the immediate vicinity of the dock. Additional acreage can be made available as the need arises, Mr. Verger said.

The dock is located near arterial roads and interstate highways. Completion is scheduled for September 1978.



SEWAGE TREATMENT SYSTEM

BUY NOW!

INSTALL LATER!

Subject to U.S. Coast Guard approval,
you may be allowed to purchase NOW
Type I equipment

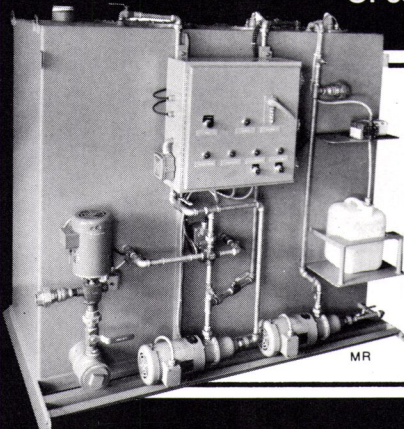
and delay installation until after January 31, 1978.

Contact SIGMA for the latest regulations and for free advice
on how to buy time and save money on
Shipboard Sewage Treatment Systems.

SIGMA also provides "turnkey" systems and installations.

Call us for details.

Or complete and mail the coupon below.



Name _____ Title _____
Company _____ Tel. no. _____
Address _____
City _____ State _____ Zip _____
Type of vessel(s) _____ No. of days in port _____ Total no. of persons _____
☐ New construction or ☐ Existing vessel ☐ Sewage only or ☐ All wastewater



603 DEAN STREET • BROOKLYN, NEW YORK 11238 • (212) 857-1050
TELEX: 223357 • CABLE: AMTRADISC NEW YORK

Newport News Shipyard Installs Powerful Hoists

Shipyard Equipment Company of Baltimore, Md., recently delivered to Tenneco's Newport News Shipyard six of the world's largest air hoists.

The transaction included four J.D. Neuhaus air hoists with 25-ton lifting capacity, and two with 50-ton lifting capacity. The two 50-ton units are the largest in the world, and the first to be used in an American shipyard.

George Frank, president of Shipyard Equipment Company, noted that the "Neuhaus air hoists have the greatest lifting capacity, compared to their size and weight, of any mechanical lifting device ever invented."

During a recent test of the 50-metric-ton unit at Newport News Shipyard, the air power was cut off with the 138,000 pound load suspended 24.5 inches above the deck. Following a 20-minute interval, the space between the load and deck was checked again, and it measured exactly 24.5 inches, indicating excellent braking and holding capability.

Mr. Frank stressed the fact that the Neuhaus air hoist provides an extra measure of safety when working near combustible gases, liquids, or any application susceptible to highly explosive conditions. The hoist itself is explosion proof, and the air power lines, even when frayed or broken, will not contribute to an explosive situation.

All of the Neuhaus equipment meets or exceeds all U.S. and foreign safety standards, including all mine safety regulations. They range in capacity from 1/4 metric ton to 50 metric tons, with many options, including air powered trolleys and radio controls.

For further information, and name of your area dealer, write to George Frank, Shipyard Equipment Company, 38 Bloomsbury Avenue, Baltimore, Md. 21228.

Kawasaki Endows M.I.T. Research Fund With Gift Of \$200,000

Kawasaki Heavy Industries, Ltd., a major Japanese firm, has agreed to endow a research fund at the Massachusetts Institute of Technology with a gift of \$200,000.

Kawasaki Heavy Industries is a machinery manufacturer whose principal business lines are ships, aircraft, rolling stock, buses, engines, construction machinery, marine machinery, industrial machinery, atomic energy machinery, oil hydraulic machinery, medical equipment and steel products. Its name is widely known in the United States for its motorcycles.

Research areas at M.I.T. which the fund may support are the development of high-strength materials for future ocean structures, the applications to critical

structures of advanced fabrication techniques, such as electron beam and laser processes, and the development of reliability criteria for welded structures.

The fund will be administered through the office of the dean of the M.I.T. School of Engineering.

M.I.T. has a long history of involvement in ocean and marine engineering and research. Its program for naval architecture and marine engineering — the first of

its kind in the United States — was founded in 1893. It has evolved into one of the world's foremost schools of naval architecture.

In 1968, M.I.T. received the first project grant awarded by the newly formed National Sea Grant Program, and in December 1976 became the first private institution of higher learning to become a Sea Grant College.

Dr. Koichi Masubuchi, profes-

sor of ocean engineering and materials science in M.I.T.'s Department of Ocean Engineering, was involved in the initial discussion of this project with Kawasaki officials. The agreement that led to the establishment of the fund was signed by Dr. Toshio Yoshida, managing director of Kawasaki Heavy Industries, and by Lt. Gen. James B. Lampert, USA (ret.), M.I.T. vice president for resource development.

Armco's Technical Library

Your Complete Source for Plate and Structural Steel Data

Comparative Data — Armco Heat-Treated Carbon Steels

Armco Steel	ASTM Designation	Yield Strength* ksi (min)	Tensile Strength* ksi	Toughness (Nil Ductility Transition temp, F)	Weldability
LTM-N	A 633 Gr A & B	42	63/83	-70	excellent
LTM-QT	A 678 Gr A	50	70/90	-80	best of 50-ksi group
CT-N	A 633 Gr C	50	70/90	-70	very good
Lo-Temp	A 537 Cl 1 & A 633 Gr D	50	70/90	-60	good
CT-QT	ASTM Spec. Pending	60	80/100	inquire	very good
Super Lo-Temp	A 537 Cl 2 & A 678 Gr B	60	80/100	-70	good
VNT-N	A 633 Gr E	60	80/100	-50	good
QTC®	A 678 Gr C	75	95/115	-70	good
VNT-QT	ASTM Spec. Pending	75	90/110	-50	good

*Both yield and tensile strength decrease in thicker sections.

When you specify Armco, you're buying more than just special steel. You're also getting total technical assistance with the engineering data you need. This comparative table on our heat-treated steel plate properties is an example of our effort to keep you informed about the Armco steels you use.

Remember, we have a whole library of engineering data to support all our product lines, including alloy steel bars and plates, wide flange beams, and heat-treated carbon and alloy steel structural shapes, among others. For technical data on any Armco product, call our Houston office and ask for Steel Marketing: Phone 713/621-7700.

For more information on the Armco heat-treated plates featured above, send us the coupon for your free copy of our 28-page catalog shown here: Armco Steel Corporation, Dept. H-27, 1455 West Loop South, Houston, Texas 77027.



Gentlemen:

Please send me a copy of your Heat-Treated Carbon Steel Plates Catalog.

Name _____ Title _____

Firm _____

Street _____

City _____ State _____ ZIP _____

I am working on the following type of project: _____



Todd Shipyards Corp. Holds Company Safety Conference In Chicago

Concurrent with the National Council Congress and Exposition in Chicago, Ill., October 17-20, Todd Shipyards Corporation held its own Safety Conference at the Oxford House Hotel in Chicago. Attending the Todd Conference were safety engineers, personnel managers and workers' compen-

sation claims control people. In all, approximately 18 people participated in the sessions. **Harry Fisher**, Todd's corporate manager of insurance, led the discussions on the impact the Safety Program has on workers' compensation. **Joe Berthelot**, of Todd New Orleans, La., covered the personnel/manager/safety engineer and claims coordination.

Clifford Jones, director of corporate resources, led the conference sessions dealing with new

employee indoctrination programs, and techniques in training and motivating supervisors in accident prevention. Supplemental discussions on other topics related to Todd's Accident Prevention / Safety / Workers' Compensation Programs were participated in by Todd's insurance carrier and broker.

The individual representatives from each of the yards led various sessions of the conference devoted to OSHA and NIOSH-

approved safety equipment. These workshop sessions dealing with the acceptable safety apparatus, equipment and aids, including personnel protection items, resulted in the Todd Corporation adopting specific standards to insure compliance with Federal and state laws.

In addition to Todd's in-house conference, many of the attendees participated in the Shipbuilders Council of America's Industrial Health and Safety Committee meeting, which was held at the Conrad Hilton Hotel. A highlight of this meeting was the showing of Todd's new slide presentation titled "Working Safely at Todd."

The Todd Safety Conference, with representatives from all of its divisions, is a continuation and an extension of Todd's intra-house company policy for the exchange of ideas on increasing operating efficiency and personnel performance.

Woolsey Marine Names Deborah Vick Marine Sales Rep



Deborah Vick

Herbert W. Evans Jr., president of Woolsey Marine Industries, Inc., 100 Saw Mill Road, Danbury, Conn. 06810, coatings manufacturer, announced recently the appointment of **Mrs. Deborah Vick** to the position of national OEM sales representative.

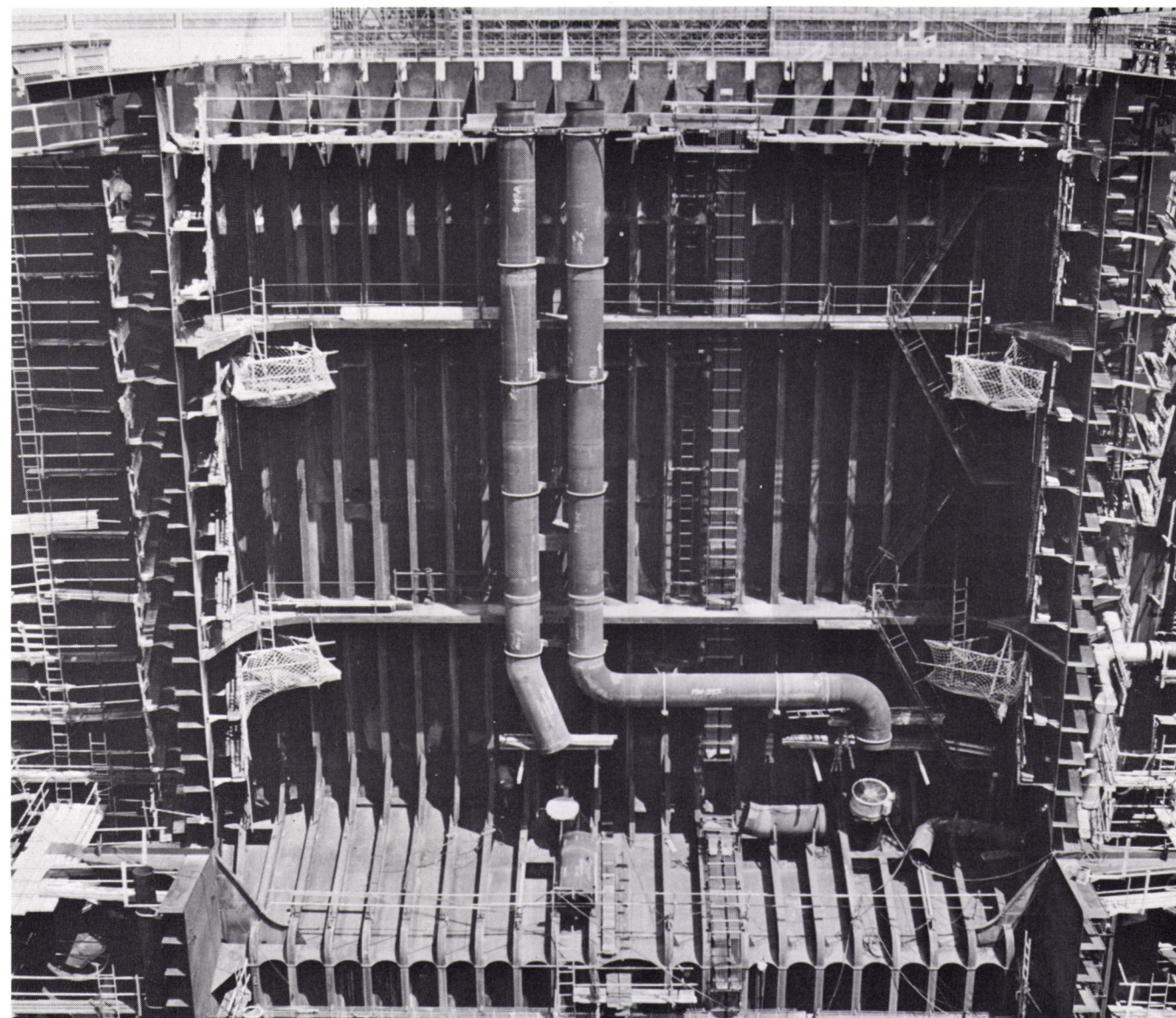
In making the announcement, **Mr. Evans** said: "It is particularly auspicious that we make this appointment on the eve of Woolsey's 125th anniversary of continuous paint manufacture. To our knowledge, **Mrs. Vick** will be the industry's first marine paint saleswoman, and reflects our contemporary attitude towards marketing today's sophisticated coatings technology."

Mrs. Vick was previously administrative sales assistant for Diversified Marine Industries.

Safmarine Appoints Woodward H. Register

Woodward H. Register has been appointed manager of South African Marine Corp.'s Gulf Division, the company has announced.

Mr. Register was previously with Lykes Bros. Steamship Co., most recently as special owners representative, assistant operations manager and traffic manager in the Far East.



Secrets behind superior corrosion resistance and weldability

Fifteen years of use without replacement is ample proof of the superiority of this pipe. Naturally, there must be some pretty good reasons for it, and there are. The materials and methods of manufacture of this cargo oil pipe are unique in the world. The material is KCP-3L, a chrome manganese steel especially developed by Kubota. It is made by Kubota's exclusive centrifugal casting techniques, widely acknowledged to be of the highest technological level. The highest degree of weldability gives it the greatest facility of use. That is why a full 95% of all Japanese tankers use Kubota cargo oil pipe. And why shipbuilders and repair docks around the world keep it on hand for installation and replacement. Write today for full information on how to raise the efficiency of your tanker operations.



KUBOTA CARGO OIL PIPE



The Basic Necessities Giant

KUBOTA

Kubota, Ltd. / Export Dept.

TOKYO OFFICE: 2, Nihonbashi-Muromachi 3-chome, Chuo-ku, Tokyo, Japan

CABLE ADDRESS: IRONKUBOTA TOKYO

TELEX: 222-3681 KUBOTA J

Tracor Introduces Automatic Omega Receiver

Tracor Instruments, Austin, Texas, has published a new brochure describing its new automatic Omega receiver.

This new system is the latest result of over 10 years' work in computerized and manual Omega systems.

The Tracor Automatic Omega provides unattended operation, latitude / longitude, GMT / date, distance / bearing to waypoint, course / speed of advance, and a variety of special functions.

Using microprocessor technology, the Tracor Automatic Omega draws only 1 amp at 12 VDC. Every production unit goes through two weeks of high and low temperature cycles to insure reliable performance.

Tracor manufactures surface and airborne Omega systems as well as Satellite Navigators.

For more information, write to Harry Thomas, Tracor Instruments, 6500 Tracor Lane, Austin, Texas 78721.

Study 56—'Sea Trade And Transportation Of Coal'

The so-called 1973 "oil crisis" had an important effect upon the international trade in hard coal, as it did much to arrest the decline in the use of coal as an energy source. However, up until now, the seaborne trade in hard coal has been centered almost entirely on the coking coal requirements of a handful of industrialized nations, with steaming coal accounting for only a negligible percentage of total movements. Indeed, coking coal requirements will continue to be a more dominant influence on the pattern of trade, although steaming coal shipments will expand to a significant extent. The object of STUDY 56 "SEA TRADE AND TRANSPORT OF COAL" is not to confine discussion to the different characteristics of the coking and steaming coal trades, but rather to examine the total pattern of seaborne hard coal movements and to assess their influence on seaborne transport.

PART 1 of the Study is primarily designed as an introduction to the seaborne coal trade, and as such, discussion is focused upon the main characteristics of the coal market, with specific reference to seaborne trade movements. This is followed, in PART 2, by a much more detailed analysis of the supply of hard coal. The existing production, seaborne exports and future development plans of both the traditional and more recent suppliers are identified and discussed. This part of the Study provides the basis for an analysis of the pattern of seaborne hard coal movements which

forms the subject of PART 3. Included within PART 3 are detailed matrices on the international seaborne hard coal trade for the years 1973, 1974 and 1975. The major importing regions and their role in the existing pattern of trade are also examined. The likely future import requirements of these regions are estimated in PART 4, which includes forecasts of demand for

seaborne hard coal for 1980 and 1985. Within PART 4, particular emphasis is placed upon the import requirements of both Japan and the EEC.

PART 5 considers the sea transport of coal, examines the changes that have occurred in the organization of the trade, the structure of transport costs, vessel types and sizes employed in the coal trade and the constraints im-

posed upon these by ports, concluding with a discussion of the future trends in sea transportation.

For a copy of Study No. 56—"SEA TRADE AND TRANSPORTATION OF COAL," write to HPD Shipping Publications, 34 Brook Street, Mayfair, London W1Y 2LL, England. Orders for overseas @ U.S. \$75. U.K. only @ £30 per copy.

One Power Source, Dozens of Engines, Hundreds of Ways To Use Them.

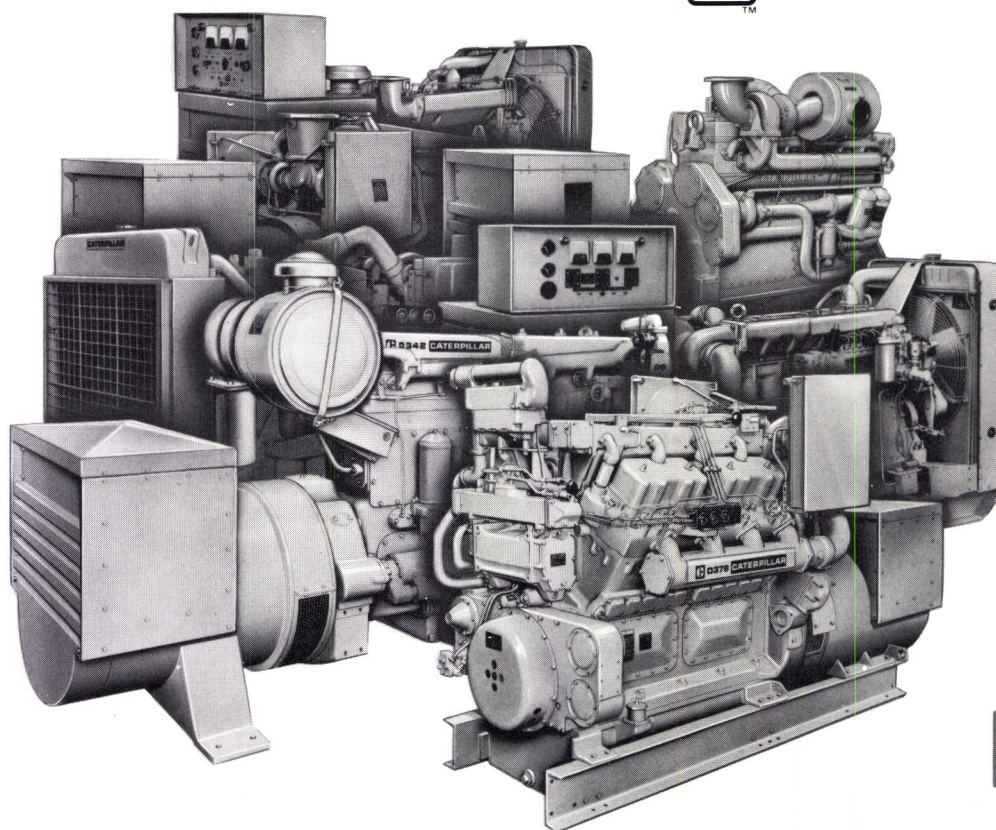
Just about anything you need is within the power of H.O. Penn. It's *the source* for the matchless economy of diesel power, the rugged dependability of Caterpillar engines—from 150 to 1425 HP for a wide variety of marine applications—Generator Sets from 100 to 900 kw.

Every power package backed by Cat Plus service.

Caterpillar power is for work and for pleasure too, for ships and boats of every size and description. Even if the one ideal power package for you hasn't been built, H.O. Penn will build it.

Come to H.O. Penn, the greatest source of power for your power needs.

ANOTHER **CAT PLUS** SERVICE



Armonk, N.Y. • Bronx, N.Y. • Westbury, L.I., N.Y. • Poughkeepsie, N.Y. • Tuxedo, N.Y. • Newington, Ct.
Caterpillar, Cat and  are trademarks of Caterpillar Tractor Co. Caterpillar Lift Trucks are manufactured by Towmotor Corporation, a Subsidiary of Caterpillar Tractor Co.

H.O. PENN

YOUR CATERPILLAR & CATERPILLAR LIFT TRUCK DEALER

H.O. PENN
CAT

SEASIDE

Spanish Society And ABS Enter Agreement

The newly organized Spanish ship classification society FIDENAVIS, and the American Bureau of Shipping (ABS) have entered into an agreement of full cooperation between the societies, it was announced by **Robert T. Young**, chairman and president of ABS.

Under the agreement, the

American and Spanish societies will cooperate in the classification and survey of ships and the exchange of technical and administrative information. ABS also will provide assistance to FIDENAVIS in training personnel and preparing the Spanish society's Rules of Classification.

