MARITIME
REPORTER
AND
ENGINEERING NEWS

Lockheed Shipbuilding Launches Second Of Three Navy Auxiliary Ships, The 23,000-Ton Sub Tender Frank Cable

(SEE PAGE 6)

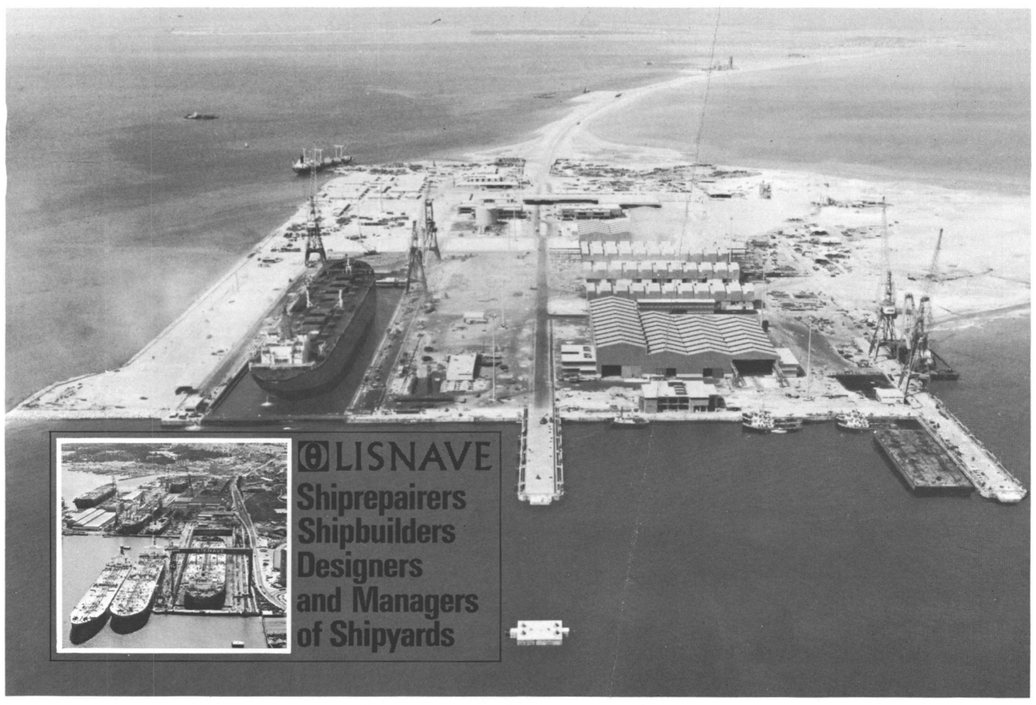
MARCH 1, 1978

LOOK

At the new Bahrain Shipyard

LISNAVE "KNOW-HOW AND EXPERTISE" IS THERE

LISNAVE, the largest and most experienced *VLCC Repair Yard* in the *W*orld and the management company of *ASRY* has the honour of announcing at the official inauguration of the *ASRY* facilities that under its management contract has designed these facilities, planned and controlled the whole construction phase, organized the operational and administrative services of *ASRY* to the *LISNAVE* well-tested high standards. All was done within the programme and budget presented to and approved by *OAPEC/ASRY* in *1974. LISNAVE* being responsible also for the management of the operational phase, fully supports *ASRY*'s operations.



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Pacific Far East Line To Sell Three Vessels

Pacific Far East Line's board of directors has authorized the sale of three surplus vessels and 800 surplus steel barges to correct its current operating problems. The vessels are the luxury liner S/S Monterey, retired from service in early January; the luxury liner S/S Mariposa, to be retired in April; and its sole remaining barge-carrying ship, the S/S Thomas E. Cuffe.

John I. Alioto, president of PFEL, stated that the sale could make available $18 million to pay current debts, which will stabilize the company's working capital position.

PFEL's present problems resulted from a combination of the 60-day East Coast dock strike, drydocking of its three LASH ships for conversion to container vessels in 1977, and unfair competition in the industry, which caused a general depression affecting all United States-flag shipping lines.