The official name of the Spanish society is Sociedad Espanola De Clasificacion Y Registro De Buques, Artefactos Flotantes E In-

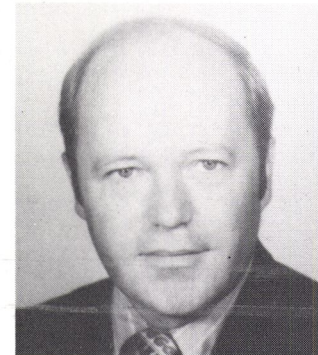
genios Oceanicos, FIDENAVIS, S.A. The principal office of the society is at Nunez de Balboa, 115, Madrid, 6, Spain.

The establishment of a Spanish classification society has long been an aspiration of Spanish shipowners, shipbuilders, naval architects, and underwriters. With the development and growth of Spain's modern merchant fleet, shipbuilding facilities, and marine underwriting, the Spanish maritime

industry believed the time was propitious to form a ship classification society.

FIDENAVIS will concentrate the accumulation of technological experience of the shipbuilding industry and merchant marine in a national institution.

J.M. Ringelberg Joins Seaward International



J. Michael Ringelberg

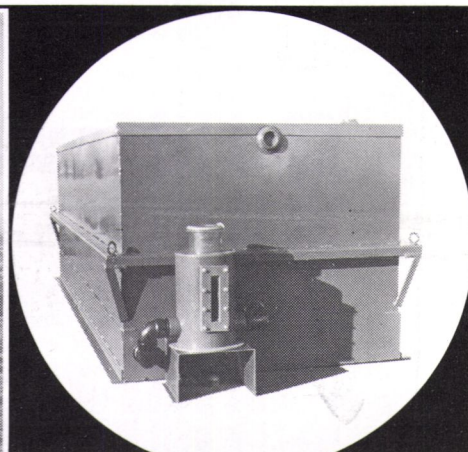
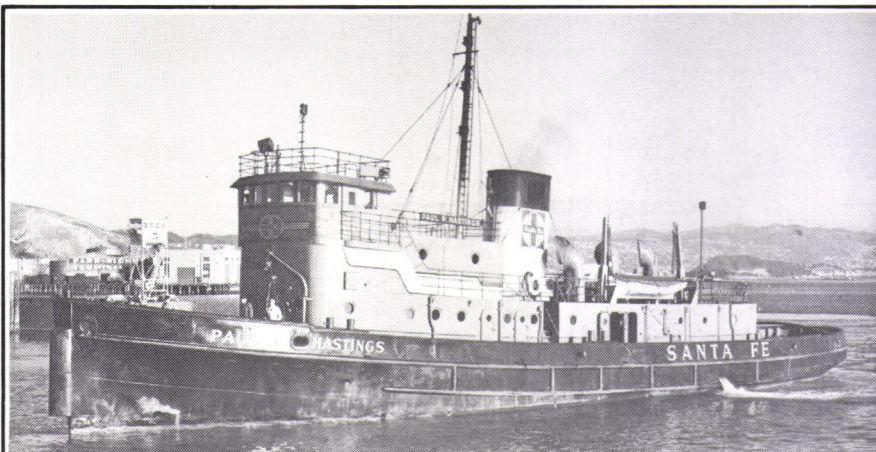
Seaward International, Inc., 6269 Leesburg Pike, Falls Church, Va. 22044, has announced that **J. Michael Ringelberg** has joined the company as director of marketing.

Mr. Ringelberg will be responsible for marketing Seaward International's SEA CUSHION fenders, SEA FLOAT buoys and floats, oil pollution control equipment and related engineering services.

Prior to joining Seaward International, Mr. Ringelberg spent 16 years in the United States Navy as an engineering duty officer specializing in diving and salvage. His most recent assignment was commanding officer of the U.S. Navy Experimental Diving Unit, an organization whose mission is research, development, testing and evaluation of diving equipment and systems. Prior to this, he was Fleet Salvage Officer for the U.S. Atlantic Fleet, where his responsibilities included direction and execution of diving, salvage, and oil-pollution abatement operations in the Atlantic, Mediterranean, Gulf of Mexico and the Caribbean. Other assignments involved seagoing tours as an engineering and deck officer. Previous shore assignments were in the areas of ship construction, overhaul, repair, docking and trials, in both the Atlantic and Pacific, including the Republic of Vietnam.

Mr. Ringelberg is a graduate of the New York State Maritime College. He completed postgraduate work at Webb Institute of Naval Architecture, and Stevens Institute of Technology. He holds the degrees of Bachelor of Marine Engineering, Bachelor of Science (Marine Engineering), and Master of Science in Naval Architecture. He is a licensed merchant marine engineering officer and a registered professional engineer.

He is a member of The Society of Naval Architects and Marine Engineers, the American Society of Naval Engineers, the Marine Technology Society, the Undersea Medical Society, the American Society of Military Engineers, and the Society of Sigma Xi.



SOLVE ON-BOARD SEWAGE DISPOSAL PROBLEMS WITH

Microphor®

452 EAST HILL ROAD P.O. BOX 490
WILLITS, CALIFORNIA 95490 707/459-5563

Simplicity and reliability are the answers. No electric hookup • No moving parts • Biologically digests your sewage to liquid and carbon dioxide • Discharges overboard meeting all EPA requirements • We have Coast Guard certified systems available for crews of 5 to 100.

- Low purchase price
- Easy installation
- Minimum maintenance

Put our years of experience to work for you.



CARRINGTON SLIPWAYS PTY. LTD AUSTRALIA

Old Punt Road, Tomago, N.S.W. 2322
Telephone (049) 64 8071, Telex AA28185,
Cable "Carringtons"

M.T. "Broadsound"
35M Tug powered by two 2800 S.H.P. engines producing a bollard pull of 75 tonnes. "Broadsound" is fitted with a high pressure foam/water/jet spray fire monitor installed atop the wheelhouse.

Middle East

Sales Manager:

John A. Skelton, P.O. Box 4134, Nicosia, CYPRUS.
Telex: 2331 Mickey's Attn. Skelton

European Agent:

European Marine & Machinery Agencies, Balmer Lawn Rd., Brockenhurst, Hants
SO4 766, ENGLAND
Telex 47509

SNAME New York Metropolitan Section Hears Paper On Port And Shipping Development

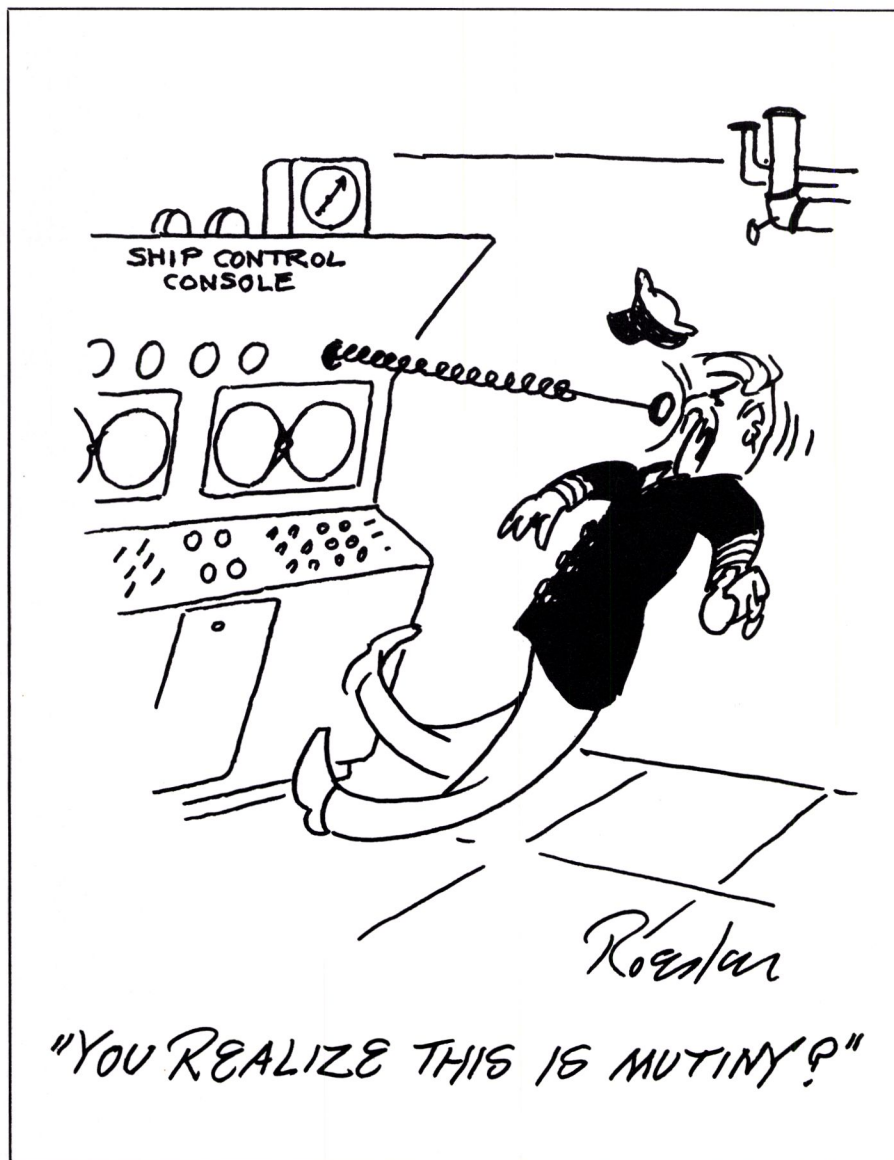


Shown above at the meeting in the Buttonwood Restaurant, left to right: Capt. Moses W. Hirschowitz, USMA, Membership chairman; Joseph Connors, Meetings chairman; Dr. Walter McLean, secretary-treasurer; Bernard Aungier, guest of honor; David A. O'Neil, vice chairman; Nicola F. Pergola, chairman; Kenneth W. Fisher, author, and John Daidola, Papers chairman.

At the October meeting of the New York Metropolitan Section of The Society of Naval Architects and Marine Engineers, **Kenneth W. Fisher** (Fisher Maritime Transportation Counselors, Inc.) presented his paper "A Conceptual Data Base for Shipping Developments."

The integration of ships, ports and intermodal facilities into the larger shipping systems is re-

sulting in rapid changes to the design of system components. This paper describes various shipping systems, design-influences and technologies which are evolving or have recently evolved to meet the requirements of an integrated shipping system. The descriptions pertain to ships, ports and intermodal facilities and environmental constraints.



U Of California Gives Course On Deepsea Oil Structures Jan. '78

A concentrated five-day course on the design, fabrication, installation and maintenance of deep-sea oil production structures will be presented January 23-27, 1978, at the University of California, Berkeley.

Staffed by a faculty of internationally recognized authorities from the University and from industry, the course will be directed to the interests of engineers, marine constructors and operators, oceanographers, engineering-oriented managers and others in related fields.

The program has been organized by a steering committee composed of **Ben C. Gerwick Jr.** and **Robert L. Wiegel**, professors of civil engineering at the Berkeley campus, and **J. Randolph Paulling Jr.**, professor of naval architecture.

Other Berkeley faculty members who will take part in the course include **H. Bolton Seed**, **Jack G. Bouwkamp** and **John Lysmer**, civil engineering; **Bruce A. Bolt**, seismology; **Israel I. Cornet**, **Frank E. Hauser** and **Iain Finnie**, mechanical engineering, and **Joseph Penzien**, structural engineering.

Experts from engineering firms include **Robert G. Bea**, from Woodward-Clyde Consultants; **I.B. Boaz**, Shell Oil Co.; **John A. Focht**, McClelland Engineers; **C.E. Grubbs**, Chicago Bridge & Iron Co.; **Griff C. Lee**, J.R. McDermott and Co.; **William J. Talbot**, Santa Fe Engineering Services Co.; **Brian J. Watt**, Brian Watt Associates, and **James G. Wenzel**, Lockheed Missiles and Space Co.

The summary of daily course sessions and topics is as follows:

Monday, January 23: waves, wave spectra and design estimates; earthquake characteristics/site statistics; wave and current forces; corrosion prevention.

Tuesday, January 24: sediment sampling and engineering testing/quasistatic foundation analysis; soil-structure interactions, dynamic response and liquefaction; fatigue, materials aspect.

Wednesday, January 25: pipelines, dynamics of riser pipes, structural configuration, tubular joint analysis.

Thursday, January 26: dynamic analysis of steel jacket structures; dynamic analysis of floating structures, including tension-leg platforms; dynamic analysis of concrete gravity structures; reliability analysis.

Friday, January 27: fabrication and installation of steel jacket platforms; deepwater concrete structures; sea-floor completion systems; underwater inspection, maintenance and repair.

Time will be reserved during

each day's program for general discussion and questions.

Registration for the course—entitled "Deep-Sea Oil Production Structures"—is \$500, including lecture notes and lunch each day. Sessions will be at the Marriott Inn, on the Berkeley marina. Advance registration is necessary.

A detailed course scheduled and registration forms may be obtained by writing to: Continuing Education in Engineering, University of California Extension, 2223 Fulton Street, Berkeley, Calif. 94720.

Slatic Named President Ameron Protective Coatings Division



James F. Slatic

James F. Slatic has been named president of the Ameron Protective Coatings Division, according to **William E. Steele**, corporate group vice president.

The Ameron Protective Coatings Division, based in Brea, Calif., develops, produces and markets a broad line of high-performance coatings, surfacers and acid-resistant cements for corrosion protection of steel and concrete structures.

The division's products are produced and sold throughout the U.S.A., as well as in approximately 25 countries abroad. Affiliated companies include Amercoat Japan Ltd. and Amercoat Mexicana, S.A. Amercoat do Brasil Industria E Comercio Ltda. is a wholly owned Ameron subsidiary.

Mr. Slatic joined Ameron as division manager of the Protective Coatings Division early in 1976. He had previously been associated with the CorBan Division of Fibreboard Corporation, Tampa, Fla., and before that with the former Corrosion Control Division of Ameron from 1959 through 1970, serving in various management positions in San Francisco, New York and in the Netherlands. He is a graduate of the University of Tennessee at Chattanooga with a B.S. degree in economics and is a member of the National Association of Corrosion Engineers (NACE).

Ameron is a diversified company with divisions and affiliates providing products and services for utility, construction and industry. Sales for 1976 were \$209 million. Stock is traded on the New York Stock Exchange.

**BOARDING
EQUIPMENT
TO MEET YOUR NEEDS**

STANDARD SIZES & CUSTOM-BUILT
**SHIPS' LADDERS
GANGWAYS
PIER STANDS**

ALSO SAFETY TREADS & GRATINGS

Call Us For Quotes!
RAMPMASTER
INCORPORATED

1226 N.W. 23RD AVENUE FORT LAUDERDALE, FLORIDA 33311
TELEPHONE 305 584-5990

*"Conrad builds barges with
remarkable cost efficiency"*

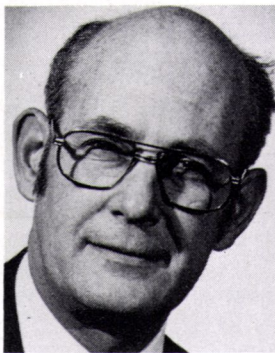
BUILDERS OF BOATS AND BARGES

CONRAD DRYDOCKS

DRYDOCKING...SHIPYARD

CONRAD
INDUSTRIES, INC.
P.O. BOX 790/MORGAN CITY, LA. 70380
TELEPHONE/AREA CODE 504-384-3060

Two Management Appointments Announced At Skagit Corporation



Kenneth W. Verge



Fritz K. Weimann

Kenneth W. Verge was named director of long-range planning and product development, and Fritz K. Weimann was named director of engineering at Skagit Corporation, Sedro-Woolley, Wash., according to Skagit's president and chief executive officer Ralph A. Clack.

Mr. Verge is a 24-year Bendix employee. He joined Skagit in September 1972, and was appointed director of engineering in February 1973. He is a graduate of Lawrence Institute of Technology, Southfield, Mich., and has a wide variety of technical and market-related experience through his activities at Skagit Corporation and the Bendix Research Laboratories.

Mr. Weimann joined Skagit Corporation in May of this year, and was responsible for product planning on both new products and the adaptation and extension of present product lines. He has had extensive engineering background, including approximately 25 years with the Lorain Division of the Koehring Company where he was most re-

cently director of engineering. Mr. Weimann is a mechanical engineering graduate of Hamburg Engineering College, Hamburg, Germany.

Skagit Corporation, a subsidiary of The Bendix Corporation, is a manufacturer of heavy equipment for the offshore oil, logging, construction, and marine industries.

IMO Pump Bulletin Describes Twin Screw Pumps

Geared Twin Screw (GTS) pumps, capable of moving large quantities of crude oil and almost any other liquid cargo or water ballast, are fully described in a bulletin published by the IMO Pump Division, DeLaval Turbine Inc.

GTS pumps have particular application in the marine field, as they can handle liquids with an extremely wide range of viscosity at discharge pressures up to 300 psig, and are available in deck mount, bulkhead mount, deep-well and other configurations. Applications include loading, off-loading, transfer, and as combination cargo and stripping pumps because of their high suction capability.

Within a given case size, the capacity of GTS pumps can be changed by installing a new set of screws. The bulletin includes operating data, capacity ranges and dimensional details.

You can obtain a free copy of Bulletin GTS-77 by contacting John Smalley, IMO Pump Division, DeLaval Turbine Inc., P.O. Box 321, Trenton, N.J. 08602.

DeLaval Turbine Inc., a Transamerica Company, has 15 operating divisions at 18 manufacturing locations worldwide. The company makes a line of industrial products, including compressors, condensers, connectors, controls, diesel engines, fasteners, filters, forgings, gearing, pumps, sensors, turbines and valves.

SALES **NAV-COM** SERVICE

Marine electronics explained, installed and protected.

SIMRAD



SIMRAD LC 204
Loran C Receiver

The fully automatic Loran C receiver for reliable — long range — accurate navigation

A reliable full-service facility in the NEW YORK AREA providing sales and support for: **LORAN RADIOTELEPHONE OMEGA ■ TELEX ECHO SOUNDERS DATA SYSTEMS**

NAV-COM Inc., 2 Hicks Street, North Lindenhurst, N.Y. 11757

(516) 884-7672

For more information, contact Gerry Gutman, Al Carlson, or Jack Provenzano.

**GENERAL METALS
IS DISMANTLING**

V-4 TUGS

Engine room parts, valves, etc. Deck equipment also available including Almon Johnson series 225 towing winches. Tugs are complete except for wheel house equipment. Electrical parts run on 230V D.C.

149' STEEL HULL STEAM POWERED TUG

Foreign Flag Sale Only. In Good Condition

CHAIN SALE

Mooring Chain
1-5/8" Stud link, .085 per lb.
Anchors and Anchor Chain
Hall Anchors—6000#, 8000# and 10,000# classes
1-15/16" Cast Steel approx. 5 1/2" Shots
2-7/16" Cast Steel approx. 5 1/2" Shots
Remnant Chain
2 1/2" Stud Link
2" Stud Link
1 1/2" Common Link
1 1/2" Topping Chain

We also stock fans, generators, pumps and motors for victory ships, destroyers, destroyer escorts and C1-M-AVI.

For more information contact: Lane Whitmore or Marty Brashem at (206) 572-4000.



1902 Marine View Drive
Tacoma, Wa 98122
(206) 572-4000

Telex: 327435 TAC • Cable: GENMETEX

In Singapore, there's a shipyard up to the challenge of any kind of ship repair. **HRD.**

HRD has had its share of the really tough ship repair jobs since starting up. Last year alone we repaired about 90 ships, a total tonnage of 10,500,000 DWT.

This statistic tells you several important facts: HRD is fast. Efficient. And a popular repair point for any kind of ship repair, any size ship.

There's also something else you should know about HRD. We're a joint venture between Hitachi Zosen and Robin Dockyard (Pte.) Ltd. This means you benefit from

Hitachi Zosen's world famous ship repair technology as well as from the convenience of the location.

In addition, our new 170,000 DWT drydock makes us more repair-ready now than ever. Along with our 300,000 DWT drydock which has been operational since 1974, the new drydock is yet another benefit that makes HRD a dockyard worth remembering no matter what kind of ship repair you need. While our three initials make the remembering easy, HRD . . . up to challenge.

Dry Docks:

No. 1 Length 350M x Width 60M x Depth 11.5M
Maximum ship size 300,000 DWT

No. 2 Length 300M x Width 60M x Depth 11.5M
Maximum ship size 170,000 DWT

Quays:

Length 350M x Depth 10M

Length 350M x Depth 8M Length 215M x Depth 7M

Crane Capacities:

80T/50T x 35M/50M 25T/15T x 35M/50M x 2
20T/10T x 50M/70M x 3 15T/10T x 15M/25M



HITACHI ZOSEN ROBIN DOCKYARD (PTE.) LTD.

HEAD OFFICE: No.15 Benoi Road, Tanjong Gul Channel, Jurong, Singapore 22 **TELEPHONE:** Singapore 656622 **TELEX:** HITABIN RS21213 HITABIN RS21906 **CABLE:** HITAZOSEN SINGAPORE

SHIP REPAIR AGENTS: ● **NORWAY** HENNING ASTRUP A/S, OSLO: Phone: 413847 (Oslo) Cable: HEAST OSLO Telex: 11307 HENNING ASTRUP A/S, BERGEN: Phone: 15233 (Bergen) Cable: HAVEN N Telex: 42316 HITACHI ZOSEN (OSLO OFFICE): Phone: 411275 Cable: HITACHI OSLO Telex: 16934 ● **SWEDEN** AB OLSON & WRIGHT: Phone: 08-228020 Cable: WRIGHTCHART STOCKHOLM Telex: 19108 ● **DENMARK** AXEL FALCK ENGINEERING & TRADING CO., LTD.: Phone: (01) HE (43) 8511 Cable: TURBOFALCK COPENHAGEN Telex: 19550 ● **GERMANY** H. GLAHR & CO.: Phone: (0421) 310331 Cable: GLACO BREMEN Telex: 0245537 ● **HOLLAND** SUPERVISION SHIPPING & TRADING CO.: Phone: 149100 Cable: SUPERSHIP ROTTERDAM Telex: 21208 ● **ENGLAND** HITACHI ZOSEN INTERNATIONAL, S.A. (LONDON BRANCH): Phone: 01-588-3531/3 Cable: HITACHI LONDON Telex: 884009, 887873 ● **ITALY** SAUL M. RACAH: Phone: (010) 586-381/2 Cable: SOLRAL GENOA Telex: 27434 ● **GREECE** HITACHI ZOSEN (GREECE OFFICE): Phone: 452-7548/9 Cable: HITACHI PIRAEUS Telex: 212943 ● **U.S.A.** HITACHI ZOSEN INTERNATIONAL, S.A. (NEW YORK BRANCH): Phone: 212-355-5650 Cable: HITACHISEC NEW YORK Telex: 232036 HITACHI ZOSEN INTERNATIONAL, S.A. (HOUSTON BRANCH): Phone: 713-658-0136/8 Cable: HITACHISEC HOUSTON Telex: 910-881-1191, 775038 ● **BRAZIL** HITACHI ZOSEN-INDUSTRIA PESADA LIMITADA: Phone: 221-5979 Cable: HITACHISEC RIO Telex: 2122904 ● **HONG KONG** HITACHI ZOSEN COMPANY (HK) LTD. Phone: 220597, 246237 Cable: HITACHI HONG KONG Telex: 73648 ● **JAPAN** HITACHI ZOSEN (TOKYO OFFICE): Phone: Tokyo (03) 213-6611 Cable: SHIPYARD TOKYO Telex: SHIPYARD J24490, J22363; HITACHI ZOSEN (KOBE OFFICE): Phone: Kobe (078) 331-6512 Cable: SHIPYARD KOBE TELEX: 5623918 HZ KOB J

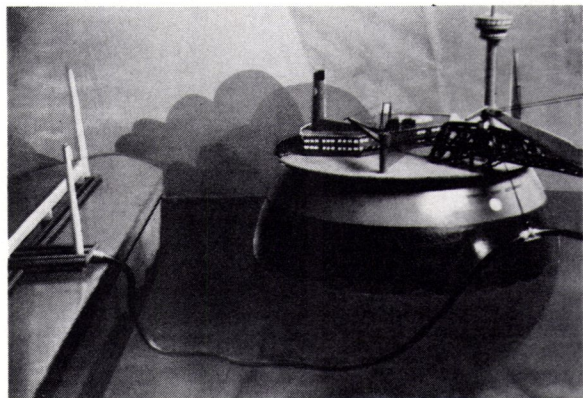
November 15, 1977

45

New England Company Receives U.S. Funds To Investigate Giant Sphere As Offshore Oil Terminal

The U.S. Government is assisting an industry-sponsored program to study and test models of ocean platforms shaped like giant concrete bubbles, each capable of holding enough fuel for 500,000 cars on a cross-country trip.

These unique vessels, called Tuned Spheres, will be located 15 to 40 miles off the U.S. coastline to serve as deepwater terminals for the biggest supertankers afloat. At present, no U.S. port can accommodate these supertankers.



Tuned Sphere floating ocean platform virtually eliminates roll and heave. Shown as model unloading supertanker in deepwater location. Full-sized sphere will have 380-foot diameter and hold four million barrels.

This means that imported crude oil now must be unloaded from supertankers in deepwater Caribbean and Canadian ports, and then transshipped to the United States, using small tankers. Transshipping is said to cost gasoline and heating oil users in this country an additional \$1 billion annually, which contributes to unfavorable U.S. balance of trade.

For this key reason, Tuned Sphere International, Inc., One Pine Street, Nashua, N.H., was awarded a grant by the Energy Research and Development Administration (ERDA) to test the feasibility of Tuned Spheres in the role of offshore terminal facilities. Tuned Sphere International, headquartered in Nashua, N.H., is a subsidiary of Energy Systems Corporation, the parent organization that employs recondit technology to create advanced products for industry and people.

Federal grants totaling more than \$200,000 will be used to demonstrate Tuned Sphere stability under the roughest sea conditions. Model-test monies also complement contracts received in the past six months from ERDA and Lockheed Missiles and Space Company to investigate feasibility of the Tuned Sphere as the platform for Ocean Thermal Energy Conversion powerplants under development by ERDA. These powerplants will convert temperature differences in ocean currents into electric power, or will manufacture at sea, useful products such as anhydrous ammonia fertilizers.

Interest in Tuned Spheres, according to **Kenneth E. Mayo**, president of Energy Systems, is being spurred by a highly favorable National Bureau of Standards technical review completed last May.

George P. Lewett, a National Bureau of Standards (NBS) official, finds Tuned Spheres "technically valid and worthy of consideration for appropriate government support." Tuned Spheres, reports NBS, "offer improved stability over the full range of weather conditions encountered on open oceans for unloading, storing, and pumping petroleum; for oil-well drilling, and as a

platform for ocean-based wind, geothermal, or other powerplants."

The National Bureau of Standards report notes that the Tuned Sphere's unusual shape "provides greater strength and distributes forces due to wave action." Stability of the sphere in heavy seas is made possible, the report adds, "by locating the center of mass well below the center of buoyancy. This may be changed by pumping water ballast from one tank to another."

"Symmetry of Tuned Spheres eliminates pitch . . . and yaw." Neither does the oversized ball heave much in the water. "This is reduced," the report says, "by means of a large quiescent pool of water located inside the sphere. This pool is open at the bottom so that its level is adjusted automatically to average wave heights."

With the forces of natural hazards and waves effectively countered, Tuned Spheres are expected to give stability over the full range of open ocean conditions, superior to that of any other vessel design.

Designed as bulk petroleum terminals, Tuned Spheres will have a 380-foot diameter to permit storage capacity of four million barrels of crude. Stored crude oil is pumped to shore via at-sea terminus of a subsea crude pipeline. Receiving facilities may be located as much as 25 miles inland.

In sum, the National Bureau of Standards says Tuned Spheres will (1) improve safety of vessels, hence personnel, (2) reduce transportation cost of oil, (3) reduce danger of oil spills, and (4) improve productivity during bad weather and sea condition.

The report also concludes that Tuned Spheres may assist relief of the nation's energy problems, because they "enhance production in offshore drilling . . . and as offshore terminals for receiving imported crude oil and petroleum products at a decrease in import costs."

Charles R. Fink, vice president for operations of Tuned Sphere International, notes that "The potential \$1-billion transportation cost savings to derive from Tuned Sphere deepwater terminals more than offset the cost increase which will result if legislation to require import of up to 10 percent of foreign crude in U.S.-flag vessels is passed by the Congress."



MonArk's Heavy-Duty 21-Ft. Utility Serves Vicksburg Engineers As A Patrol And Rescue Boat

MonArk's 21-foot all-aluminum police utility, powered by a 280-hp Mercruiser I/O engine, is working as a patrol and rescue boat for the Vicksburg Corps of Engineers. The hardtop is on a track and may be slid aft or removed.



MonArk's 21-ft. police utility with removable hardtop.

Standard equipment included navigation lights, mechanical steering, three lifting eyes, 3-inch extruded rubber bumper guard, and bow rails. The hull bottom is of 3/16-inch all-welded marine aluminum.

Available power systems are single or twin outboard or inboard/outboard.

MonArk's 21-foot patrol and rescue boats are available in Tri or V-Hull designs.

For more information and a free brochure, write **Anne Robirds**, MonArk Boat Company, P.O. Box 210, Monticello, Ark. 71655.

Navy Awards \$1.5 Million To Sanders Assoc. For New Shipboard Acquisition System

Sanders Associates, Inc., Daniel Webster Highway, South, Nashua, N.H. 03060, has received \$1.5-million initial funding from the U.S. Navy Electronic Systems Command for two service test models of a shipboard signal acquisition system for the Navy.

The new systems are advanced versions of an earlier model developed by Sanders under an approximately \$1-million Navy program which recently completed the shipboard engineering evaluation test phase.

The systems represent an extension of Sanders technology in the signal intelligence area. Sanders is currently producing the SRD/19 direction finding systems and the SLR-16 shipboard acquisition systems for the Navy.

The service test model will undergo operational and technical evaluation aboard ship. Work will be performed at the company's Special Programs Division.

Dravo Corporation Appoints Spurgeon To Engineering Works Div.

Judson C. Spurgeon has been appointed assistant to the general manager for Dravo Corporation's Engineering Works Division.

Mr. Spurgeon joined Dravo in 1941 and most recently served as manufacturing services manager. He is an industrial engineering graduate of Penn State University and holds a master's degree in mechanical engineering from the University of Iowa.

Dravo's Engineering Works Division, headquartered at Neville Island near Pittsburgh, Pa., manufactures towboats and barges for the inland rivers, bulk materials handling equipment, and operates Dravo SteelShip, Pine Bluff, Ark., a subsidiary.

Port Brownsville Shipyard To Convert Jumbo River Barges To Parcel Chemical Carriers

Port Brownsville Shipyard, Inc. recently received an order to convert the cargo systems of three stainless steel jumbo river barges for Chemlink, Inc. of New Orleans, La., a subsidiary of Slade, Inc., Orange, Texas. The three vessels will be converted to multiple tank, parcel chemical carriers capable of transporting relatively small lots of cargo under Subchapter "O" hazardous cargo regulations.

The newly fitted cargo piping and pumping systems shall be entirely manufactured from stainless steel materials. Welding of pipe and fittings shall be carried out by the shipyard's fully automatic, programmed pipe welding system to insure perfectly welded joints.

Port Brownsville Shipyard is located in Brownsville, Texas 78520, where it is engaged in the construction of workboats, barges and fishing vessels and the conversion and refitting of cargo vessels.

SNAME And SSC Plan Ship Vibration Symposium For Washington, D.C. October 1978

The Society of Naval Architects and Marine Engineers (SNAME) has joined with the interagency Ship Structure Committee (SSC) in the sponsorship of an international Ship Vibration Symposium to be held at the Sheraton National Hotel in Arlington, Va. (Metropolitan Washington, D.C.) on October 16-17, 1978. This Symposium follows the highly successful Ship Structure Symposium of October 1975, which was also jointly sponsored by these two organizations.

The Symposium will bring together representatives of the maritime community including ship operators, builders, designers, researchers, governmental and classification bodies to discuss all aspects of ship vibration, noise, and hull/machinery incompatibility. The emphasis of the Symposium will be the interfaces between hull structure, hydrodynamics, machinery, and man. It will foster an awareness and appreciation of shipboard vibration and noise problems.

It has been over 12 years since the first conference on Ship Vibration was held at Stevens Institute of Technology. In the intervening years, a dramatic growth in the size and installed horsepower of vessels has taken place. The impact of shipboard problems has also increased substantially, due to the high capital cost of new vessels. During these years, substantial progress and developments have taken place in the vibration and noise fields. It is now time for these technological problems and new advances to be discussed in an open forum with all those engaged in ship design, construction, and operation.

A Symposium Committee has been formed under the general chairmanship of **Norman O. Hammer** of the Maritime Administration, Department of Commerce. The Symposium's Papers Committee is made up of representative members of SNAME's Hull Structure Committee, Hydrodynamics Committee and Ships' Machinery Committee. Participation by these SNAME committees will insure that the problem of ship vibration is discussed from every viewpoint. The co-chairmen of the Technical Program and Papers Committee are **William A. Wood**, Bethlehem Steel Corporation, and **Jacques B. Hadler**, David W. Taylor Naval Ship Research and Development Center.

Ralph Johnson, National Transportation

Safety Board and **Dr. Warren C. Dietz**, U.S. Coast Guard, will serve as co-chairmen of the Arrangements Committee. **Lt. Comdr. Thomas H. Robinson**, U.S. Coast Guard, is chairman of the Publicity Committee. The chairman of the Registration Committee is **Lt. Comdr. Steven H. Davis**, U.S. Coast Guard, and the chairman of the Publications Committee is **Richard W. Rumke** of the Ship Research Committee, National Academy of Sciences.

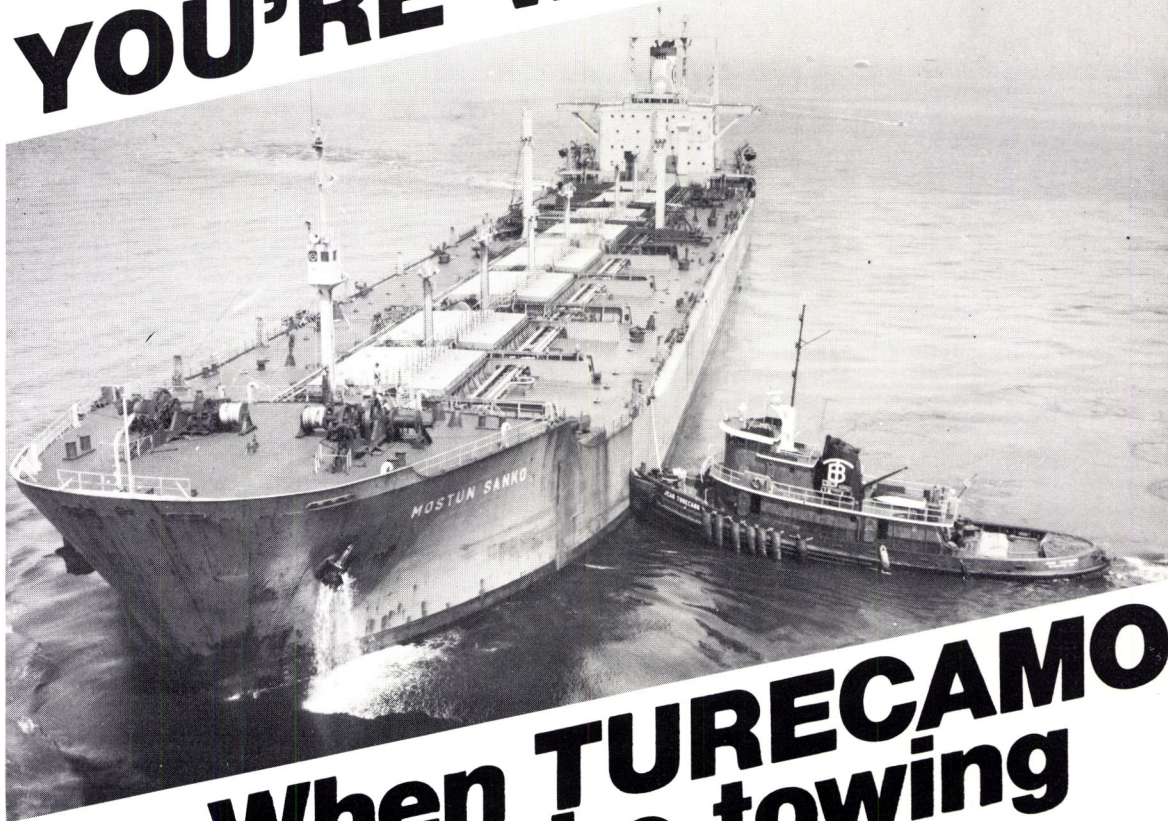
The Ship Structure Committee is an interagency committee composed of representatives from the Naval Sea Systems Command, Maritime Administration, U.S. Coast Guard, Military Sealift Command, and the American Bureau of Shipping. The purpose of that committee is to conduct an aggressive research program which will, in the light of changing technology in marine transportation, improve the design, materials and con-

struction of the hull structure of ships. This is accomplished by an extension of knowledge in these fields for the ultimate purpose of increasing the safe operation of ships.

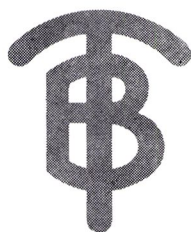
The Society of Naval Architects and Marine Engineers is an internationally recognized, nonprofit, technical and professional society, dedicated to the advancement of the art, science, and practice of naval architecture, marine engineering, shipbuilding, ship operating, and ocean engineering, in all of their many branches. A major purpose of the Society is the gathering and collating of technical information in the above fields, and the dissemination of this information to the maritime community through various media. It also administers an extensive Technical and Research (T&R) Program involving over 900 individuals.

Further details on the technical program will be forthcoming.

YOU'RE WAY AHEAD



When TURECAMO does the towing



Around the clock, Turecamo's modern fleet of fast, powerful tugs stand ready to instantly provide you with the very best in towing services. Added to this are the years of invaluable experience docking and undocking ships of all sizes and in every phase of towing operations.

When you want fast, efficient and economical service...Call Turecamo First.

DOCKING • UNDOCKING — harbor, sound, coastwise, canal and lake towing

TURECAMO COASTAL & HARBOR TOWING CORP.

P.O. BOX 201
OYSTER BAY, N.Y. 11771

ONE EDGEWATER STREET
STATEN ISLAND, N.Y. 10305

TEL: (212) 442-7400

MATTON
TRANSPORTATION CO.
INC.

TURECAMO
TRANSPORTATION CORP.

MATTON
SHIPYARD CO., INC.

TURECAMO TANKERS
INC.

Electro-Nav To Market New 400-Watt SSB Transmitter/Receiver

Electro-Nav president **Robert E. Negron** has announced the addition of the EN 400 SSB Transmitter/Receiver to his company's product line.

"This is a unique unit," said Mr. Negron. "It's chock full of excellent features, performs beautifully and reliably, is simple to operate, and has a sensible price tag. The EN 400 is a natural for fast, efficient offshore and long-range communications."

The EN 400 is equipped with one-control reset for rapid retrieval of any of 100 preselected frequencies. Fully synthesized, it can be tuned to any frequency in any marine band with no need

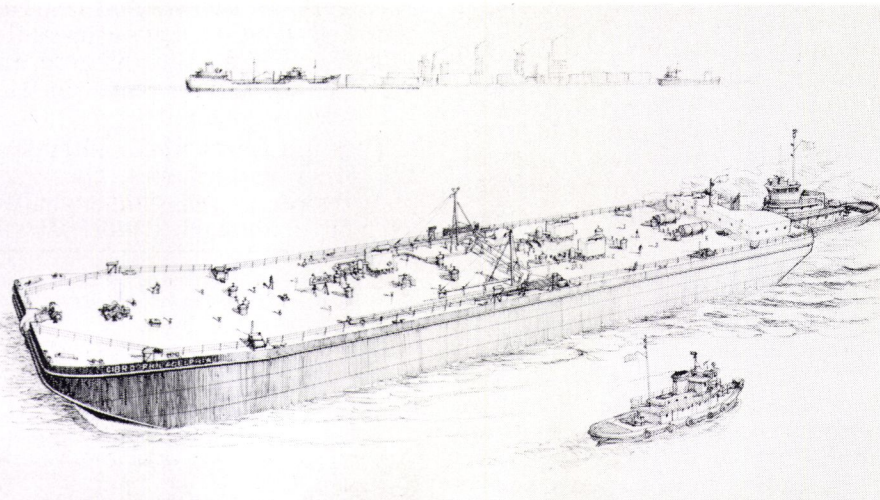
for crystals, regardless of any future channel allocations by any authority.

The unit is conservatively rated at 400 watts of clean antenna power for reliable offshore and long-range communications, both voice and code, and comes with built-in fully automatic antenna tuning that eliminates amplifier band switches and drive, tune and load controls. Single knob operations simplifies tuning, and band-pass filter circuits permit optimum duplex performance.

The EN 400 was previewed at the recent Seattle Fish Expo and in San Francisco, where it generated significant industry interest.

For more information on the EN 400, write to Electro-Nav, Inc., 1201 Corbin Street, Elizabeth Marine Terminal, Elizabeth, N.J. 07201.

CIBRO Petroleum Building Super Barge At Todd Shipyards' Houston, Texas Division



A sketch of the CIBRO Philadelphia, ABS-classed A-1 Manned, with accommodations for a crew of four, will have a loaded speed of seven knots with a 6,000-hp tug in the stern notch, and 10 knots light.

CIBRO Petroleum, a major industrial fuel oil marketer headquartered in New York City, has announced construction is underway at Todd Shipyards Corporation, Houston Division, for the newest addition to its super barge fleet. The 24,200-ton vessel, to be named CIBRO Philadelphia, will join the company's super barges CIBRO Albany and CIBRO New York, which have been operating for the past two years.

The new vessel, having a length overall of 425 feet, a 74-foot 6-inch beam, and a molded depth of 36 feet 6 inches, was designed to offer the cargo capacity of a conventional tanker with the delivery flexibility of a harbor transport barge.

The CIBRO Philadelphia, like a tanker, will operate on a regular basis between U.S. refining centers and the company's network of distribution terminals, and a wide range of industrial fuel oil consumers.