PFEL's officials estimate that sale of its surplus ships and barges can be accomplished within three to four months, and with creditor approval can be handled without court intervention.

The decision leaves unimpaired the company's Pacific service to the Far East and its East Coast service to the Middle East Gulf, both of which, according to Mr. **Alioto,** are currently operating with positive cash flow.

Griffiths & Sons Apply For Title XI To Build Tugboat And Oil Barge

James Griffiths & Sons, Inc., Pier 43, Seattle, Wash., has applied for a Title XI guarantee to aid in financing the construction of a 1,400-horsepower tug and a 30,000-barrel barge.

The tug will be 75-85 feet in overall length, 20-28 feet abeam, and have a draft of 9 feet 11 inches. It will be designed to work as a unit with the barge, which will be 230 feet long, 60 feet wide and 16 feet deep. The applicant plans to use the vessels in the coastwise or intercoastal trade.

Total estimated cost of the two vessels is approximately $2.2 million. A shipbuilder has not yet been determined.

MARITIME REPORTER AND ENGINEERING NEWS

107 EAST 31st STREET
NEW YORK, N. Y. 10016
(212) 689-3266, 3267, 3268, 3269

ESTABLISHED 1939

No. 5 Volume 40

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.

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Galbraith-Pilot Marine announces the first "PROVEN" ACC & ACCU packaged diesel engine automation systems

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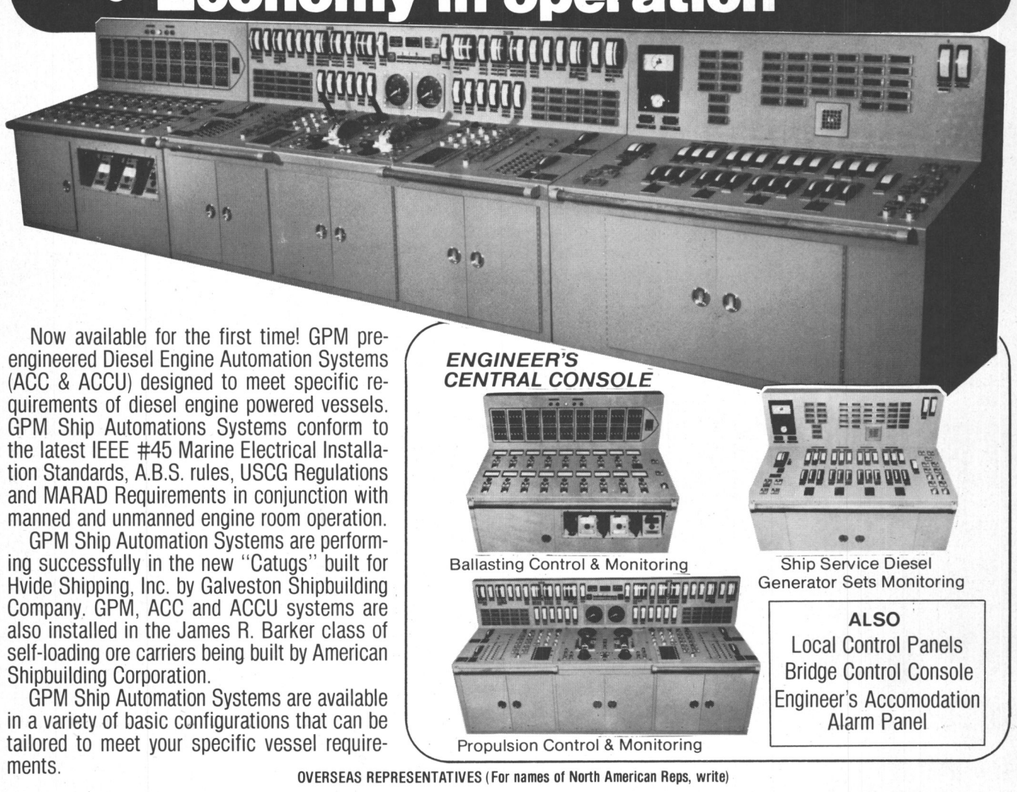

Now available for the first time! GPM pre-engineered Diesel Engine Automation Systems (ACC & ACCU) designed to meet specific requirements of diesel engine powered vessels. GPM Ship Automations Systems conform to the latest IEEE #45 Marine Electrical Installation Standards, A.B.S. rules, USCG Regulations and MARAD Requirements in conjunction with manned and unmanned engine room operation.