Unlike conventional tankers, however, the CIBRO Philadelphia's shallow-draft design pro-

vides the flexibility to deliver its 160,000-barrel cargo to many inland and shallow-water ports and consumers which heretofore had to rely on much smaller-capacity vessels.

To facilitate the long-range transportation of heavy industrial grade fuel oil, the CIBRO Philadelphia is to be equipped with a self-contained 12,000,000-BTU hot-oil heating system.

Three deep-well pumps will discharge the vessel's cargo at a rate of 12,000 barrels per hour, giving the super barge a turn-around time of only 14-16 hours, as opposed to the 30-36 hours required by most conventional tankers of the same capacity.

CIBRO officials indicate the company's super barge concept was developed to facilitate the transportation of large quantities of oil directly to the consumer with minimizing related delivery costs.

The CIBRO Philadelphia is expected to begin full operations early this spring.





POWER PERFORMANCE

AT REAL SAVINGS from POWER & PROPULSION SYSTEMS

Get the facts on savings on EMD's, F-M's and other engines for tugs, offshore supply vessels and your complete power requirements.

Complete diesel propulsion systems and generator sets with undivided responsibility . . . over thirty years experience.

Engines currently available:

GM 8V71N	EMD 16-567-C	FM 8-38-D8 1/8
EMD 12-567-BC	EMD 16-645-CE2	FM 6-38-D8 1/8
EMD 16-567-BC		



**POWER
& PROPULSION
SYSTEMS, INC.**

9821 Katy Freeway, Suite 116 • Houston, Texas 77024 • 713-461-7177

MARINE AND INDUSTRIAL POWER SYSTEMS □ DIESEL ENGINES □ GENERATOR UNITS □ PROPULSION SYSTEMS

Cathodic Protection—Plain Talk!!

Ship and marine structure owners use cathodic protection for one reason—to save money. The prevention of corrosion on submerged areas eliminates costly repairs.

Norton Corrosion Limited, Inc. has been preventing corrosion for two decades. With our affiliates, associates, and a worldwide network of engineering/service offices, we can provide you with everything you need for complete cathodic corrosion control.

Why should you use NCL's Morgan impressed current cathodic protection? Again, to save money!

A cathodic protection system should be easy to install, reliable, simple to maintain, and inexpensive to operate. NCL's system is all of these. Custom designed for each project, the components are modular for quick delivery and ease of installation. The anodes are

alloyed (not thin coated) for ruggedness. Because they are self-shielded, no fancy coatings are required initially or at every dry-docking. The electronics are solid-state and easy to service.

Where you really save money, however, is in power production costs! Because our system runs at low voltage, power consumption is half that of other systems. You know what it costs to produce power—the savings to you by using the NCL system can reach thousands of dollars yearly.

Over 700 users will testify to the effectiveness of the NCL/Morgan system. Fourteen navies throughout the world have standardized on it—and it is approved for Marad and by all other classification societies.

Drop us a note or your business card and let us send you details.



NORTON CORROSION LIMITED, Inc.
22327 - 89th Avenue
Woodinville, WA 98072
1-206-486-9126
TWX 910-449-2810

OFFICES IN:
—1206 Post Oak Rd., Suite 200
Houston, TX 77056, 1-713-961-4090
—1050 Clifton Ave.
Clifton, NJ 07013, 1-201-471-6223



OMNITHRUSTER Names J. Michael Melvin VP

Stanley A. Dashew, president and founder of OMNITHRUSTER INC., recently announced that the board of directors elected **J. Michael Melvin** vice president, marketing. Mr. Melvin will report directly to the office of the president.

OMNITHRUSTER INC. manufactures 12 different models of thrusters ranging from 25 to 585 horsepower, with thrusts of 500 to 11,500 pounds. The patented OMNITHRUSTER system provides positive control of the bow and/or stern by the thrust of high-volume water jets. Forward and aft propulsion can be provided through the unique steering valve and Thrust Director.

Before joining OMNITHRUSTER INC., Mr. Melvin held marketing-field engineering management positions with Sperry Marine Systems, a division of Sperry Rand Corporation. Prior to that, he was a staff engineer with the Vance Division of O.I.M.E. Mr. Melvin has authored and presented numerous professional society papers dealing with the subject of steering and steering controls, as well as integrated ship systems.

In making the announcement, Mr. Dashew stated that "OMNITHRUSTER systems are being used for maneuvering vessels and position-keeping, in addition to side thrusting. Mike Melvin's experience in steering systems and steering controls, as well as his marketing and field service management expertise, will be helpful in guiding the company's growth."

Santa Fe Reenters Onshore Drilling In The United States

Santa Fe International Corporation, Orange, Calif., has reached an agreement in principle with A.W. Thompson, Inc., a prominent Texas drilling contractor, to purchase all the outstanding shares of A.W. Thompson, Inc., for \$22 million in cash and notes.

A.W. Thompson, Inc., headquartered in Midland, Texas, owns and operates 12 medium and deep oil and gas well drilling rigs, all currently under contract in the west Texas area. The company was founded more than 50 years ago by the late A.W. Thompson, and is now headed by **Frank L. Thompson**, the founder's son.

Following the acquisition, A.W. Thompson, Inc. will continue to operate under its own name as a Santa Fe subsidiary and **Frank L. Thompson** will continue as its president, according to **E.L. Shannon Jr.**, president of Santa Fe International.

The transaction will mark Santa Fe's reentry into the onshore drilling business in the United States

after an absence of six years. The company's drilling division sold all its land-based rigs in California in 1971, and since then has operated land rigs exclusively overseas, while continuing to operate offshore rigs both in the U.S. and abroad.

Through Santa Fe Drilling Co. and other subsidiaries, the company currently owns and operates 39 land drilling rigs and 19 ma-

rine units. All are located outside this country except for two offshore units in the Gulf of Mexico.

Gordon M. Anderson, president of Santa Fe Drilling, said the expansion decision was made following an extensive survey to determine the future demand for land drilling rigs in the U.S. "We are fortunate to have the opportunity to join forces with Thompson," he said, "for it is one of

the premier privately owned land drilling contractors in the United States, and is noted for quality equipment and service."

Under terms of the agreement, Santa Fe will make an initial cash payment of about \$11.7 million to the shareholders of A.W. Thompson, Inc. upon closing of the transaction on or before November 30. The balance will be paid over a period of four years.

Repairing a vessel can cost you a lot of dollars!

and, if you take it to the wrong dockyard,
it can cost you more in time and money!



Let HMD handle your SHIP REPAIR problems.

**Dependable,
Economical
& Fast.**

Services include :

- All types of engine and hull repairs
- Major conversions and lengthening
- Tank cleaning and slop/sludge disposal



HYUNDAI MIPO DOCKYARD CO., LTD.

Head Office : 456 Cheonha-Dong, Ulsan 690-02, Korea
Tel: (ULSAN) 2-9021/5, Tlx: HMDYARD K3589, Cab: "HMDREPYARD"
Seoul Office : 178 Sejongro, Jongro-Ku, Seoul 110, Korea KPO Box 289 Seoul
Tel: 72-7537, 7656, Tlx: K28361 (HDYARD) Cab: "HDYARD"
Overseas Offices : London, Oslo, Hamburg, Athens, Tehran, New York, San Francisco, Tokyo, Hong Kong

Agent in U.S.A.:
Robert M. Catharine

JACKSON MARINE CORPORATION

17 Battery Place, N.Y.C. 10004 Tel:(212)269-0937 Tlx:269 0937

Moore-McCormack Lines Awarded \$453,000 Contract To Develop Cost Control System For Ships

Moore-McCormack Lines, Inc., New York, N.Y., was awarded a \$453,308 contract to develop and implement a Purchasing Inventory and Cost Control System for ships stores, supplies, equipment, consumables and services to be applied throughout its fleet. As part of the Maritime Administration's Shipping Operations Information System (SOIS), the results of this work will be available to all U.S.-flag shipping companies.

ASNE Flagship Section Holds First 1977-78 Meeting

The Flagship Section of the American Society of Naval Engineers held its first meeting of the 1977-78 technical program year at the Officers' Club of the National Naval Medical Hospital, Bethesda, Md.

Following the social hour and dinner, which were enjoyed by approximately 65 members and guests, chairman **Thomas Albee** opened the meeting by welcoming all those in attendance. Captain Albee especially noted the presence of former Flagship Section chairman **Robert Browning**, members of the Flagship Council, and the main speaker, Capt. **James W. Kehoe Jr.**

Captain **Kehoe** made a presentation entitled "Observations of Soviet 'Kiev,'" which was highlighted by slides showing the ship during a Mediterranean cruise. In addition, Captain **Kehoe** presented a film of the take-off and landing of Soviet helicopters and VTOL aircraft attached to the ship. The presentation was very well received, and a lively question and answer period followed.

The Flagship Chapter wishes to note that ASNE members and guests are welcome to attend any of the future Flagship meetings:

November 15, 1977 — Coast Guard Program at Curtis Bay, "Coast Guard Response to Oil Spills in the North Atlantic" by Lt. Comdr. **Barry Chambers**, C.D. Strike Team.

December 7, 1977 — Presentation and Panel Discussion on "Seakeeping." Moderator, **Wolfgang Reuter**.

January 10, 1978 — "An Overview of Congressional Perspectives on U.S. Navy Ship Program" from the point of view of a naval engineer on the House Armed Services Committee, Dr. **Tom Cooper**.

February 7, 1978 — Subject, "Aegis."

March 4, 1978 — Presentation/Panel Discussion on COGAS Propulsion. Moderator, **R. Carleton**.

April 11, 1978 — Presentation/Panel Discussion on Ship Design Perspectives.

June 1978 — Dinner-Dance.



Wigham Poland Inc. Expands Marine Insurance Division

As part of an effort to enhance Wigham Poland Inc.'s brokerage services, one of the first areas to be expanded is the marine insurance division.

The marine division, 111 John Street, New York, N.Y. 10038, headed by a team of professionals with excellent reputations, will offer a wider range of services by continuing to develop business in the areas of marine insurance and average adjusting.

The marine team, with **Mike A'Hearn** as Marine Department manager and **Bill Nicol** as Senior Average Adjuster, will provide a complete and unique feature to Wigham Poland's broking capabilities.



Wigham Poland's new marine team, left to right: **Mike A'Hearn**, Marine Department manager; **Bill Horan**, vice president/Production; **Bill Nicol**, Senior Average Adjuster, and **Louise Casazza**, assistant broker.

"Wigham Poland's substantial international reputation as a marine insurance broker, augmented by these new staff members, provides the necessary competitive edge in producing and servicing marine accounts," pointed out **Richard Hummel**, company president.

The Marine Department's growing roster of competent professionals serves to increase the division's strength. This staff will continue to work closely with underwriters to achieve the best product for Wigham Poland's marine clients.

In order to implement growth, the marine team has channeled its efforts in two directions: first, emphasizing production; and second, providing Wigham Poland U.K. with additional marketing capabilities. "Furthermore," stressed Mr. A'Hearn, "we will support our U.K. Marine Department when required to finalize placements of their business in our U.S. markets."

MARINE ENGINEERS

Immediate openings for operating Marine Engineers for training and assignment to Marine Surveyor positions with long established international organization. Sea experience necessary and Chief Engineer's license preferred but not essential. Also, shoreside experience as Port Engineer or Shipyard Estimator would be advantageous. Salary negotiable. Generous employee benefits.

Send resume in complete confidence to:

Box 1102 Maritime Reporter/Engineering News
107 East 31 Street New York, N.Y. 10016

PORT ENGINEER

Wanted by international steamship company, headquartered in New York, in the operations department which is responsible for maintenance, repair and budgetary control for a wide range of vessels. The successful applicant will be directly responsible for a group of these vessels.

Qualifications & Experience:

- Chief Engineers license—steam and diesel
- Suitable experience as a Port Engineer supervising high pressure turbine and large slow speed marine diesel engines (B&W and Sulzer). Preference will be given to applicants with experience in operation of LPG's, Bulk Carriers and VLCC's and unmanned engine room operations.

Send full details and salary history in complete confidence to:

Box 1119 Maritime Reporter/Engineering News
107 East 31 Street New York, N.Y. 10016

ENGINEERING DESIGNERS

Electrical

Electronics

Piping

Machinery

Hull

We have immediate openings for qualified individuals who have naval drawing design/review experience in electrical, piping, machinery, hull, or electronic systems. Applicant must read and understand working drawings and parts lists, ship specifications, revision notices, change proposals and do material take-offs of revisions.

Salary commensurate with experience. Please submit resume to:

TODD PACIFIC SHIPYARDS CORPORATION

Los Angeles Division

P.O. Box 231

San Pedro, California 90733

Equal Opportunity Employer

MARINE SURVEYOR GS-12, \$21,883-\$28,444

Career Civil Service Position with long range potential

Position location — Newport News, Virginia

Responsible for conducting a variety of surveys and inspections including subsidy, mortgage, damage, dismantling and final guarantee surveys, generally on the more recently constructed or converted vessels. Solves difficult technical engineering problems concerned with repair of vessels. Performs a variety of special projects, special surveys, and investigations as required. Requires at least 6 years of progressively responsible marine experience in the survey and inspection of ocean-going merchant vessels which included 1 year in active sea service as First Assistant Engineer, Assistant Engineering Officer, Chief Warrant Machinist or Warrant Machinist. A bachelor's degree in naval architecture or marine engineering may be substituted for 3 years of experience except for the active sea service. Detail resume or Federal Form SF-171 should be sent to:

Personnel Officer — Maritime Administration

Department of Commerce

26 Federal Plaza, Room 3738A

New York, New York 10007

212-264-1323

The Department of Commerce is an Equal Employment Opportunity Employer

marine recruiters

Brokers of
Marine Talent
2200 6th Avenue Seattle, WA 98121 (206) 623-6790



Naval Architect/Marine Engineer

Houston based engineering department of major international oil company requires experienced individual with demonstrated capabilities in hull technical and cost engineering. Must have college degree and be qualified for professional engineer registration.

Assignments will include participation in,

- feasibility studies and project development of offshore oil and gas production projects in specified areas, worldwide;
- development of new technology associated with floating production platforms, subsea work systems and exposed location marine terminals;
- development of cost estimating system based on cost statistics to forecast capital and operating costs of new offshore production and terminal projects;
- industrial and government committee activity dealing with rules and regulations for offshore production operations.

Furnish resume of experience and training to

N.D. Birrell

Supervisor — Marine Engineering Section
Production Engineering Services
Continental Oil Company
P.O. Box 2197
Houston, Texas 77001

ELECTRICAL ENGINEER

We are in immediate need of an engineer to supervise electrical work in a shipyard engineering office.

The person we seek must be familiar with electrical / electronic ordnance and automatic propulsion controls. Should have hands-on knowledge of all electrical / electronic engineering requirements for Naval vessels. Major work involves follow-on ship change proposals, revisions and scoping material modifications.

Salary commensurate with experience.

Please submit salary history and requirements to:

Box 1120

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

An Equal Opportunity Employer

SALES MANAGER MARINE AND OFFSHORE PRODUCTS

An excellent opportunity with an established company directing the overall sales program including branch offices in Houston and London from Headquarters in New York.

We represent both major U.S. and European marine equipment manufacturers and shipyards. The candidate should have at least 5 years experience in marine related sales, with marine engineering background.

Excellent salary, bonus and benefits package, commensurate with experience.

Please send resume, with salary history, in confidence to:

ROLAND MARINE, INC.
1 State Street Plaza
New York, N.Y. 10004

COMMISSION SALES NEGOTIATORS NEEDED

We provide all kinds of Offshore Oil equipment and supplies to clients in several countries. We seek additional on the spot sales partners. Come to us if you buy or sell hose, fittings, valves, welders, winches, cranes, electronics and other equipment.

CORRICK INTERNATIONAL

206 Locust Street, Santa Cruz, California 95060
Phone (408) 426-9010 TWX 910-598-4411

Fuutstraat 31, Postbus 6001, Vlaardingen, Netherlands
Phone: 010-347-167 Telex: 26367 GEINT

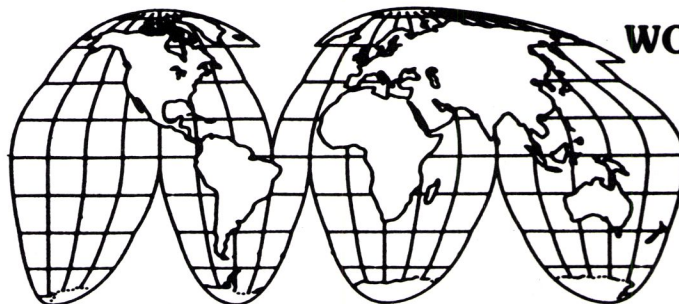
MARINE WATER TREATMENT & SPECIALTY CHEMICALS
Worldwide marine consultants need staff engineers and field service engineers for their Linden, New Jersey and San Francisco, California offices. Self starters with 3-5 years experience. Excellent salary and benefits. Send resume and salary history in confidence to:
Manager, Technical Services, Timmons & Charles, Inc.
P.O. Box 507 Linden, NJ 07036

MARINE SURVEYOR

Minimum of 2 years experience in marine surveys, especially cargo loading & loss surveys required. Maritime degree preferred. Good salary-profit sharing plan. Baltimore Area. Please send resume to:

Box 1104 Maritime Reporter/Engineering News
107 East 31 Street New York, N.Y. 10016

MEN



WOMEN

WORK OVERSEAS!!

**Australia - Europe - Japan - The South Pacific - Africa
Far East - South America - Central America - Middle East
\$800.00 to \$4000.00 Per Month - Tax Benefits**

U.S. Government, Private Corporations and Organizations.

Construction - Engineering - Sales - Transportation - Teaching - Oil Refining - Medical - Accounting - Manufacturing - Secretarial - Aircraft, etc., etc.

If you like travel, excitement and adventure, then overseas employment is for you. To allow anyone the opportunity to explore overseas employment we have published a complete set of Overseas Employment Guides. Our Overseas Employment Guides contain the following information . . .

- List of CURRENT OVERSEAS JOB OPPORTUNITIES with a special section on overseas construction projects, executive positions and teaching opportunities.
- How, Where and Whom to apply for the job of your choice OVERSEAS!
- FIRMS and ORGANIZATIONS employing all types of Personnel in nearly every part of the Free World.
- Firms and organizations engaged in OVERSEAS CONSTRUCTION PROJECTS, MANUFACTURING, MINING, OIL REFINING, SECRETARIAL, AIRCRAFT, ENGINEERING, SALES, SERVICES, TEACHING, ETC!
- COMPANIES and GOVERNMENT AGENCIES employing personnel in nearly every occupation, from the semi-skilled laborer to the College trained professional.
- How and Where to apply for OVERSEAS GOVERNMENT JOBS!
- Employment on U.S. Government ships "MERCHANT MARINES"!
- Directory of U.S. Businesses operating in AUSTRALIA that employ Americans.
- List of U.S. DEFENSE CONTRACTORS with operations OVERSEAS THAT EMPLOY Americans!
- Information about TEMPORARY and SUMMER JOBS OVERSEAS!
- You will also be told How to write your resume or application letter! How to plan your job hunting campaign! How to conduct yourself in a job interview! Plus many professional tips that may mean the difference between landing the job of your choice or missing out.

MAIL OUR ORDER FORM TODAY!!!

The Job You Want OVERSEAS May Be Waiting For You Right Now!!

ORDER FORM

Overseas Employment Guides
1727 SCOTT ROAD, SUITE C
BURBANK, CA 91504

I am enclosing \$10.00 cash, check or money order. Please send me your complete set of OVERSEAS EMPLOYMENT GUIDES immediately.

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

Or charge this order on your BankAmericard or Master Charge

BankAmericard Account No. _____



Expiration Date _____

Master Charge Account No. _____



Expiration Date _____

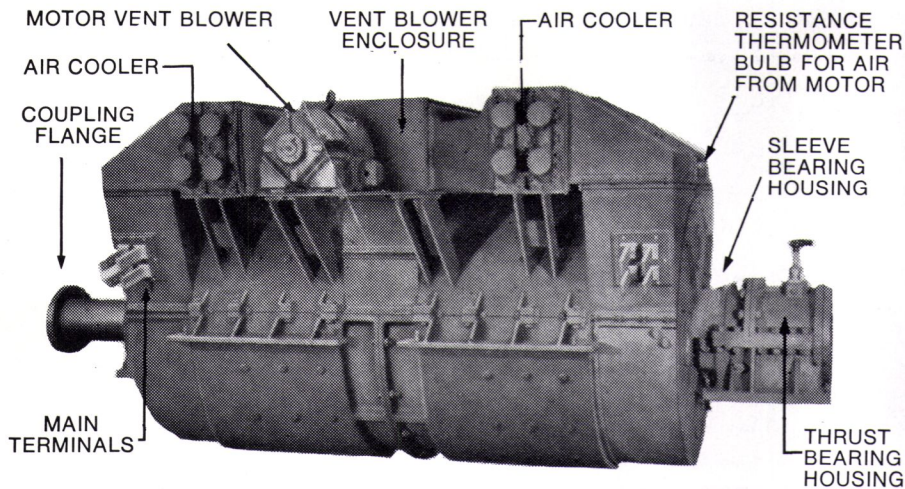
30 DAY MONEY BACK GUARANTEE

If you are dissatisfied with our Overseas Employment Guides, for any reason, simply return our Guides to us within 30 days and your \$10.00 will be refunded to you immediately. NO QUESTIONS ASKED.