GPM Ship Automation Systems are performing successfully in the new "Catugs" built for Hvide Shipping, Inc. by Galveston Shipbuilding Company. GPM, ACC and ACCU systems are also installed in the James R. Barker class of self-loading ore carriers being built by American Shipbuilding Corporation.

GPM Ship Automation Systems are available in a variety of basic configurations that can be tailored to meet your specific vessel requirements.

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Tugboats approached the fully launched Frank Cable (AS-40) to remove launching gear and move it to the vessel's outfitting pier in Elliot Bay.

Lockheed Launches Second Of Three 23,000-Ton Submarine Tenders

The 23,000-ton submarine tender Frank Cable, second of three of the 644-foot auxiliary ships Lockheed Shipbuilding is constructing for the U.S. Navy, was launched on January 14 at the Seattle, Wash., shipyard.

Mrs. Rose S. Michaelis, wife of Adm. **Frederick H. Michaelis,** Chief of Naval Material, christened the ship before it slid down Lockheed's Shipway 3 on Harbor Island into the West Waterway of the Duwamish.

Admiral **Michaelis** was the principal speaker in the launch ceremonies that preceded the christening of the Frank Cable.

Two matrons of honor were named by the sponsor, **Mrs. Michaelis,** for the christening program — **Mrs. Molly Ann Michaelis Fine,** wife of Dr. **Ronald Fine,** San Antonio, Texas, and Navy officer Lt. (jg) **Polly Michel Michaelis Capansky,** married to Lt. Comdr. **Mark Capansky,** Pensacola, Fla.

Flower girl for the ceremony was **Miss Jodi Kartes,** daughter of **Robert D. Kartes,** AS-39 production manager, and his wife, **Verna.**

G. Graham Whipple, president of Lockheed Shipbuilding and Construction Company, served as master of ceremonies, while **Roy A. Anderson,** chairman of the board of directors, Lockheed Corporation, introduced the principal speaker.

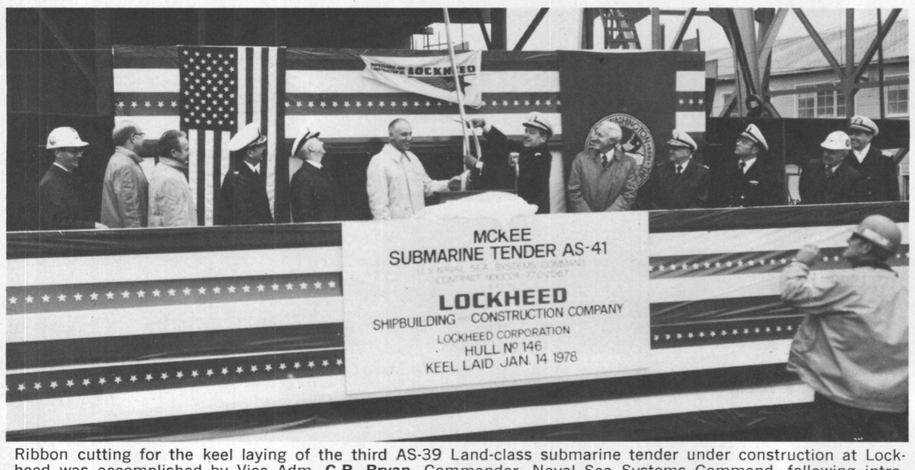
Arnold Weinmeister, vice president, International Brotherhood of Teamsters, represented labor in the ceremonies. Vice Adm. **C.R. Bryan,** Commander, Naval Sea Systems Command, also addressed the crowd of employees, Navy people, and others that gathered for the ceremonies.

Tugs immediately moved in to make lines fast to tow the ship to Lockheed's Yard 2 in West Seattle for outfitting. The Frank Cable, expected to be delivered to the U.S. Navy in late 1979, joined a sistership, Emory S. Land (AS-39), which was launched May 4, 1977.

Principal Characteristics

Length overall	643 feet 8 inches
Beam	85 feet
Light displacement	13,840 tons
Full load displacement	23,008 tons
Depth molded at center	56 feet 6 inches
Full load draft	25 feet 6 inches
Shaft horsepower	20,000
Boilers	2
Sustained speed	18 knots
Total complement	1,351
Deck levels	13
Compartments and spaces	875

Frank Cable (AS-40) sponsor **Mrs. Rose S. Michaelis,** co-matron of honor **Mrs. Molly Michaelis Fine,** and flower girl **Miss Jodi Kartes** pose en route to launch platform for christening ceremonies.



Ribbon cutting for the keel laying of the third AS-39 Land-class submarine tender under construction at Lockheed was accomplished by Vice Adm. **C.R. Bryan,** Commander, Naval Sea Systems Command, following introductory remarks by Lockheed Shipbuilding's executive vice president **M.L. Ingwersen,** and a brief address by Vice Admiral **Bryan**. Pictured left to right are: **O.G. Edwards,** hull production manager (LSCC); **Wm. B. Rieke,** Lockheed Group vice president; **J.N. Watt,** AS Program manager (LSCC); Capt. **P.S. Passantino,** Supervisor of Shipbuilding, USN, Seattle; Adm. **F.H. Michaelis,** Chief of Naval Material; **M.L. Ingwersen,** executive vice president (LSCC); Vice Adm. **C.R. Bryan,** Commander, Naval Sea Systems Command; **R.A. Anderson,** Lockheed chairman of the board; Rear Adm. **J.D. Murray,** Commandant, Thirteenth Naval District; Lt. Comdr. **R.D. Greenamyer,** Resident "AS" Project Officer; **G.G. Whipple,** president (LSCC), and Capt. **L. Shafer,** Project Manager (Auxiliary, Amphibious and Special Mission Ship Acquisition), Naval Sea Systems Command.

Frank Cable, for whom the AS-40 is named, was a pioneer submarine engineer whose first introduction to submarines was the Holland. Before the turn of the century, **John P. Holland** built the Holland in Elizabethtown, N.J. Mr. **Cable,** an electrical engineer, was sent by his firm to assist with electrical work after the Holland accidentally sank at its dock. Shortly thereafter, Mr. **Cable** found himself as engineer in charge and trial captain for the Holland. Many of his ideas were incorporated into the Holland prior to her acceptance as the Navy's first successful submarine. Among his other accomplishments, Mr. **Cable** helped train the Navy's first submarine crews. He organized the New London Ship and Engine Company that built the first marine diesel engine in the U.S., a development that led to safer submarines. His company was incorporated into the Electric Boat Company, now a subsidiary of General Dynamics. Keel for the AS-40 Frank Cable was laid March 2, 1976.

Keel-laying ceremonies on Shipway 1 for the third of the ships being built in the yard, McKee (AS-41) followed the launch of the Frank Cable.

Rear Adm. **Andrew Irwin McKee,** for whom the AS-41 is named, pioneered modern submarine design and development. Beginning in 1926 as Officer in Charge of Submarine Design, he later rendered service in building and repairing the highly successful World War II submarines. By retirement in 1947, he had been awarded the Legion of Merit, Bronze Star, and Gold Star in lieu of Second Legion of Merit. His civilian work in design and engineering at Electric Boat-General Dynamics saw introduction of Trident-class submarines before his death in 1976 at the age of 80.

The three submarine tenders rank as among the largest Naval ships to be built in the Northwest. The Frank Cable and the Emory S. Land are being built under a contract awarded to Lockheed by the Naval Sea Systems Command, November 20, 1974. The McKee is being funded under an incremental contract announced during the Land launching on May 4, 1977. Together, the three ships represent nearly a half billion dollars in ship-

building contracts. Some 3,000 persons presently work at the Lockheed yards. While the company carries on active ship repair and commercial steel businesses, the submarine tender work represents the bulk of the company's activities.