ZIDELL HAS THIS EQUIPMENT AVAILABLE NOW!

4 only—2700 H.P. MOTORS

415 volts D.C.—280 RPM, Totally Enclosed



These DOUBLE ARMATURE SUBMARINE MOTORS would be excellent for: Drill Ships/Platform, Dredge Pump Drives or Mine Hoist Motors.

- 2 — Motors have been A-1 Reconditioned by a manufacturers shop and carry A.B.S. Certification.
- 2 — Motors are used and will be removed from a Submarine in the very near future.

1 only—3 Drum CLYDE HOIST

Model 10 with Swinger

ADDED FEATURES

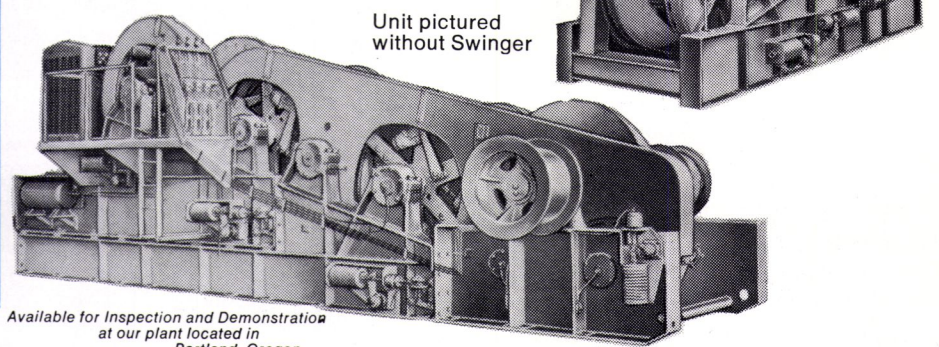
POWER: G.M. 8V-71 Diesel with 3 Stage Torque Converter 11,500 series and Air Compressor.
OP. CONTROLS: All Air, Air Paul and Air Friction Brakes with Controls console mounted at operators stand.
CLUTCH: Internal expanding band friction, two shoes, 50" dia. and 6" wide.
BRAKES: External contacting, single band, two piece construction, 57" dia. and 7" wide.
BEARINGS: Drums are taper roller bearing mounted. All shafts turn in Anti-friction bearings.
SWINGER: Two drum attached type with slack take up.

Less than 1,000 Hours operating time on Unit — Ready to work NOW!

HOIST SPECIFICATION

MODEL: Frame 10—3 drum with 2 drum swinger.
LINE PULL: 30,000 Lbs.
DRUM SIZE: Dia. 25"—lgth. 36"—Flgs. 57"
DRUM CAP.: 4170 Ft. of 1 1/2" 3500 Ft. of 1 1/4"
RATING: 37,500 lbs. S.L.P. at 150 FPM—Sec. on larger wire rope.

This Unit is in EXCELLENT CONDITION — Ready to work NOW—THE PRICE IS RIGHT!



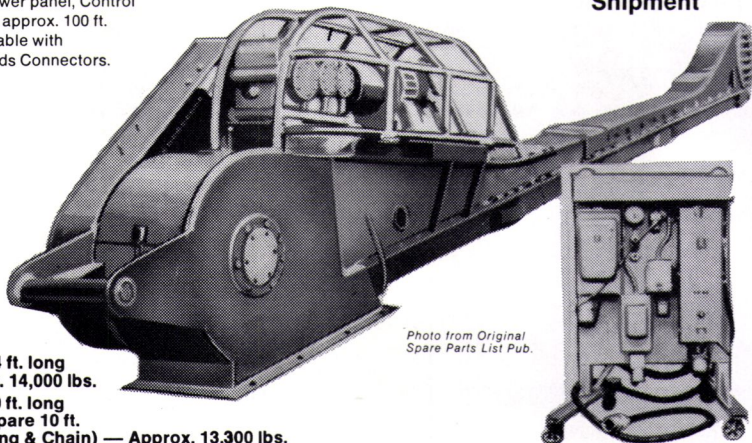
Available for Inspection and Demonstration at our plant located in Portland, Oregon

2—SHIP DISCHARGERS

• PORTABLE—Bulk Cargo • BUHLER—Type SKT-11"

TWO (2) IN STOCK Ready to go...

Complete with 440 volt, 3 phase, 60 cycle power panel, Control Stands and approx. 100 ft. of Power Cable with Crouse Hinds Connectors.



- 1 — Only 54 ft. long approx. 14,000 lbs.
- 1 — Only 40 ft. long (with spare 10 ft. of Tubing & Chain) — Approx. 13,300 lbs.

Each with 75 HP, TEFC Motor, 220/440 volts, 3 phase, 60 cycle and Twin Disc Fluid Coupling and Gear Reducer.
Model: 14.5 HCMR-16.
CAPACITY: Up to 150 Tons of Wheat per hour (prox. Max. Material Size 2" to 3").
Will Handle — Grain, Soy Beans, Phosphate, Nitrate, Potash, Kaolin, China Clay, Fertilizer, Alfalfa Pellets and other similar bulk materials.

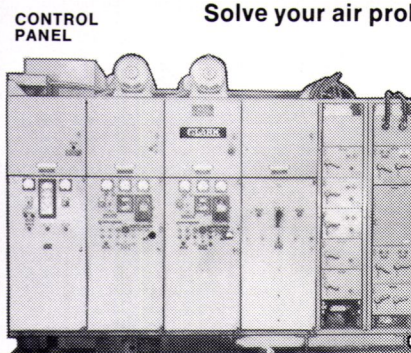
- Reasonably Priced
- Ready to work NOW!
- Immediate Shipment

CONDITION USED-EXCELLENT and priced to move NOW!

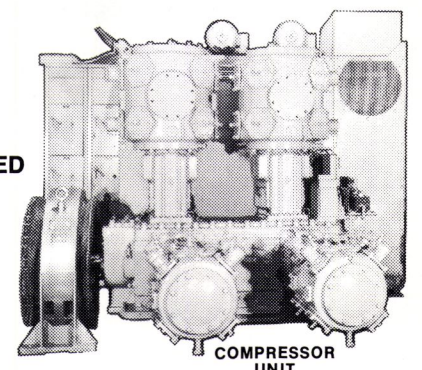
WRITE FOR FREE BROCHURE

4 only—2500 C.F.M., 125 P.S.I. AIR COMPRESSORS

Solve your air problems with these units and save!



Manufactured by Clark—Model CMA, Horizontal Opposed Cylinder Design. Powered by 500 H.P. Synch. Motor, 2400/4160 volts, 3 Phase, 60 Cycle, 600 RPM, and includes Starter.
Equipped with Self Contained, Closed Water System, Radiator Cooled.



- 1 — UNIT IS COMPLETELY OVERHAULED
- 1 — UNIT, USED — AS IS
- 2 — UNITS ARE INSTALLED IN A RAILWAY CAR.
- 2 — Railway Cars are available for these units, if so desired.

These Compressors are skid mounted, packaged units. They were originally installed in railway cars as Emergency Air Supply on the West Coast by the Navy Bureau of Yards and Docks.

Ideal for Shipyard or other large volume air consumers.

For additional information and Quotation, Please Contact:

Hugh Sturdivant

Sales Manager, Marine & Industrial Sales Div.

Phone: 503/228-8691

Telex: 36-0503 • Cable: "ZIDELL"

Marine and Industrial Sales Division of

ZIDELL
EXPLORATIONS, INC.
3121 S.W. Moody
Portland, Oregon 97201

SHIPBOARD EQUIPMENT

From

ZIDELL

EXPLORATIONS
INC.

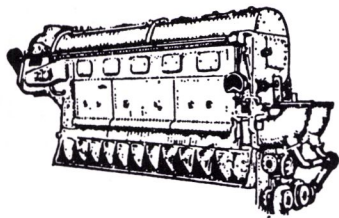
Contact: Hugh Sturdivant

3121 S.W. Moody Ave., Portland, Ore. 97201

Telex: 36-0503 • Cable "ZIDELL"

PHONE: A/C 503 • 228-8691

MARINE DIESEL ENGINES



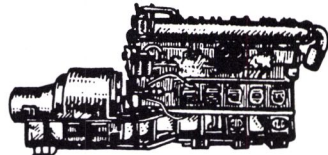
MATCHED PAIR . . . FAIRBANKS-MORSE Model 38D8-1/2 — 1 Port; 1 Starboard. Used condition, 1800 HP, 800 RPM, 2 cycle, 8 1/2" bore, 10" stroke, Air Start.. Complete with Westinghouse Reduction Gears, 2.216:1 ratio —with Hydraulic Coupling.

MARINE DIESEL GENERATORS

4—COOPER - BESSEMER, Marine . . . Model FSN 6, 6 cylinders, 375 HP, 900 RPM with General Electric generators, 250 KW 440/3/60.

2—SUPERIOR Diesel Engines . . . Model GBD8 Marine, 150 HP, 1200 RPM, 8 cylinder, with Delco Generators, 100 KW, 120/240 DC.

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



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

Many other units in stock

TURBINE GENERATORS—AC and DC Voltage

A. C.

4 — 1250 KW, GENERAL ELECTRIC Turbines: Type FSN, 525 PSI, 7938 RPM. Generators: 1250 KW, 450/3/60, 3600 RPM, Type ABT2.

7 — 750 KW, GENERAL ELECTRIC Turbines: Type FN3-FN24, 525 PSI, 10,033 RPM. Generators: 750 KW, 450/3/60, 1200 RPM, Type ATI.

2 — 500 KW, GENERAL ELECTRIC Turbines: Type FN3-FN20, steam 375/425 PSI, 6 Stage, 9987 RPM. Generators: 500 KW, 450/3/60, 1200 RPM, Type ATI.

D. C.

1 — 400 KW, WORTHINGTON Turbine, 200 PSI with Crocker-Wheeler Generator, 400 KW, 120/240 Volts DC, Type CDC, 1200 RPM.

7 — 300 KW, ALLIS-CHALMERS Turbines, 440 PSI, 5645 RPM, with Westinghouse Generators, 300 KW, 120/240 Volts DC, 1200 RPM.

2 — 300 KW, WESTINGHOUSE Turbines, 440 PSI, 5920 RPM, with Westinghouse Generators, 300 KW, 120/240 Volts DC, 1200 RPM.

2 — 300 KW, TERRY Turbines, 440 PSI, Type TM-5, 5965 RPM, with Crocker-Wheeler Generators, 300 KW, 120/240 Volts DC, 1200 RPM.

1 — 300 KW, ALLIS-CHALMERS Turbine, 440 PSI, 470 HP, 8000 RPM, with Allis-Chalmers Generator, 300 KW, 240/240 Volts DC, Type HO, 1200 RPM.

1 — 250 KW, DE LAVAL Turbine, 440 PSI, 360 HP, 10,000 RPM, with Crocker-Wheeler Generator, 250 KW, 240/120 Volts DC, Type CCD, 1200 RPM.

12 — 60 KW, WESTINGHOUSE Turbines, 89.4 HP, 200 PSI, 7283 RPM, Type M-20-EH, with Westinghouse Generators, 60 KW, 120 Volts DC, 1800 RPM.

DELAVAL, 450 PSI, 750°F, 300 KW, 120/240 DC.

**FAST REPLIES
ON YOUR
INQUIRIES!**



A partial
listing of our
stock from
**EX-NAVY and
MARITIME VESSELS**

Certifications to A.B.S.
or Lloyd's a routine

**SEE OUR 2-PAGE
SPREAD IN
ALTERNATE
ISSUES OF
M.R.**



Rebuilt
and Guaranteed

AXIAL FLOW FANS

LaDel, Sturtevant, etc.

In 440 AC, in 115 DC, and in 230 DC, and in sizes 1 HP through 20 HP. Completely reconditioned.

EXAMPLE LISTING:

Size A 1/4	Size A3	Size A8
Size A 1/2	Size A4	Size A10
Size A1	Size A5	Size A12
Size A2	Size A6	Size A16

Electro-Mechanical STEERING GEAR

1—SPERRY No. 2, 5 HP, 230 Volts DC, complete with Steering Winch, Controller Panel, Ballast Resistor, Electro-Mechanical Steering Stand—with Steering Wheel (with Pull-out Knob).



AIR COMPRESSORS

1—GARDNER-DENVER, 150 CFM, 125 PSI, Class WB, Size 7x5 3/4 x5, with Diehl Motors, 45 HP, 230 Volts DC, 870 RPM, 167 Amperes.

3—INGERSOLL - RAND, Size 5x5x4x4, 50 CFM, 150 PSI, with G.E. Motor, 20 HP, 440/3/60.

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

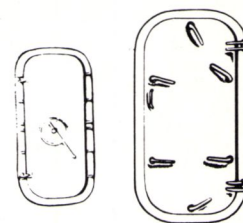
2—WORTHINGTON, 20 CFH, 3000 PSI, 4 stage, 585 RPM, with Worthington Steam Turbine, 47 HP, 5502 RPM.

FOR MARINE VALVES AND FITTINGS: A/C 503,
228-8691, ASK FOR "VALVE DIVISION."

FOR ELECTRICAL EQUIPMENT: A/C 503,
228-8691, ASK FOR "ELECTRICAL DIVISION."

STEEL WATERTIGHT DOORS

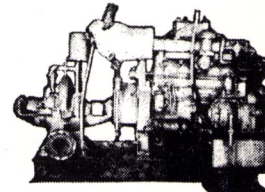
Used, Good
Condition,
Trimmed
Frames.



Many sizes available, priced reasonable. Some Typical Prices shown below. Please Inquire for other sizes.

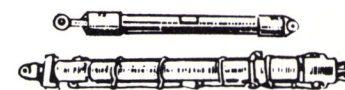
26"x48"-4 Dogs—\$60.00 ea.
26"x57"-6 Dogs—\$80.00 ea.
26"x60"-4 Dogs, 6 Dogs—\$86.00 ea.
26"x66"-6 Dogs, 8 Dogs—\$100.00 ea.
26"x66"-Q.A. Type—\$175.00 ea.

FIRE PUMPS



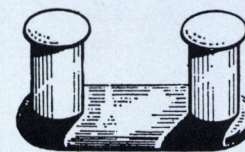
2—BUDA, Model 6-LD-468, Diesel Engine 6 cylinders, 100 BHP, Marine, Gardner Denver, centrifugal Pumps, Bronze, horizontally split case, 1000 GPM, 280' head, 6" suction and 5" discharge.

HYDRAULIC CYLINDERS

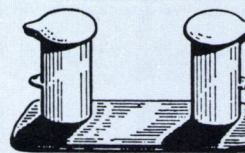


Bore	Overall Stroke	Rod Diameter	Retracted Length	Action
10"	12"	3.75"	45 1/2"	double
10"	26"	3.75"	58 1/2"	double
2"	8"	1 1/2"	20"	double
2.5"	15"	1.12"	25 1/2"	double
3"	8"	1.37"	15 1/2"	double
6"	8"	4"	144"	double

DOUBLE BITS



STYLE A



STYLE B

Used, clean, good, suitable for reuse. Predominantly 12" and 14" sizes, 2 styles. Many other sizes in stock, ranging from 6" to 18".

Specify quantity, size and style required for fast quotation.

ANCHOR CHAINS USED - GOOD



1 3/8" Size	2 1/4" Size
1 1/2" Size	2 3/8" Size
2 1/8" Size	

WILSON is STEAMSHIP!

We have served the Shipping Industry exclusively for nearly 40 years and maintain an active file of people experienced in all of its phases — including Port Engineers, Ship Construction Supervisors, M&R, sales, etc. — to relocate anywhere.

All salaries and fees negotiable.

Inquiries without obligation and in confidence.

WILSON AGENCY, Inc. 150 B'way, NYC 10038
(212) 732-2921-2-3-4-5

WANTED NO. 2 We need qualified men as assistant operation managers for our divisions on the East Coast and Gulf Coast. Experience would be in the production area of Maritime Service companies. Managers experienced in estimating, production supervision and customer relations. Salary, bonus and profit sharing. Excellent benefits.

Box 1116

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

MASTER MARINER

MARINE MARINER WITH BRITISH FOREIGN GOING CERTIFICATE (UNLIMITED) ALSO HOLDING MASTER, LIBERIAN AND PANAMANIAN, SEEKS A CHALLENGING POSITION WITH REPUTABLE COMPANY, AS MASTER OR SHORE BASED AS PORT CAPTAIN OR MARINE SUPT. NOW BASED NEW ORLEANS, BUT WILL RELOCATE. EXPERIENCED WITH DRILL SHIPS, SUPPLY VESSELS AND LARGE HP TUGS.

Reply Box 1117 **MARITIME REPORTER/ENGINEERING NEWS**
107 EAST 31 STREET NEW YORK, N.Y. 10016

POSITION WANTED NAVAL ARCHITECT

Experienced with Ship Design, Maintenance & Repair and Field Survey. BS/NA, MS/ME, P.E.
Seeks a position with an established company.

Box 1118 **Maritime Reporter/Engineering News**
107 East 31 Street New York, N.Y. 10016

PORT ENGINEER;

Available for employment on short notice.
Experienced in large diesels

Box 1115 **Maritime Reporter/Engineering News**
107 East 31 Street New York, N.Y. 10016

Position Wanted

Marine Engineer seeks marine management opportunity. Ten years marine experience which include, port engineer, new ship construction, purchasing, and data processing. Engineering degree and MBA. Mid thirties — will relocate anywhere in USA.

Box 1101 **Maritime Reporter/Engineering News**
107 East 31 Street New York, N.Y. 10016

POSITION WANTED

Retired Naval Officer with 13 years business experience in the marine field seeks employment with a progressive firm in the merchant marine field. Business experience includes Program Manager for a large Navy sonar system, president of a subsidiary, product line manager for a new system in merchant marine field, vice-president marketing.

Advertising experience, work well with people. Capable in presentations, willing to travel. Willing to relocate.

Box 823

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

EMPLOYMENT SPECIALISTS IN THE MARINE INDUSTRY

Job opportunities in marine professions. Naval architects, marine engineers, shore-based marine administration; mechanical, structural, and other disciplines in offshore, marine and shipbuilding industries.

GLOBE PERSONNEL CONSULTANTS, INC.
2727 KIRBY, #517 HOUSTON, TEX. 77098
713/526-3748

DIESEL ENGINE DISTRIBUTORS WANTED

A world leader in the diesel engine industry is looking for established distributors in the United States. These distributors will handle the sales, parts distribution and service of diesel engines for industrial and marine applications ranging from 31 to 860 BHP (1,000 to 3,000 RPM).

For further information write or call

Alco Industrial Power, Inc.
3572 East T. C. Jester
Houston, Texas 77018
713/680-8881

POSITION WANTED

17 years experience in Marine Communications and Navigation Electronics. Background includes engineering as well as marketing management experience. Currently employed. Desire position in greater Port of New York area.

Box 1005 **Maritime Reporter/Engineering News**
107 East 31 Street New York, N.Y. 10016

WANTED RAIL BARGE

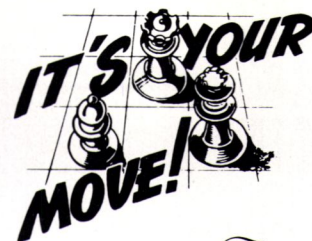
Great Lakes Area
Reply P.O. Box 1120
Windsor, Ontario Canada

DUMP BARGES Wanted

Capacity from 1000 yds.
up to 2000 yds.

Call or Write

General Construction Co.
P. O. Box 3845
Seattle, Wn. 98124
Attn: Dick Barber
(206) 767-2300



Call
The Barge People

WE RENT BARGES

AVAILABILITY INCLUDES:

OIL BARGES
SHALE BARGES
DECK SERVICE BARGES
OCEAN CERTIFIED DECK BARGES

A PART OF OUR LARGE AND VARIED FLEET

McDONOUGH MARINE SERVICE

NEW ORLEANS
(504) 949-7586
TELEX 58-4393
P. O. BOX 26206
NEW ORLEANS, LA. 70186

HOUSTON
(713) 452-5887
P. O. BOX 233
CHANNELVIEW, TEX. 77530

PARKERSBURG
(304) 485-4494
TELEX 86-9412
P. O. BOX 1825
PARKERSBURG, W. VA. 26101

54 FT. PUSH BOAT FOR SALE OR BARE BOAT CHARTER



54'x20'x76", 2 years old, excellent condition, 800 horsepower, two Detroit Marine Diesel 12V-71 engines, 6:1 reduction, fully equipped including Konel Radar and 2 ship-to-shore radios. Contact Rogers Beall, P.O. Box 486, Slidell, Louisiana 70459. 504/641-2882

NEW OCEAN DECK BARGE FOR CHARTER
160'x40'x9'10", 8 cpts, 3/8" hull, 1100#/sq. ft. deck strength, 1150 ST capac. @ ABS loadline, 12/5/77 U.S. Gulf, offering several larger & smaller deck barges.

Houston Barge & Boat Sales c/o Jim Brooks
8007 Lorrie, Houston, Tex. 77025 #713-665-7725

COFFIN BOILER FEED PUMPS

DEB — DE — CG — F
COMPLETE PUMPS or PARTS

Exchange or Sale

Nicolai Joffe Corporation

SAN FRANCISCO (415) 761-0993
445 Littlefield Ave. (Box 2445)
So. San Francisco, CA 94080
TWX 910-371-7248



NEW YORK
SALES OFFICE
(212) 832-3320

BEVERLY HILLS
MAIN OFFICE
(213) 878-0650

SYNCRON LIFT® DRYDOCKS AND TRANSFER SYSTEMS

Estimates at no cost or obligation
PEARLSON ENGINEERING CO., INC.
 P.O. BOX 8/MIAMI, FLA. 33156/(305) 271-5721
 TELEX: 051-9340 / CABLE: SYNCRONLIFT

WINCHES—Steam or Air Operated

Stockless Anchors 3,000 lbs. through 27,500 lbs. in stock, FOB Jersey City

Large inventory of surplus chain and fittings

Supply of new chain, including ten shots of 2 5/16" and twenty shots of 2 5/8"

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

Spare parts for all steam winches

STANDARD STEAM WINCH CO., INC.

Agents for The Crosby Group
 16 Beaver St., N.Y., N.Y. 10004 212/269-1557

U. S. FLAG OCEAN TUG FOR SALE

117' x 30' x 18'

Built 1944

Rebuilt & repowered 1960

Under 400 gross tons

ABS ocean load line

Main engine-Fairbanks-Morse 12 cyl. OP rated 2160 continuous horsepower (ABS rating)

Pilothouse controls (direct reversing main engine)

Towing capstan

50,000 gals. fuel oil capacity

Availability prompt

PRICE—\$300,000 as-is, where-is U.S. Gulf

For further information, contact William J. Hall, Maxwell Harris, 148 State St.

Boston, Mass. 02109

Broker inquiries welcomed.

FOR SALE: Vessel and Business

M/V "Moss Harbor"—Coast Guard Certified Freight Vessel—Lakes, Bays, Sounds and Cook Inlet Alaska. Presently engaged on Cook Inlet Alaska in beach landing, Platform supply, overpipeline diving and research work. Completely fitout and sailing. 200 ton cargo capacity or four forty foot trailers roll on roll off. Can carry Hydro carbons on deck in approved tanks. Further specs on request.

Write: Moss Harbor Marine, Box 483, Kenai, Alaska 99611

RAINBOW MARINE ORGANIZATION CO. GENERAL SHIP REPAIRS

CALL PETROS THEMELIS (212) 721-5051, 5052
 TELEX: IIT 426-024 RAINUI

HEAD OFFICE
 31-92 30TH STREET
 L. I. CITY, N. Y. 11106

SERVICE STATION
 40, SUNNYSIDE, L.I.C. 11104
 N. Y. S. LIC. #206003

FORCED DRAFT BLOWERS FOR SALE

4 — UNUSED FORCED DRAFT BLOWERS (2 CLOCKWISE, 2 COUNTERCLOCKWISE ROTATION). HORIZONTAL, DOWN BLAST ARRANGEMENT, BACKWARD CURVED BLADES, TWO BEARING SUPPORT. SUITABLE FOR EITHER MOTOR OR TURBINE DRIVE. IMPELLER AND CASING HOT DIPPED GALVANIZED STEEL. BEARINGS SKF SPHERICAL ROLLER TYPE, GREASE LUBRICATED.

36 INCH DIAMETER WHEEL. CAPACITY AT 1770 RPM — 35,000 CFM AT 7.5 INCH W.G. STATIC PRESSURE. MAXIMUM DIRECT DRIVE SPEED 2720 RPM, BELT DRIVE 2600 RPM. AVAILABLE FOR INSPECTION IN WORCESTER, MASS.

FOR FURTHER DETAILS PHONE:
 (212) 487-2856

HYDRAULICS

SERVICE•REPAIR•PARTS•CONSULTING CUNNINGHAM MARINE HYDRAULICS CO., INC.

201 Harrison St. • Hoboken, N.J. 07030

Phones: Hoboken (201)792-0500

Phones: New York (212)267-0328

TWX 710-730-5224 CMH HBKN



FOR SALE OR LEASE

6.2 Acres on HYLEBOS WATERWAY

1601 Taylor Way

TACOMA, WASHINGTON

with 30,600 ft. Building 15 ton overhead crane. Ideal for boat builder.

Contact

JOSEPH SIMON & SONS, INC.

2202 E. River Street

Tacoma, Wash. 98421

Tel. 206-272-5112

FOR SALE

- 1 — Western Gear 2 1/16 Anchor Windlass 75 H.P., 3/60/440, Nearly New—Bargain
- 8 — 40/50 H.P. E. Dynamic 230 VDC Motors 1310/1750 R.P.M., Cmpd. Wound, DPBB
- 5 — 25 H.P. Century 230 VDC Motors 1750 R.P.M., St. Shunt, DPBB

Quantity of A.C. & D.C. Motors and Generators Diesel Generators, Turbo-Generators — New, Used & Rebuilt

AETNA ELECTRIC MOTOR CO.

505 N. Belt East Suite 440 Houston TX 77060

Call Collect—(713) 448-6542

"We'll purchase your surplus electrical equipment."

TURBINE GENERATORS & PARTS

From Stock

300 KW — 400 KW — 500 KW — 600 KW
 750 KW — 1000 KW — 1250 KW — 1500 KW

American Manufacturers

Nicolai Joffe Corporation

SAN FRANCISCO (415) 761-0993
 445 Littlefield Ave. (Box 2445)
 So. San Francisco, CA 94080
 TWX 910-371-7248



NEW YORK
 SALES OFFICE
 (212) 832-3320

BEVERLY HILLS
 MAIN OFFICE
 (213) 878-0650

FOR SALE

Electric D.C. Propulsion System 1000 Shaft H.P.

Allis Chalmers Generator 814KW, 560 V.D.C.
 750 RPM 120 Volt Excitation

Allis Chalmers Motor 1020 H.P., 560 V.D.C.
 200/875 RPM, 120 Volt Excitation

Farrel Birmingham Reduction Gear Type SMR,
 Size 30/18, 1000 H.P. 875-200 RPM

Electrical Control Stand

Call Mr. Fred Speidel at 212-442-0700



WELD-SALE PLATENS
 2-1/2' x 5' IN STOCK 4' x 4'
 5' x 5' 5' x 8'
 TOOLING, STANDS & LEGS IN STOCK

WELDSALE CO.

Div. J.A. Cunningham Equip., Inc.

2151 DREER ST., PHILA., PA. 19125

215-739-7474

Anchors-Chain

3 Each 14,000 lbs. Baldt type 19¢ pound.

14 shots 2-5/8" stud link chain 12¢ pound.
 Good condition.

Lancaster Metals Inc.
 Port Isabel, Texas 78578

P.O. Box 1214
 512/943-6471

GM Parts

SAVE 50%! *

*(off current domestic list price)

CRANKCASE

6-278A
 P/N 3269476

8-278A
 P/N 3322106

12-278A
 P/N 3322957

MANIFOLDS

6-278A
 P/N 3276443

8-278A
 P/N 3311414

12-278A
 P/N 3249789

CRANKSHAFT

6-278A
 P/N 3274264

8-278A
 P/N 3238149

12-278A
 P/N 3273498

We Also Have: PISTONS, RINGS AND LINERS

Call Now!

DIESEL SYSTEMS INC.

77 Mark Drive
 San Rafael, Calif. 94903

(415) 479-2721 • Cable: DSILYON • Telex: 34-479

IN THE EAST call: Miami Diesel Service Corp.
 (305) 635-2809 Telex: 515-687

MONTHLY MARINE SPECIALS

FOR SALE

A — STEEL DIESEL TUGBOATS

- (a) Built 1952 (Single Screw)
100' x 26' x 12.8' 1600 HP \$395,000.00
(b) Rebuilt 1958 (Single Screw)
102' x 25' x 12' 1500 HP \$195,000.00

B — TWO EACH—STEEL DECK BARGES

- 112' x 32' x 10' Cap: 650 T Built 1948 \$60,000.00
90' x 30' x 9' Cap: 400 T Built 1953 \$50,000.00
80' x 30' x 9' Cap: 350 T Built 1968 \$50,000.00
60' x 20' x 4 1/2' Cap: 100 T Built 1965 \$20,000.00

C — TWO EACH—STEEL COVERED BARGES

- 90' x 30' x 9' Cap: 400 T Built 1953 \$50,000.00
80' x 30' x 9' Cap: 350 T Built 1968 \$50,000.00

Charter prices upon request.



MOWBRAY'S
TUG & BARGE
SALES CORP.

21 WEST ST. NEW YORK N.Y. 10006
TELEPHONE (212) 943-7070

Europe's Largest Marine Stocks

FACTORY RECONDITIONED

WITH CERTIFICATES

- | | |
|-----------------------|-----------------|
| Anchors (1500) | (60) Generators |
| Chain Cables (3000 +) | (250) Pumps |
| Winches (150) | (35) Lifeboats |
| Windlasses (50) | (20) Gangways |
| Accommodation | |
| Ladders (30) | Spare Parts |

PROMPT DELIVERY ALL PORTS

ASK FOR OUR STOCKLIST

WILLEM POT B.V.

45 Stationsplein—Rotterdam

HOLLAND

TELEX: 22496

Phone: 11 98 70

Grams: "Windlass"

Delaval Oil Purifiers

- | | |
|--------------------------|----------------------|
| 2 Each Model PX-209-15-F | 2 Each VIB 1924-C |
| 2 Each HVB 1924-C | Excellent Condition. |
| Lancaster Metals Inc. | P.O. Box 1214 |
| Port Isabel, Texas 78578 | 512/943-6471 |

FOR SALE (2) Marine 4600 KW 2700v 90 cycle Brand New Steam Turbine Generators, orig. standby for destroyer escort, new 1942, never used.
75 ton LORAIN PNEU. TIRED CRANE, 80' boom, 20' long jib, hydr. outriggers model MC-760, 220 HP, good condition
140 ton P & H Mobile Crane, 270' boom, 1971, 60' jib
175/25 ton Shepard Niles O/H, 100' span, cab oper. 230v DC
Eveready; Box 1780; Bpt., Ct. 06604 (203) 334-9471-2

SHIPS PARTS

MARINE PARTS
NOW DISMANTLING

Engine Parts • Electric Motors
Pumps • Generators • Many
other Surplus and Supplies Available
One of the West Coast's Largest Ship
Dismantling Operations.

SCHNITZER INDUSTRIES

American Ship Dismantling Operations
4200 N.W. Front, Portland, Ore. 97210
Phone (503) 224-9900
W.U. Telex: 36-0144 PTL

Cable: SCHNITZERBRO, PTL

Mailing address: 3300 N.W. Yeon Ave.
Contact — Bruno Moreschi, Sales Mgr.

RIVER TERMINAL DEVELOPMENT COMPANY

The Largest Inventory of Used Equipment
in America

MARINE DIESEL GENERATORS

- 6 Ea. — Fairbanks Morse 38-1/8 D 8-1/2 O.P.
(Mexican Hat) Engines Drive Westing-
house Generator at 1375 KW 900
V.D.C.
6 Ea. — Fairbanks Morse Mod. 38E5 1/4, 6
Cylinder O.P. A.C. Generator, 200
KW, 250 KVA, 450 V 321 Amp., 900
RPM 3 Ph., 60 Cycle.
9 Ea. — G.M. 8-268-A 339 HP, 1200 RPM
Westinghouse Gen. 200 KW, 250
KVA, 450 V-AC, 320 Amps, 3 Ph.,
60 Cycle.
4 Ea. — G.M. 3-268-A 143 HP Gen. 100 KW,
450 V. AC, 3 Ph., 60 Cycle.

MARINE PROPULSION DIESEL ENGINES

- 1 Ea. — Nordberg Serial No. TSM-216230
D.H.P. 1700-hp
Bore 21 1/2" Stroke 29"
1 Ea. — Busch Sulzer main engine #1477
type 8-DHBM-27 1/2 180 rpm BHP
1700 — B.S. 20 1/2 x 27 1/2
1 Ea. — Hamilton main engine size 21.5x27.5
180 rpm engine #8103

ANCHORS AND CHAIN

CONTACT:

MR. MARIO PANZA
RIVER TERMINAL DEVELOPMENT COMPANY
PORT KEARNY
SOUTH KEARNY, NEW JERSEY 07032
TELEPHONE: (201) 589-0063
TWX — 710-995-4466

Aqua Chem 100,000 GPD Distilling Plant 3 3/8" Dilok Anchor Chain

PUMPS

Deepwell, Cargo, Fuel, Fire,
Lube Oil, Booster, Condensate,
Salt Water, Hydraulic-Vacuum,
Electric, and Diesel Driven

WINCHES

Electric and Hydraulic Cargo
Vane Axial Fans

COMPRESSORS

Air & Refrigeration
Electric Motors, AC, 440V, 60C, 3PH
Motor Generators
Hydraulic Cylinders

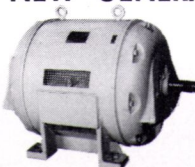
UNION MINERALS

and
ALLOYS CORPORATION

CONTACT:

Gunter Bilstein
Berth 52
San Pedro, CA 90731
Telephone: (213) 831-1242
831-1243 831-1344

NEW GENERAL DYNAMICS MOTOR



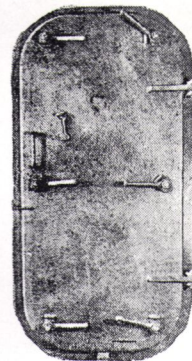
504S type TN-125/60-440/3/60
— 3490/1775 RPM — 152/92 —
FSN-6105-16-6997 — ball bearing
— dripproof.

THE BOSTON METALS COMPANY

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

FOR SALE

NEW WATERTIGHT DOORS



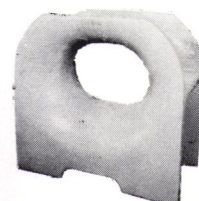
6-Dog right and left hand hinged
doors with frames. Constructed of
1/4" steel plate and meet Coast
Guard regulations for above deck
as well as below deck use. All
dogs are bronze bushed.

SIZE

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

EACH DOOR

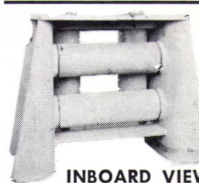
IMMEDIATE DELIVERY



NEW 7" RADIUS PANAMA CHOCKS

(MEET PANAMA REGULATIONS)

With extended legs for welding
to deck. 14" Wide on base —
length 28" — height 27 1/4". IM-
MEDIATE DELIVERY FROM STOCK.

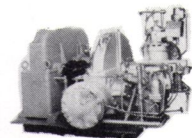


UNIVERSAL FAIRLEADS

7 1/2" Rollers — pin size 2 1/2".
Opening between vertical rollers
10" — between horizontal rollers
4". Epoxy coated.

700 HP CARGO PUMP TURBINE AND GEARS

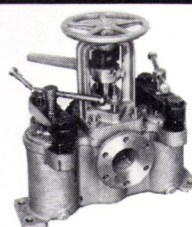
with oil operated hydraulic governor



TURBINE: Mfg by GE—type DP—
700 HP—5000 RPM—inlet pressure
560 PSIG—exhaust pressure 2
PSIG—temp. 490°—steam inlet 6"
—outlet 10". Pump rotation is
clockwise when standing at pump
end and facing turbine & gear.
Turbine is single stage with 2-row bucket wheel—
pressure lubricated bearings—carbon shaft packing.
Speed is regulated by oil-relayed governor system.
REDUCTION GEAR: 5000 RPM to 1425 RPM output.
Typical turbine serial #126910/911. G.E.I. Book 27200B.

THE BOSTON METALS COMPANY

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



UNUSED 2" BRONZE STRAINERS (DUPLEX)

Flanged — mfg by Derbyshire Machine
& Tool Co. Flange has 6 holes 9/16".
Can be bored to larger size.

\$450

THE BOSTON METALS COMPANY

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

ALCO HEAT EXCHANGER



29 Square foot shell and tube
type. Size 1024 — oil to water.
2 1/4" Oil inlet and outlet — 3 1/2"
water inlet and outlet.

THE BOSTON METALS COMPANY

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

BUYERS DIRECTORY

AIR CONDITIONING AND REFRIGERATION—REPAIR & INSTALLATION

Bailey Refrigeration Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231
Nance Industries, P.O. Box 1547, Beaumont, Texas 77704
Stal-Laval, Inc., 400 Executive Blvd., Elmsford, N.Y. 19523
Way-Wolff Associates Inc., 45-10 Vernon Blvd., Long Island City, N.Y. 11101

AUTOMATION EQUIPMENT

Siemens Corporation, 186 Wood Avenue South, Iselin, N.J. 08830

BABBITT METALS

E.L. Post & Co., Inc., 233 Broadway, New York, N.Y. 10007

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
Morse Chain Company, Div. Borg Warner, So. Aurora St., Ithaca, N.Y. 14850
Waukesha Bearings Corp., P.O. Box 798, Waukesha, Wisc. 53186

BLASTING—Cleaning—Equipment

Atlantic Sandblasting & Coatings, Inc., 505 Faulkenburg Road, Tampa, Florida 33619
Aurand, 1270 Ellis Street, Cincinnati, Ohio 45223
Clemco Industries, 2177 Jerrold Ave., San Francisco, Ca. 94124
Wheelabrator-Frye, 621 S. Byrkit Avenue, Mishawaka, Ind. 46654

BOILERS

Combustion Engineering, Inc., Windsor, Connecticut 06095
Way-Wolff Associates Inc., 45-10 Vernon Blvd., Long Island City, N.Y. 11101

BOW THRUSTERS

Bird Johnson Company, 110 Norfolk St., Walpole, Mass. 02081
Maritime Industries Ltd., 6307 Laurel St., Burnaby, B.C., Canada V5B 3B3
Omnithruster Inc., 10880 Wilshire Blvd., Suite 614, Los Angeles, CA 90024
Propulsion Systems Inc., 21213 76th Ave. South, Kent, Wash. 98031
Schottel of America, Inc., 21 N.W. South River Dr., Miami, Fla. 33128

BROKERS

Capt. Astad Company, Inc., 231 Carondelet St., New Orleans, La. 70112
Gulfwide Marine Inc., 2150 West Bank Expressway, Harvey, LA 70058
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
Riggs Marine Corp., 29 Broadway, New York, N.Y. 10006
Vensport, Apartado Postal No. 1201, Maracaibo, Venezuela

BUNKERING SERVICE

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

CHOCKING SYSTEMS

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

COILS—Cooling, Heating, Ventilating

Colmac Coil, Inc., Colville, Wash. 99114

CONTAINERS—Cargo Container Handling

Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501

CONTAINER LASHINGS & COMPONENTS

Line Fast Corp., 805 Grundy Ave., Holbrook, N.Y. 11741

CONTROL SYSTEMS

Automated Marine Systems Division, Litton Systems Canada Limited, 21101 Oxnard St., Woodland Hills, CA 91364
Delaval Turbine Inc., (Gems Sensors Div.) Spring Lane, Farmington, Conn. 06032
Henschel Corporation, 14 Cedar St., Amesbury, Mass. 01913
William E. Hough Co., 1101 N.W. Ballard Way, Seattle, Wash. 98107
Propulsion Systems Inc., 21213 76th Ave. South, Kent, Wash. 98031
Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.
Teleflex, Inc., P.O. Box 218, North Wales, Pa. 19454

COOLING EQUIPMENT

E. J. Bowman (Birmingham) Ltd., Aston Brook Street East, Birmingham B6 4AP, England

CORROSION CONTROL

Engelhard Industries, Capac Systems, 2655 U.S. Rt. 22, Union, N.J. 07083
Eureka Chemical Co., P.O. Box 2205, So. San Francisco, CA 94080
Woolsey Marine Industries, Inc., 100 Saw Mill Road, Danbury, CT 06810

CRANES—HOISTS—DERRICKS—WHIRLEYS

Clyde Iron, a unit of AMCA International Corp., Suite 200/Stockton Bldg., University Office Plaza, Newark, Del. 19702
Diamond Manufacturing Co., P.O. Box 603, Savannah, Ga. 31402
AB Hagglund & Söner, Rep. in U.S.A. by Stal-Laval, Inc., 400 Executive Blvd., Elmsford, N.Y. 10523
M. P. Howlett, Inc., 410 32nd St., Union City, N.J. 07087
Lake Shore Inc., P. O. Box 809, Iron Mountain, Mich. 49801
Marathon LeTourneau Company, P.O. Box 2307, Longview, Texas 75601
Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501
PHB (Pohlig-Heckel-Bleichert), Vereinigte Maschinenfabriken AG, Pohligstr. 1, D-5000 Köln 51, Cologne, Germany
Weeks Stevedoring Co., Inc., 216 North Avenue East, Cranford, N.J. 07016

DECK COATINGS—Non-Slip

American Abrasive Metals Co., 460 Coit St., Irvington, N.J. 07111

DECK COVERS—Chain Pipe

Lockstad Co., Inc., 179 West 5th Street, Bayonne, N.J. 07002
MacGregor-Comarain, Inc., 135 Dermody St., Cranford, N.J. 07016
Marine Moisture Control Co., 449 Sheridan Blvd., Inwood, N.Y. 11696
Mechanical Marine Co., 900 Fairmount Ave., Elizabeth, N.J. 07027