The submarine tender Frank Cable (AS-40) and its sisterships of the AS-39 class—Emory S. Land (AS-39) and McKee (AS-41)—will provide mobile support bases for nuclear-powered SSN-688 Los Angeles-class high-speed attack submarines. They are auxiliary ships that will provide submarines and their crews repairs, spare parts, provisions, and medical, dental, mail, legal, and other services. Among the some 50 technical shops aboard will be those that deal with such things as storage batteries, antennas, electronics, electrical systems, gyrocompass, machining, welding, optical, pipe, typewriters, watches, sheet metal, projectors, carpentry, and more. The ships will provide living quarters for better than 1,000 men manning the shops and operating the ship, in addition to temporary quarters for submarine crews. Submarines moored alongside for servicing, maintenance, repair, and reprovisioning can be provided with compressed gases, steam, diesel fuel, water, electricity, and various other services.

Lockheed Shipbuilding and Construction Company operates the largest privately owned shipyard in the Pacific Northwest, and currently employs approximately 3,000 people. Lockheed Corporation acquired the Seattle shipyard in 1959 and operates it as a wholly-owned subsidiary. There are actually two shipyards in Seattle—one on Harbor Island devoted largely to constructing hulls which are launched into the Duwamish River, and one across the waterway largely devoted to outfitting and ship repair. The firm's principal product lines include shipbuilding, ship repair, and commercial steel fabrication and processing. Among the 40 ships and other marine structures Lockheed has delivered have been ferries, light cruisers, drilling vessels, destroyer escorts, frigates, assault transports, destroyers, a hydrofoil, a bulk carrier, and icebreakers.

Principal Suppliers and Subcontractors

Alaskan Copper & Brass	Piping & Fittings
Buffalo Forge Company	Ventilation Fans
Carver Pump Company	Pumps
Colmac Coil	Chilling & Heating Coils
Colt Industries	Diesel Emergency Generator
Combustion Engineering	Boilers
Cosmodyne Division	Oxygen/Nitrogen Plant
Cutler-Hammer, Inc.	Electrical Controllers
DeLaval Turbine Inc.	Reduction Gears and Turbines
Dynalec	Internal Communications Systems
Familian Northwest	Valves/Piping/Fittings
Federal Pacific Electric Company	Switchboards
Frigitemp Marine Division	Furnishings and Deck
Hardie-Tynes Mfg. Company	Forced Draft Blowers
Isaacson Structural Steel	Structural Tee Beams
Jered Industries, Inc.	Weapons Elevators
John Perine Company	General Marine Hardware
Liberty Equipment & Supply	Valves/Piping/Fittings
Louis-Allis	Electric Motors
Mitsui & Co. (USA)	Hull Steel/Shafting/Propellers
Native American Mfg. Company	Service Booms
Nelson Electric	Internal Communications and Test Switchboards
Overbeke-Kain Company	Watertight Doors and Sideports
Owens-Corning Fiberglas	Hull & Refrigeration Insulation
Pacific Car and Foundry	Mooring Bitt Castings
Puget Sound Pipe & Supply	Piping & Fittings
Richards-Wilcox Mfg. Company	Bridge Cranes
Unidynamics/St. Louis	Cargo Elevators
Velan Engineering	Special Valves and Traps
Warren Pumps	Pumps
Western Gear Corporation	Steering Gear & Capstans
Worthington Pump Corporation	Pumps and Air Compressors
York Division, Borg-Warner	Air-Conditioning & Refrigeration

Marine Steam Propulsion Seminar Held in New York

Shown at the Whitehall Club, left to right, are: **J. Swiatocha,** General Electric Co.; **F.T. Wendt,** Rockwell Manufacturing Co.; **R.C. Crawford,** FMC Corp.; **J.T. Schroppe,** Foster Wheeler Boiler Corp.; **B.A. Jones,** FMC Corp.; **H.C.K. Spears,** General Electric Co.; **M.A. Prohl,** General Electric Co.; **J.P. Casey,** General Electric Co.; **J. Femenia,** SUNY; **R.C. Bryant,** General Electric Co.; **R.J. Walsh,** General Electric Co., and **R.F. Hamlet,** General Electric Co.