DECK MACHINERY—Cargo Handling Equipment

AB Hagglund & Söner, Rep. in U.S.A. by Stal-Laval, Inc., 400 Executive Blvd., Elmsford, N.Y. 10523
Appleton Marine, Appleton Machine Co., 618 S. Oneida St., Appleton, WI 54911
Markey Machinery Co., Inc., 79 S. Horton St., Seattle, Wash. 98134
New England Trawler Equipment Co., 291 Eastern Ave., Chelsea, Mass. 02150
Skagit Corporation, P.O. Box 151, Sedro-Woolley, Wash. 98284

DIESEL ACCESSORIES

Alnor Instrument Co., 7301 N. Caldwell Avenue, Niles IL 60648
Controls, Inc., 2655 U.S. Rt. 22, Union, N.J. 07083
Exhaust Controls, Inc., 2655 U.S. Rt. 22, Union, N.J. 07083
General Thermodynamics Corporation, 150 Ballardvale St., Wilmington, Mass. 01887
Piston Products, Inc., 1140 Bloomfield Avenue, P.O. Box 1079, West Caldwell, N.J. 07006

DIESEL ENGINES

Alco Power Inc., 100 Orchard St., Auburn, N.Y. 13021
Caterpillar Tractor Co., Industrial Division, Peoria, Ill. 61629
Cot Industries Inc., Power Systems Div., Beloit, Wisc. 53511
Electro-Motive Division General Motors, La Grange, Illinois 60525
Golden Marine Co., Inc., 160 Van Brunt St., Brooklyn, N.Y. 11231
Mitsui Engineering & Shipbuilding Co. Ltd., 6-4 Tsukiji, 5-chome, Chuo Ku, Tokyo, Japan

MTU/Motoren-und Turbinen-Union, Friedrichshafen GmbH, P.O. Box 2040, D-7990 Friedrichshafen, W. Germany
Oosterhuis Industries Inc., 1800 Engineers Road, Belle Chasse, La. 70037

H.O. Penn Machinery Co., Inc., 1561 Stewart Ave., Westbury, N.Y. 11590

Power & Propulsion Systems, Inc., 9821 Katy Freeway, Houston, Texas 77024

DOCK BUILDERS

DeLong Corporation, 29 Broadway, New York, N.Y. 10006
GHH Sterkrade, Ferrostaal Overseas Corp., 17 Battery Place, New York, N.Y. 10004

DIVERS

Undersea Systems, 112 W. Main St., Bay Shore, N.Y. 11706

DOORS—Watertight—Joiner

Overbeke-Kain Co., 20905 Aurora Rd., Cleveland, Ohio 44146
Walz & Krenzer Inc., 400 Trabold Road, Rochester, N.Y. 14624

ELECTRICAL EQUIPMENT

AMP Special Industries (Div of AMP Products Corp), P.O. Box 1776, Paoli, Pa. 19301
Argo Marine, Div. of Argo Intl., 140 Franklin St., New York, N. Y. 10013
General Regulator Div., Forney Engineering Co., 3405 Wiley Post Road, Addison, Texas 75001
Merrin Electric, 1120 Clinton Street, Hoboken, N. J. 07030
Oceanic Electrical Mfg. Co., Inc., 159 Perry Street, N.Y. 10014
Port Electric Supply, 157 Perry Street, N.Y., N.Y. 10014
Rapid Electric Co., Inc., P.O. Box 2915, Brookfield, CT 06804
Zidell Explorations, Inc., 3121 S.W. Moody St., Portland, Ore. 97201

EQUIPMENT—Marine

Alexander Industries, Inc., 1901 Julia Street, New Orleans, LA 70113
Argo Marine, Div. of Argo Intl., 140 Franklin St., New York, N. Y. 10013
Beaver Tool & Machine Co., 525 S.E. 29th St., Oklahoma City, OK 73109
Comet Marine Supply Corp., 157 Perry St., New York, N.Y. 10014
Kearfott Marine Products, 550 South Fulton Ave., Mount Vernon, N.Y. 10550
Nicolai Joffe Corp., P.O. Box 2445, 445 Littlefield Ave., So. San Francisco, Calif. 94080
Merrin Electric, 1120 Clinton Street, Hoboken, N.J. 07030
Thompson Marine Supply, Inc., 11 Broadway, New York, N.Y. 10004
Waukesha Bearings Corp., P.O. Box 798, Waukesha, Wisc. 53186

EVAPORATORS

Riley-Beard, Inc., P.O. Box 1115, Shreveport, La. 71130

FAIRLEADS—Blocks and Rigging

Crosby Group, Box 3128, Tulsa, Okla. 74101

FANS—VENTILATORS

Aerovent, Inc., #1 Aerovent Drive, Piqua, Ohio 45356
Camar Corp., 186 Prescott St., Worcester, Mass. 01605
Coppus Engineering Corp., 344 Park Avenue, Worcester, Mass. 01610
Dasic International Corp., 1035 Southeast Ninth Street, Portland, OR 97214
Merrin Electric, 1120 Clinton Street, Hoboken, N.J. 07030
Zidell Explorations, 3121 S.W. Moody St., Portland, Ore. 97201

FENDERING SYSTEMS—Dock & Vessel

Hughes Bros., Inc., 17 Battery Place, New York, N.Y. 10004
Johnson Rubber Co. (Marine Div.), 16025 Johnson St., Middlefield, Ohio 44062
Morse Chain Company, Div. Borg Warner, So. Aurora St., Ithaca, N.Y. 14850

FINANCING—Leasing

General Electric Credit Corp., P.O. Box 8300, Stamford, Conn. 06904
Kidder, Peabody & Co., Inc., 10 Hanover Square, New York, N.Y. 10005
Lazard Freres & Co., One Rockefeller Plaza, New York, N.Y. 10020
Lehman Brothers Inc., One Williams Street, New York, N.Y. 10004
Manufacturers Hanover Leasing Corp., 350 Park Av., N. Y., N.Y. 10022
Warburg Paribas Becker Inc., 2 First National Plaza, Chicago, Ill. 60670

FITTINGS & HARDWARE

Robson Backing Ring Co., 675 Garden St., Elizabeth, N.J. 07207
Superior Switchboard & Devices, Division of Union Metal Manufacturing Company, P.O. Box 590, Canton, Ohio 44701

FURNITURE

Bailey Joiner Co., Inc., 74 Sullivan Street, Brooklyn, N.Y. 11231
Inland Marine Industries, 1818 Harrison St., San Francisco, CA 94103

GANGWAYS

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

HULL CLEANING

Butterworth Systems, Inc., P.O. Box 9, Bayonne, N.J. 07002
East Coast Marine Associates, Inc., 80 Broad Street, New York, N.Y. 10004
MP Industries Inc., 1200 Ponca St., Baltimore, Md. 21224
U.S. Phosmarine Inc., 3186 Airway Ave., Bldg. F, Costa Mesa, CA 92626
Wheelabrator-Frye, 621 S. Byrkit Ave., Mishawaka, Ind. 46654

HYDRAULICS—Launching Equipment

Hydraulics, P.O. Box 1068, Goleta, Calif. 93017

INERT GAS—Generators—Systems

Airflow Engineering, Inc., 1901 Julia St., New Orleans, La. 70113

Gaulin Corp., Garden Street, Everett, Mass. 02149

INSULATION—Cloth, Fiberglass

Amatex Corp., 1032 Stanbridge Street, Box 228, Norristown, PA 19404
Bailey Carpenter & Insulation Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231
Cryogenic Structures Corp., 10 Fairway Court, Northvale, N.J. 07647
Haveg Industries, Inc. (A subsidiary of Hercules, Inc.) 900 Greenbank Road, Wilmington, Delaware 19808

INSURANCE

Adams & Porter, 1819 St. James Place, Houston, Texas 77027
Adams & Porter, 5 World Trade Center, Suite 6433, New York, N.Y. 10048
R.B. Jones Insurance, 911 Main St., Kansas City, MO 64199
R.B. Jones Insurance, 120 S. Central Ave., St. Louis, MO 63105
R.B. Jones Insurance, 160 Water St., New York, N.Y. 10038

KEEL COOLERS

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

LADDERS

Duo-Safety Ladder Co., 513 West 9th Ave., P.O. Box 497, Oshkosh, Wisc. 54901

MACHINE TOOLS

Master Machine Tools, Inc., 1300 East Avenue A, Hutchinson, Kansas 67501

MARINE CONSTRUCTION

Morrison-Knudsen Company, Inc., P.O. Box 7808, Boise, ID 83729

MARINE SERVICE

General Electric, Schenectady, N.Y. 12345
Siemens Corporation, 186 Wood Avenue South, Iselin, N.J. 08830

MATERIAL HANDLING SYSTEMS

W.A. Whitney Corp., An Esterline Company, 650 Race St., Rockford, Ill. 61105

MOORING SYSTEMS

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

NAVAL ARCHITECTS, MARINE ENGINEERS, SURVEYORS

Advanced Marine Enterprises, Inc., Suite 500, 2341 Jefferson Davis Highway, Arlington, Va. 22202

Alpha Engineers, 7215 N.E. 13th Ave., Vancouver, Wash. 98665
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

Anchorage Marine Services Incorporated, 844 Biscayne Boulevard, Miami, Florida 33132

J.L. Bludworth, P.O. Box 5217, Houston, Texas 77012
Boquer & Associates, P.O. Box 30184, New Orleans, La. 70190
Breit & Garcia, Naval Architects, 441 Gravier St., New Orleans, La. 70130

CADCOM Inc., 2024 West St., Suite B, Annapolis, Md. 21401
R.A.CADY-Marine Survey Practice, 2301 Leroy Stevens Road, Mobile, Ala. 36609

Catalina National, Inc., 1725 Monrovia Ave. (Suite A4), Costa Mesa, CA 92627

C.D.I. Marine Co., Regency East, Suite 222, 9951 Atlantic Blvd., Jacksonville, Florida 32211

Childs Engineering Corp., Box 333, Medfield, Mass. 02052
Coast Engineering Co., 711 W. 21st St., Norfolk, Va. 23517

Crandall Dry Dock Engrs., Inc., 21 Pottery Lane, Dedham, Mass. 02026
Francis B. Crocco, Inc., Box 1411, San Juan, Puerto Rico

C.R. Cushing & Co., Inc., One World Trade Center, New York, N.Y. 10048

Design Associates, Inc., 3308 Tulane Ave., New Orleans, La. 70119
Designers & Planners, Inc., 114 Fifth Ave., New York, N.Y. 10011

M. Mack Earle, 103 Mellor Ave., Baltimore, Md. 21228
Parker C. Emerson & Associates, 17935 Cardinal Drive, Lake Oswego, Oregon 97034

Christopher J. Foster, Inc., 14 Vanderventer Ave., Port Washington, N.Y. 11050

Friede and Goldman, Ltd., 225 Baronne St., New Orleans, La. 70112
Gibbs & Cox, Inc., 40 Rector Street, New York, N.Y. 10006

John W. Gilbert Associates, Inc., 58 Commercial Wharf, Boston, Mass. 02110

Phillip Gresser & Associates (PTE) Ltd., 122 Eng Neo Ave., Singapore 11

Morris Guralnick Associates, Inc., 550 Kearny Street, San Francisco, Calif. 94108

J.J. Henry Co., Inc., Two World Trade Center—Suite 9528, New York, N.Y. 10048

Hydraulics, Incorporated, 7210 Pindell School Road, Howard County, Laurel, Maryland 20810

Jantzen Engineering Co., 6655-H Amberton Drive, Baltimore, Md. 21227

James S. Kroger & Co., Inc., 3333 Rice St., Miami, Fla. 33133
Littleton Research and Engrg. Corp., 95 Russell St., Littleton, Mass. 01460

Robert H. Macy, P.O. Box 758, Pascagoula, Miss. 39567
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

Maritime Service Company, 1357 Rosecrans St., Suite B, San Diego, CA 92106

Rudolph F. Matzer & Associates, Inc., 13891 Atlantic Blvd., Jacksonville, Fla. 32225

John J. McMullen Associates, Inc., 1 World Trade Center, New York, N.Y. 10048

George E. Meese, 194 Acton Rd., Annapolis, Md. 21403
Metritape, Inc., 77 Commonwealth Ave., West Concord, Mass. 01742

Nelson & Associates, Inc., 2001 N.W. 7th Street, Miami, Florida 33125

Nickum & Spaulding Associates, Inc., 811 First Ave., Seattle, Wash. 98104

Ocean-Oil International Engineering Corporation, 3019 Mercedes Blvd., New Orleans, La. 70114

Miles G. O'Harra, steam control systems consultant, 9355 Milford Lane, Mentor, Ohio 44060

Pearlson Engineering Co., Inc., 8970 S.W. 87th Ct., Miami, Florida 33156

S.L. Petchul, Inc., 1380 SW 57th Ave., Fort Lauderdale, Fla. 33317
Proto-Power Management Corporation, P.O. Box 494, Mystic, Conn. 06355

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

Seaworthy Engine Systems, P.O. Box 327, Canton, Conn. 06019
George G. Sharp, Inc., 100 Church St., New York, N.Y. 10007

T. W. Spaetgens, 156 West 8th Ave., Vancouver, Canada V5Y 1N2
SRS Shipping Research Services Inc., 205 S. Whiting St., Alexandria, VA 22304

The Stanwick Company Maritime Systems Department, 3661 E. Virginia Beach Blvd., Norfolk, VA 23502

R. A. Stearn, Inc., 100 Iowa St., Sturgeon Bay, Wisc. 54235
Richard R. Taubler Inc., Treadway Towers, 9 E. Loockerman St., Dover, Delaware 19901

H.M. Tiedemann & Co., Inc., 295 Greenwich Ave., Greenwich, Conn. 06830

Timco, 951 Government St., Suite 2161, Mobile, Alabama 36604
Uhlig & Associates, Inc., 8295 S.W. 188th St., Miami, Florida 33157

Undersea Systems, 112 W. Main St., Bay Shore, N.Y. 11706
Wesley D. Wheeler Associates, Ltd., 104 East 40 St., Suite 207, New York, N. Y. 10016

NAVIGATION & COMMUNICATIONS EQUIPMENT

American Hydromath Co., Buckwheat Bridge Rd., Germantown, N.Y. 12526

Automated Marine Systems Division, Litton Systems Canada Limited, 21101 Oxnard St., Woodland Hills, CA 91364

Communication Associates, Inc., 200 McKay Road, Huntington Station, N.Y. 11746

Comsat General Corp., 950 L'Enfant Plaza, S.W., Washington, D.C. 20024

Dynell Electronics Corp., 536 Broad Hollow Road, Melville, N.Y. 11746

Edo Corporation, 13-10 111th Street, College Point, N.Y. 11356
Electro-Nav, Inc., 1201 Corbin St., Elizabeth Marine Terminal, Elizabeth, N.J. 07201

Griffith Marine Navigation, Inc., 134 North Avenue, New Rochelle, N.Y. 10801

Henschel Corp.,

BUYERS DIRECTORY (continued)

PACKING & JOINTING MATERIALS

Drew Chemical Corp., 701 Jefferson Rd., Parsippany, N.J. 07054
PAINT—Coatings, Protective
 Clearkin Chemical Corporation, Schiller & Allen Sts., Philadelphia, Pa. 19134

Eureka Chemical Co., P.O. Box 2205, So. San Francisco, CA 94080
 Farboil Company, 8200 Fischer Road, Baltimore, Md. 21222
 Hempel's Marine Paint, Inc., 25 Broadway, New York, N.Y. 10004
 International Paint Co., 17 Battery Place North, Suite 1150, New York, N.Y. 10004
 Mobil Chemical Co., Maintenance & Marine Coatings Dept., P.O. Box 250, Edison, N.J. 08817
 Products Research & Chemical Corp., (PRC Coating and Sealants Div.) 5430 San Fernando Road, Glendale, California 91203
 Union Carbide Corporation, 250 Park Avenue, New York, N.Y. 10017
 Woolsey Marine Industries, Inc., 100 Saw Mill Road, Danbury, CT 06810

PETROLEUM SUPPLIES

Shell Oil Co., 1 Shell Plaza, Houston, Texas 77002

PILOT LADDERS—Wood Products

A.L. Don Co., 58 Grant Avenue, Carteret, N.J. 07008

PIPE—HOSE—Cargo Transfer, Clamps, Couplings
 Camlock Flange Sales Corp., 449 Sheridan Blvd., Inwood, L.I., N.Y. 11696
 Kubota, Ltd., 22, Funade-cho 2-chome, Naniwa-Ku, Osaka, Japan
 Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030

PLASTICS—Marine Applications

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

PLATE

Welding Wholesale Co., Div. J.A. Cunningham Eqp., Inc., 2151 Dreer St., Philadelphia, Pa. 19125

PROPELLERS: NEW AND RECONDITIONED—SYSTEMS

Avondale Shipyards, Inc., P.O. Box 52080, New Orleans La. 70150
 J.W. Berg, S-430 90 Ockero, Gothenburg, Sweden
 Bird Johnson Company, 110 Norfolk St., Walpole, Mass. 02081
 Coolidge Propellers, 1601 Fairview Ave. East, Seattle, Wash. 98102
 Escher Wyss GmbH, P.O. Box 798, Ravensburg, Germany
 Lips BV, Lipsstraat 52, Drunen, Netherlands
 Propulsion Systems Inc., 21213 76th Ave. South, Kent, Wash. 98031
 Voith Schneider—U.S. Agent: Krupp International, Inc., 550 Mamaronck Ave., Harrison, N.Y. 10528

PROPULSION—Marine

Combustion Engineering, Inc., Windsor, Connecticut 06095
 Delaval Turbine Inc., Turbine Div., Trenton, N.J. 08602
 In-Place Machining Co., 1929 N. Buffman St., Milwaukee, WI 53212
 Maritime Industries Ltd., 6307 Laurel St., Burnaby, B.C., Canada V5B 3B3
 Port Electric Turbine Div., 155-157 Perry St., New York, N.Y. 10014
 Schottel of America, Inc., 21 N.W. South River Dr., Miami, Fla. 33128
 Stal-Laval, Inc., 400 Executive Blvd., Elmsford, N.Y. 10523

PUMPS—Repairs—Drives

Delaval Turbine Inc., IMO Pump Division, P.O. Box 321, Trenton, N.J. 08602
 FMC Corporation, Pump Division, 326 So. Dean Street, Englewood, N.J. 07631
 Hydro-Craft, Inc., 4223 Edgeland, Royal Oak, Mich. 48073
 Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030
 Terry Corporation, P.O. Box 1200, Windsor, CT 06101
 Worthington Pump Inc., P.O. Box 1250, Mountainside, N.J. 07092

RATCHETS

CM American, Division Columbus McKinnon Corp., P.O. Box 74, McKees Rocks, Pa. 15136

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
 Stal-Laval, Inc., 400 Executive Blvd., Elmsford, N.Y. 10523

RIGGING & BLOCKS

Crosby Group, P.O. Box 3128, Tulsa, Okla. 74101
 Superior Switchboard & Devices, Division of Union Metal Manufacturing Company, P.O. Box 590, Canton, Ohio 44701
 D. Van Beest En Zn.B.V., P.O. Box 57, Merwestraat 1-5, Sliedrecht, The Netherlands

ROPE—Manila—Nylon—Hawser—Fibers

American Mfg. Co., Inc., Willow Avenue, Honesdale, Pa. 18431
 Samson Ocean Systems, Inc., 99 High Street, Boston, Mass. 02110
 The Cordage Group, Columbian Drive, Auburn, N.Y. 13021
 Wall Rope Works, Inc., Beverly, N. J. 08010

RUDDER ANGLE INDICATORS

Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
 Hose McCann Telephone Co., Inc., 524 W. 23rd St., N.Y. 10011
 Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.

SCAFFOLDING EQUIPMENT

Trus Joist Corp., P.O. Box 60, Boise, Idaho 83707

SCALERS

Chicago Monarch, Box 9751, Cleveland, Ohio 44140
 Corrosion Dynamics, Inc., 1100 Walnut Street, Roselle, New Jersey 07068

SEWAGE—Pollution Control

Argo Marine, Pollution Systems Division, 140 Franklin St., New York, N.Y. 10013
 Baylor Company, P.O. Box 36326, Houston, Texas 77036
 Colt Industries, Water & Waste Management Operation, Beloit, Wisc. 53511
 Demco, Inc., P.O. Box 94700, Oklahoma City, OK 73109
 Eureka Chemical Co., P.O. Box 2205, So. San Francisco, CA 94080
 Engelhard Industries, Chloropac Systems, 2655 U.S. Rt. 22, Union, N.J. 07083
 LaMere Industries, Inc., (Marland Environmental Services and Clear Water, Inc.) 227 N. Main Street, Walworth, WI 53184
 Mapco, 1437 So. Boulder Ave., Tulsa, Okla. 74119
 Marine Moisture Control Co., Inc., 449 Sheridan Blvd., Inwood, L.I., N.Y. 11696
 Microphor, Inc., P.O. Box 490, Willits, CA 95490
 Red Fox Industries, P.O. Drawer 640, New Iberia, La. 70560
 St. Louis Ship FAST Sewage Systems, 611 East Marceau St., St. Louis, Mo. 63111
 Sigma Treatment Systems, 603 Dean Street, Brooklyn, N.Y. 11238

SHAFTS, SHAFT REVOLUTION INDICATOR EQUIP.