The latest technical developments in marine steam propulsion were reviewed for shipowners and operators and naval architects at an all-day seminar held January 24 at the Whitehall Club in New York City.

The seminar was held to promote viability of marine steam ship propulsion. Hosted by the General Electric Company, Lynn, Mass.; Foster Wheeler Boiler Corp., Livingston, N.J.; Rockwell Manufacturing Company, Pittsburgh, Pa., and FMC Corporation, Englewood, N.J., the seminar included naval architect firms, shipyard personnel, and shipowners and operators.

Participants heard presentations on "Steam Propulsion for Modern Ships," by **Howard C.K. Spears,** manager-Power Systems Engineering, General Electric Company, Lynn, Mass.; "Marine Fuels," by Prof. **Jose Femenia,** chairman-Ocean Engineering Department, SUNY Maritime College; "Marine Boiler Technology for Operation in the 1980's," by **J. Thomas Schroppe,** vice president, engineering, Foster Wheeler Boiler Corp.; "Boiler Fuel Pumps," by **R.C. Crawford,** engineering manager, and **B.A. Jones,** general sales manager, Coffin Turbo Pump Division of FMC Corporation; "Valves for Marine Service," by **F.T. Wendt,** area sales manager, Flow Control Division, Rockwell International; "Turbines and Gears for Modern Ship Propulsion Systems," by **M.A. Prohl,** manager-Turbine and HRSG Engineering, General Electric Company, Lynn, Mass.; "Recent Developments in Marine Turbine Generators," by **James Swiatocha,** General Electric Company, Fitchburg, Mass.; "Steam Propulsion Controls," by **Richard C. Bryant,** project engineer, General Electric Company, Lynn, Mass., and "On Saturation (and Economic Comparisons)," by **John P. Casey,** manager-Power Systems Development, General Electric Company, Lynn, Mass.

Planning Research Corporation Wins $1.6-Million Contract To Modernize Army Watercraft

Planning Research Corporation (PRC) 1850 K Street N.W., International Square, Washington, D.C. 20006, has been awarded a $1.6-million contract to modernize Army watercraft by the U.S. Army Mobility Equipment Research and Development Command, Ft. Belvoir, Va.

The work will be performed by the Marine Systems Division of one of the 19 PRC companies, Technical Applications, Inc. Working with its marine design affiliate, Morris Guralnick Associates, PRC's Marine Systems Division will use 60-ton and 100-ton crane barges as pilot models for the modernization program and overhaul the 100-ton barge. Turnkey modernization to be provided the Army will include: engineering to develop drawings; material identification and procurement; planning, estimating and bid specification preparation; shipyard contract award management; on-scene industrial engineering and quality assurance of the ongoing project; and definition of required integrated logistic support for classwide barge modernization.

PRC Marine Systems Division, headquartered in San Diego, Calif., has more than 225 employees in major American seaports. Planning Research Corporation is the world's largest diversified professional services organization, serving government, business and industry primarily in the areas of planning, engineering and architecture, information services and management consulting.

Port Of Savannah To Host Southeast Regional Convention Of Propeller Club March 27-29

The Port of Savannah will host the 1978 Southeast Regional Convention of The Propeller Club of the United States, scheduled for March 27, 28 and 29, at the Savannah Inn and Country Club.

The agenda for the convention includes: registration all day on Monday, March 27, and a Get-Acquainted Oyster Roast at 6:30 that evening. Tuesday, March 28, features the first Convention Conference Seminar Session, the Speakers Program, a Historic Savannah Tour and luncheon for the ladies, a tour of Georgia Ports Authority facilities, golf and tennis tournaments and a Polynesian Luau that evening. The convention concludes on Wednesday, March 29, with a business meeting and closing luncheon.

Convention officials say the Speakers Program on Tuesday will present a talk by Capt. **Warren G. Leback,** vice president of El Paso Marine Company of Houston, Texas, on the liquid natural gas industry, with particular emphasis on the new LNG facility on Elba Island in the Port of Savannah and the ships that will bring LNG into the facility.

Planning Research And Morris Guralnick Work On $500,000 Project

Planning Research Corporation (PRC) Marine Systems Division, 1850 K Street N.W., International Square, Washington, D.C. 20006, will team with Morris Guralnick Associates, Inc. in a $500,000 project to provide planning and engineering services for the U.S. Navy's Service Life Extension Program (SLEP).

SLEP is designed to extend the life of aircraft carriers built in the 1950s for an additional 15 years with no more maintenance or modernization than that provided by normal overhaul procedures.

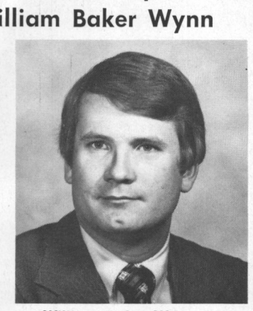
Marine Systems Division, part of Technical Applications, Inc., one of 19 PRC companies, and Morris Guralnick Associates, Inc., will plan repairs, modernization and alterations; develop new techniques and procedures; train crew members; and identify long-lead time material.

The team will back up these tasks with across-the-board logistic support.

Morris Guralnick Associates, Inc. is a naval architecture and marine engineering firm located in San Francisco, Calif.

Planning Research Corporation is the world's largest diversified professional services organization, serving government, business and industry, primarily in the areas of planning, engineering and architecture, information services and management consulting.

Delta Steamship Names William Baker Wynn



William Baker Wynn Jr.

William Baker Wynn Jr. has been appointed marketing assistant at Delta Steamship Lines, Inc.

Mr. **Wynn,** a native of New Orleans, La., is a 1974 graduate of Tulane University, and in May of this year will also be receiving his MBA degree from that institution.

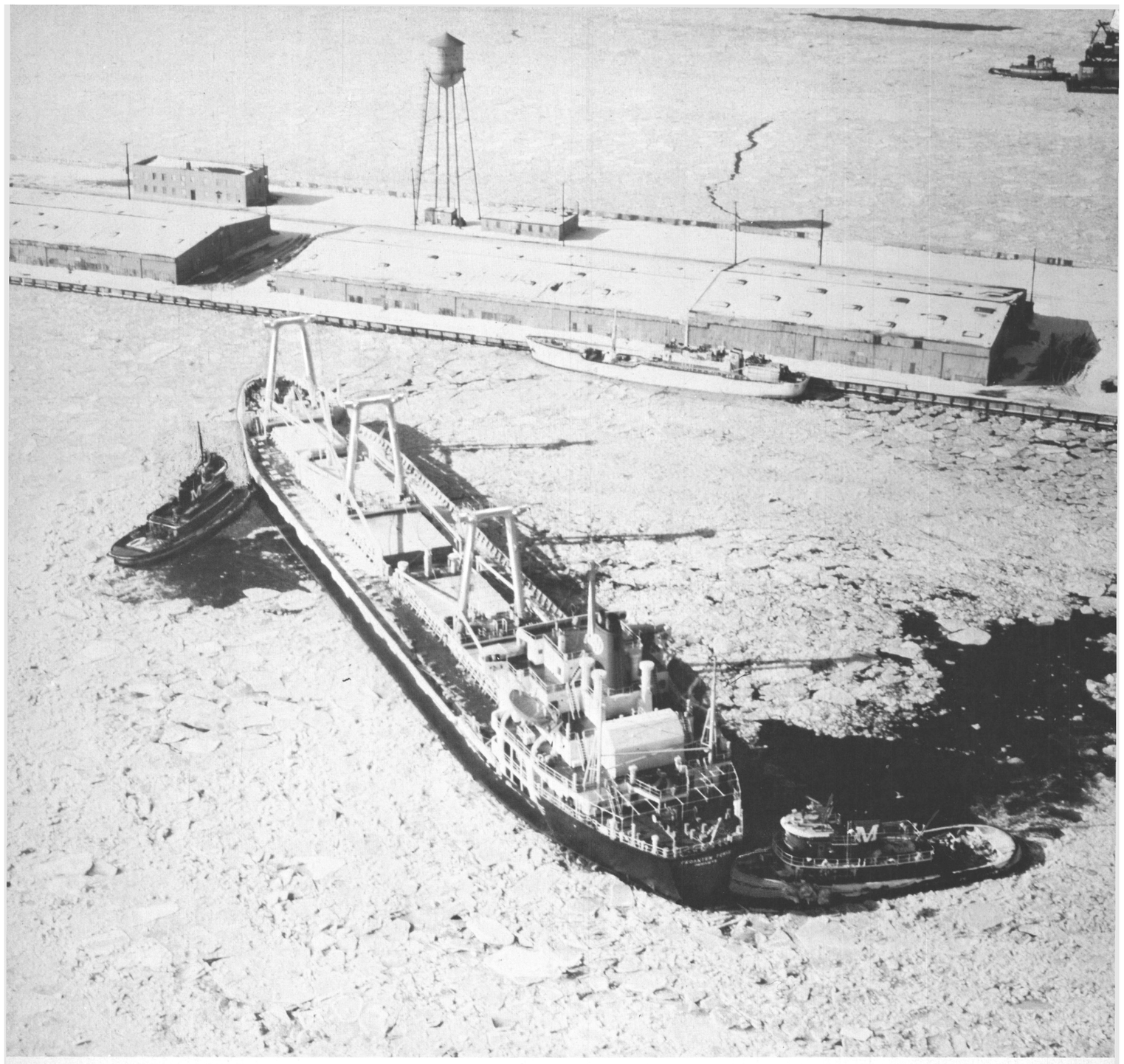
As marketing assistant, Mr. **Wynn** will be responsible for the management of all marketing data and for the production of various marketing reports, under the direction of Delta's vice president-market research, **J. F. Badger.**