Armco Steel/Advanced Materials Div., 703 Curtis St., Middletown, OH 45043
 Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
 Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030

SHIPBREAKING—Salvage

American Ship Dismantlers, Inc., Division of Schnitzer Industries, 3300 N.W. Yeon Avenue, Portland, Ore. 97210
 The Boston Metals Co., 313 E. Baltimore St., Baltimore, Md. 21202
 General Metals of Tacoma, Inc., 1902 Marine View Dr., Tacoma, Washington 98422
 National Metal & Steel Corp., 691 New Dock St., Terminal Island, Cal. 90731
 Zideff Explorations, Inc., 3121 S. W. Moody St., Portland, Ore. 97201

SHIP MODELS

Jas Foley & Son, 506 Seventh Street, Santa Monica, Calif. 90402

SHIPBUILDING STEEL

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

SHIPBUILDING—Repairs, Maintenance, Drydocking

Arab Shipbuilding & Repair Yard Co., P.O. Box 5110, Bab-Al-Bahrain Building, Bahrain, Arabian Gulf

Astilleros Espanoles, S.A., 17, Padilla, Madrid 6, Spain
 Avondale Shipyards, Inc., P.O. Box 52080, New Orleans La. 70150
 Bethlehem Steel Corp., Shipbuilding, 25 Broadway, N.Y. N.Y. 10004

Blohm + Voss AG, D-2000 Hamburg 1, P.O.B. 10 07 20
 Blohm + Voss Co., 55 Morris Ave., Springfield, N.J. 07081
 Bludworth Shipyard, Inc., (Subsidiary of Elpac, Inc.), 8502 Cypress St., Houston, Texas 77012

Boston Marine Industrial Park, Public Drydock No. 3, 60 Congress St., Boston, Mass. 02109
 Carrington Slipways Pty. Ltd., Old Punt Road, Tomago, N.S.W., Australia 2322

Conrad Industries, P.O. Box 790, Morgan City, La. 70380
 Curacao Drydock Co., Inc., P.O. Box 153, Willemstad, Curacao, Netherlands Antilles

Dravo Corporation, One Oliver Plaza, Pittsburgh, Pa. 15222
 Dravo Steelship Corp., R.4, Box 167, Pine Bluff, Ark. 71602
 Equitable Shipyards, Inc., P.O. Box 8001, New Orleans, La. 70122
 FMC Corp., Marine & Rail Equipment Div., 4700 N.W. Front Ave., Portland, Oregon 97208

General Dynamics, Quincy Division, Quincy, Mass. 02169
 Gladding-Hearn Shipbuilding Corporation, 1 Riverside Avenue, Somerset, Mass. 02725
 Halter Marine Services, Inc., Route 6, Box 287H, New Orleans, La. 70126

Harland & Wolff Shipbuilding & Engineering, Queens Island, Belfast, Northern Ireland
 Havre de Grace, Havre de Grace, Md.
 Hillman Barge & Construction Co., P.O. Box 510, Brownsville, Pa. 15417

Hitachi Shipbuilding & Engrg. Co., Ltd., 47 Edobori 1-Chome, Nishi-Ku, Osaka, Japan
 Hongkong United Dockyards Ltd., Kowloon Docks, Hong Kong
 Hyundai Mipo Dockyard Co., Ltd., 456 Cheonha-dong, Ulsan, Korea
 Hyundai Shipbuilding & Heavy Industries Co., Ltd., 5 World Trade Center, Suite 679, New York, N.Y. 10048

Jeffboat, Inc., Jeffersonville, Ind. 47130
 Kawasaki Heavy Industries, Ltd., Kawasaki Kisen Kaisha, Ltd., 8 Kaigan-dori, Kura-ku, Kobe, Japan
 Keppel Shipyard Ltd., P.O. Box 2169, Singapore
 Kockums Shipyard, S-201, 10 Malmo 1, Sweden
 Lantana Boatyard, Inc., 808 N. Dixie Hwy., Lantana, Fla. 33460
 Lockheed Shipbuilding and Construction Co., 2929 16th Avenue, S.W., Seattle, Wash. 98134

Marathon Manufacturing Company
 Marathon LeTourneau Offshore Company, 1700 Marathon Building, 600 Jefferson, Houston, Texas 77002
 Marathon LeTourneau Gulf Marine Division, P.O. Box 3189, Brownsville, Texas 78520

Marathon LeTourneau Marine Division, LeTourneau Rural Station, Vicksburg, Mississippi 39180
 Marathon LeTourneau Offshore Pte., Ltd., P.O. Box 83, Taman Jurong Post Office, Singapore 22, Singapore
 Marathon Shipbuilding Company, P.O. Box 870, Vicksburg, Miss. 39180

Marathon Shipbuilding Company (U.K.) Ltd., Clydebank Dunbartonshire, G81-1YB, Scotland
 Marinette Marine, Ely Street, Marinette, WI 54143
 Matton Shipyard Co., Inc., P.O. Box 428, Cohoes, New York 12047
 Maxon Marine Industries, Inc., P.O. Box 349, Tell City, Ind. 47586
 J. Ray McDermott & Co., Inc., P.O. Box 60035, New Orleans, LA 70160

Mercantile Marine Engineering & Graving Docks Co., N.V., Antwerp, Belgium
 Misener Industries, Inc., 5353 Tyson Avenue, P. O. Box 13625, Tampa, Fla. 33681
 Mitsui Shipbuilding & Engrg. Co. Ltd., 6-4, Tsukiji 5-chome, Chuo-ku, Tokyo, Japan

Monark Boat Co., P.O. Box 210, Monticello, Ark. 71655
 Moss Rosenberg Verft A.S., P.O. Box 53, 1512 Jelay/Moss/Norway
 Murray & Stewart (Marine) (PTY) Ltd., Ocean Road-Table Bay Harbour, P.O. Box 1909, Cape Town 8000, South Africa
 National Steel & Shipbuilding Corp., San Diego, Calif. 92112
 Navimar U.S.A., One World Trade Center, Suite 3557, New York, N.Y. 10048

Neorion Shipyards Syros, Ltd., Syros, Greece
 Northwest Marine Iron Works, P. O. Box 3109, Portland, Oregon 97208
 O.A.R.N. (Officine Allestimento-Riparazioni Navi), P.O. Box 1395, Genoa, Italy 16100
 Paccini Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501

Pearlson Engineering Co., P.O. Box 8, Kendall Branch, Miami, Fla. 33156
 Perth Amboy Dry Dock Co., Perth Amboy, N.J. 08862
 Port Allen Marine Service, Inc., P.O. Box 108, Port Allen, LA 70767
 St. Louis Shipbuilding—Federal Barge, Inc., 611 East Marceau, St. Louis, Mo. 63111

Sasebo Heavy Industries Co., Ltd., New Ohtemachi Bldg., Chiyoda-ku, Tokyo, Japan
 Savannah Machine & Shipyard Co., P.O. Box 787, Savannah, Ga. 31402
 Sembawang Shipyard (Pte) Ltd., P.O. Box 3, Sembawang, P.O. Singapore, 27

Sumitomo Heavy Industries Ltd., 2-1 Ohtemachi 2-chome, Chiyoda-ku, Tokyo, Japan
 Swiftships Inc., P.O. Box 1908, Morgan City, LA 70380
 Terrin Shipyards, Societe Provencale des Ateliers Terrin, 287, Chemin De La Madraque, 13345 Marseille—Cedex 3, France
 Todd Shipyards Corp., 1 State St. Plaza, New York, N.Y. 10004
 Tracor Marine, P.O. Box 13107, Port Everglades, Fla. 33316
 Union Dry Dock & Repair Co., Foot of Pershing Road, Weehawken, N.J. 07087

Vancouver Shipyards Co., Ltd., 50 Pemberton Ave., North Vancouver, B. C., Canada
 Wiley Mfg., a unit of AMCA International Corp., Suite 200/Stockton Bldg., University Office Plaza, Newark, Del. 19702

SHIP STABILIZERS

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

SHOCK CORDS

Wm. B. Bliss Inc., 381 Park Ave. So., New York, N.Y. 10016

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

TANK CLEANING

Butterworth Systems Inc., P.O. Box 9, Bayonne, N.J. 07002
 Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030

TANK LEVELING INDICATORS

Gems Sensors Div., Delaval Turbine Inc., Spring Lane, Farmington, Conn. 06032
 GPE Controls, Inc., 6511 Oakton Street, Morton Grove, Illinois 60053

TOWING—Vessel Chartering, Lighterage, Salvage, etc.

Bay-Houston Towing Co., 805 World Trade Bldg., Houston, Texas 77002
 Chofin Transportation, Inc., 1414 One Shell Square, New Orleans, La. 70139
 Curtis Bay Towing Co., Mercantile Bldg., Baltimore, Md. 21202
 Henry Gillen's Sons Lighterage, 21 West Main St., Oyster Bay, N.Y. 11771
 Gulf Mississippi Marine Corp., 225 Baronne St., New Orleans, La. 70112

James Hughes, Inc., 17 Battery Pl., New York, N.Y. 10004
 McAllister Bros., Inc., 17 Battery Pl., New York, N.Y. 10004
 McDonough Marine Service, P.O. Box 26206, New Orleans, La.
 Moran Towing & Transportation Co., Inc., One World Trade Center, Suite 5335, New York, N.Y. 10048

Suderman & Young Towing Co., Inc., 918 World Trade Building, Houston, Texas 77002
 Turecamo Coastal & Harbor Towing Corp., One Edgewater St., Clifton, Staten Island, N.Y. 10305
 B.V. Bureau Wijsmuller, Postbus 510, Ijmuiden, Holland

TURBINES

Camar Corp., 186 Prescott St., Worcester, Mass. 01605
 Nicolai Joffe Corp., P.O. Box 2445, South San Francisco, CA 94080
 Terry Corporation, P.O. Box 1200, Windsor, CT 06101

UNDERWATER SERVICES

Undersea Systems, 112 W. Main St., Bay Shore, N.Y. 11706

VACUUM LIFT SYSTEMS

DP Way Corp., 3822 West Elm Street, Milwaukee, Wisc. 53209

VALVES AND FITTINGS

American-Darling Valve, Div. of American Cast Iron Pipe Co., P.O. Box 2727, Birmingham, Ala. 35202
 Contromatics Div., Litton Industrial Products, Inc., 222 Roberts St., East Hartford, CT 06103
 Demco, Inc., P.O. Box 94700, Oklahoma City, Okla. 73109

Flexitallic Gasket Co., 5 Linden Street, Camden, N.J. 08102
 Leslie Company, 399 Jefferson Road, Parsippany, N.J. 07054
 Marine Moisture Control Co., 449 Sheridan Blvd., Inwood, N.Y. 11696
 Mechanical Marine Co., 900 Fairmount Ave., Elizabeth, N.J. 07027
 Stow Manufacturing Co., 86 Bump Road, Binghamton, N.Y. 13902
 Valve Services Corp., 266 54th St., Brooklyn, N.Y. 11220
 Robert H. Wager Co., Inc., Passaic Avenue, Chatham, N.J. 07928
 Waukesha Bearings Corp., P.O. Box 798, Waukesha, WI 53186

VIDEO EQUIPMENT

Televideo Corporation, 1014 Wirt Road, Houston, Texas 77055

WATER PURIFIERS

Everpure Inc., 600 North Blackhawk Drive, Westmont, Ill. 60559

WEATHER FORECASTS

Fleetweather, Orbit Lane, Hopewell Junction, N.Y. 12533

WINCHES

Clyde Iron, a unit of AMCA International Corp., Suite 200/Stockton Bldg., University Office Plaza, Newark, Del. 19702
 Geomatic Co., Ltd., 7400 132nd St., Surrey, B.C., Canada
 Markey Machinery Co., 79 South Horton St., Seattle, Washington 98134

Skagit Corporation, a subsidiary of The Bendix Corporation, Sedro-Woolley, Washington 98284

WINDOWS

Kearfoot 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
 Elkan Electric Cable Co., 248 Third St., Elizabeth, N.J. 07206

WIRE ROPE—Slings

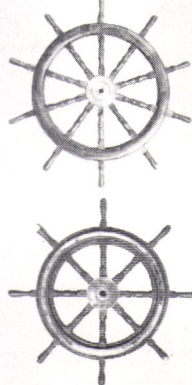
Armco Steel Corp., 703 Curtis St., Middletown, Ohio 45042
 Bethlehem Steel Corp., Bethlehem, Pa. 18016

WORK PLATFORMS—Self-Propelled

Chamberlain Manufacturing Corp., 845 Larch Ave., Elmhurst, Ill. 60126

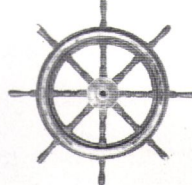
ZINC

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



New-Wood Steering Wheels

Beautiful hardwood finish, brass hubs. 36" and 48" over spokes. In stock; immediate delivery. Prices on request.



36" Ships Wheels

Brass bound on rim with brass hub marked "John Hastie & Co. Ltd—Greenock"

THE BOSTON METALS COMPANY

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



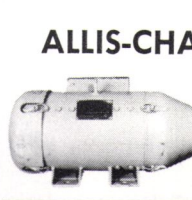
16" PORTLIGHT SPECIAL

These fine 16" heavy bronze portlights, with 3 dogs, were recently removed from cargo ships and represent the finest workmanship of its kind. Whether for actual or ornamental use, why buy replicas when you can buy the real thing. Complete with 3/4" glass, 5/8" Spigot. Before shipment, all paint removed and bronze polished.

**PRICED TO SELL
QUANTITY DISCOUNTS AVAILABLE**

THE BOSTON METALS COMPANY

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



1 KW ALLIS-CHALMERS M.G. SETS

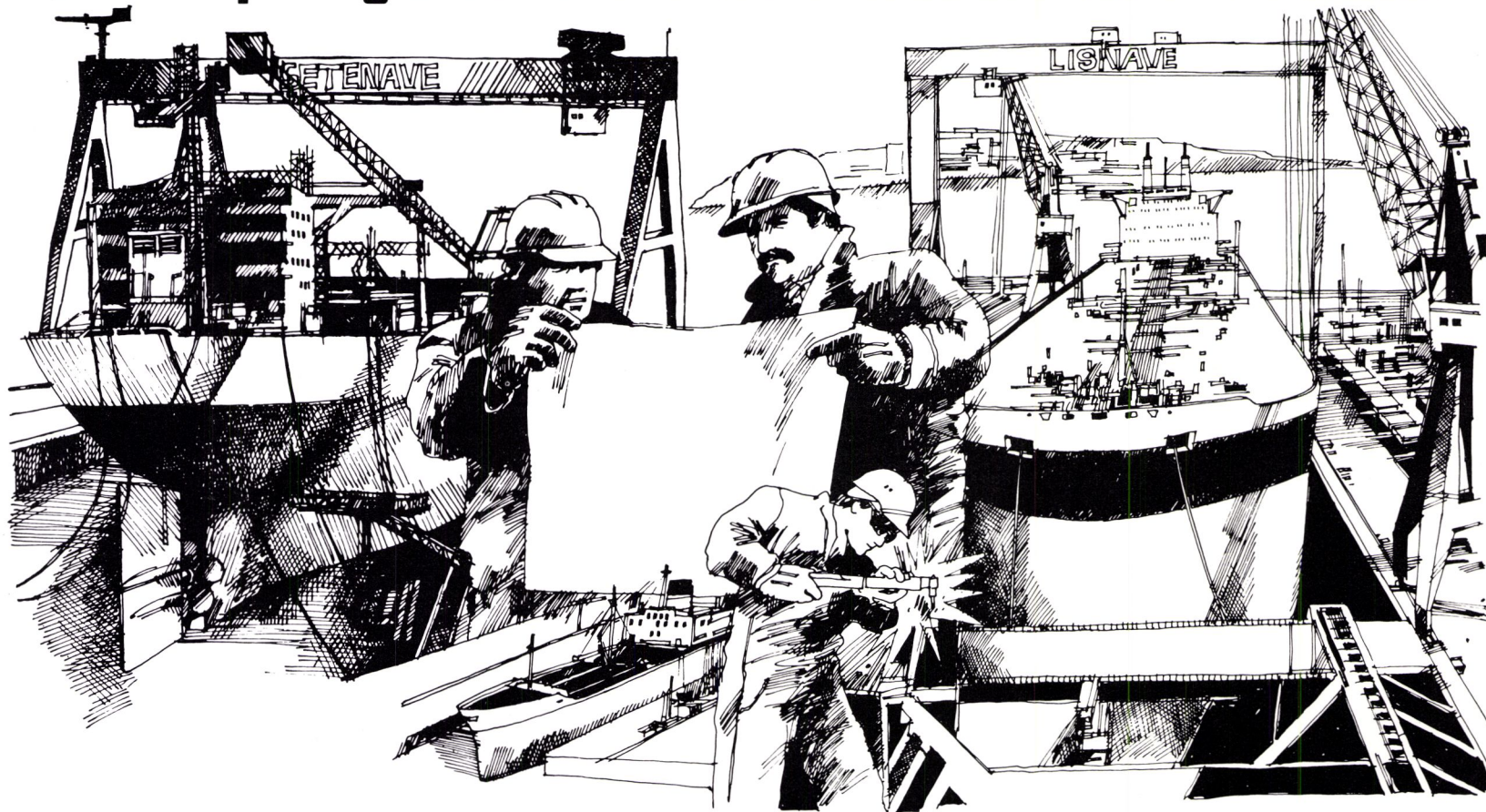
Input 230 volts DC — 6.6 amps.
Output 1 KW—120 volts—single phase—10.4 amps—continuous duty.

THE BOSTON METALS COMPANY

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

OUR DRYDOCKING CAPACITY KEEPS ON GROWING

2 new repairing docks for 350.000 and 700.000 tdw are available



The highest quality of ship repair service



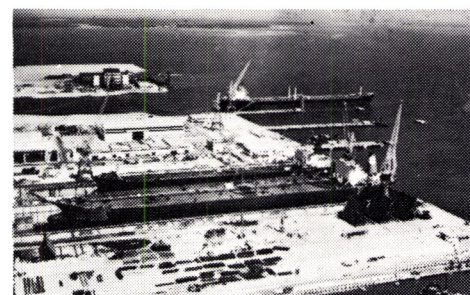
LISNAVE ROCHA YARD

Where we are «small» enough to carry out any kind of repair work on ships up to 21.000 tdw.



LISNAVE MARGUEIRA YARD

Where we handle the most complex repair and conversion works on ships of any size.



SETENAVE MITRENA YARD

Where we are «growing» to meet the market's demand for versatility.

We offer now, in our 3 yards, a total of 9 drydocks for ship repairs up to 1,000,000 tdw.

LISNAVE
Estaleiros Navais de Lisboa, S.A.R.L.
Avenida Alfredo da Silva, 1 — Almada
P. O. Box 2138 Lisboa 3 — Portugal
Telex. 16370, 12649, 18172 A-B LSNAP P

setenave
Estaleiros Navais de Setúbal
P.O. Box 135 — Setúbal — Portugal
Telex 13143-16170-16171 — SETNAV P

Agents/Representatives: **Brazil** — Sonave S.A. — Comércio e Indústria / Rio de Janeiro
Denmark — Aktieselskabet Maritime Agency / Copenhagen
East Germany — Baltica GmbH / Rostock
France — Bigard Le Grand / Paris
Germany — Wilhelm Schmidt / Hamburg
Holland — Esma — Euro Shipbuilding and Marine Agency / Amsterdam
Italy — Lisnave — Estaleiros Navais de Lisboa, S.A.R.L. / Genova

Japan — Aall Marine and Industrial Services / Tokio
Norway — Henning Astrup A/S / Oslo / Bergen
Soviet Union — Oweg-Ost-Export Ges. M.B.M./Vienna & Moscow
Sweden — Aktiebolaget August Leffler & Son / Gothenburg
United Kingdom — Keller, Bryant & Co. Limited / London
U. S. A. — Lisnave Shipyards, Inc. / New York

**Please
Note
Our
New
Name**



SUMITOMO... SHIPBUILDER TO THE WORLD

For well over seventy years Sumitomo has been building ships of every description. Mammoth tankers, bulk carriers, combination carriers and special purpose ships such as LASH and liquefied gas carriers. All are built to the high technical standards and attention to detail that mark all Sumitomo products.

And with the future needs of customers in mind

Sumitomo has constructed Oppama, the computer-age shipyard, which, in almost three years operation has already launched a score of ships.

Good ships start in good yards. Sumitomo's adoption of the most modern facilities in this 133-acre productive facility means that you get workmanship, performance and scheduling that's even better than ever before.



SUMITOMO HEAVY INDUSTRIES, LTD.

Head Office: 2-1, Ohtemachi 2-chome, Chiyoda-ku, Tokyo, Japan Telex: J22264 Cable: SUMIJUKI TOKYO
New York Office: Suite 4949, One World Trade Center, New York, N.Y. 10048, U.S.A. Telex: 232699, 422145 Cable: SUMIJUKI NEWYORK
London Office: 35, New Broad Street, London, EC2M 1NH, England Telex: 886450 Cable: SUMIJUKI LONDON

Previously known as SUMITOMO SHIPBUILDING & MACHINERY CO., LTD.