Delta Steamship Lines, Inc., with headquarters in New Orleans, owns and operates a fleet of ultramodern cargovessels maintaining regular American-flag service between U.S. Gulf of Mexico ports and the east coast of South America, Central America, the Caribbean and the west coast of Africa.

Literature Describes Powered Work Platform

Spider Staging Sales Company has announced a powered suspended work platform designed for shipyard use. The "Shipyarder" platform is 20 feet long by 3 feet wide and of all-aluminum construction. It is powered by two electric winches, each with a capacity of 235 feet of 5/16-inch wire rope. Rated load is 750 pounds with a 4:1 safety factor. A unique feature is the 4-foot platform extensions on each end that may be raised or lowered while the Shipyarder is in suspension. One-man operation is provided by a single station control that can be repositioned to any point on the platform handrail. The Shipyarder may be rigged and used while the ship is a drydock or afloat.

For literature describing the Shipyarder, write to **Ron Fisher,** Spider Staging Sales Co., Box 182, Renton, Wash. 98055.



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Propeller Symposium Slated For May 1978 At Virginia Beach, Va.

A technical symposium on ships' propellers will be held on May 24 and 25, 1978, at the Cavalier Hotel, Virginia Beach, Va. Entitled "Propellers '78," the symposium is to be jointly sponsored by Technical and Research Panel M-16 (Modernization of Propulsion Shaft Systems) and the Hampton Roads Section of The Society of Naval Architects and Marine Engineers. This symposium follows the successful Propellers Symposium held in 1975, which was also sponsored by Panel M-16 and the Philadelphia Section of SNAME.

This will be a larger symposium than in 1975, with a total of 22 papers, and the treatment of propeller problems will be handled more broadly. Experts in the field of propellers from both the United States and abroad will cover analytical procedures for the design of all types of marine propellers, will explore the special problems of controllable-pitch propellers, and give papers on the correlation of design predictions with experimental data.

Other subjects to be presented and discussed will be the metallurgical properties of propeller materials, construction maintenance and repair, and some results of full-scale testing.

The reason for this symposium, as with the meeting in 1975, is that propeller failures in the past decade have revealed serious gaps in design information. These gaps may lead to deficiencies in propeller design, in the area of hull wakes, dynamic forces, cyclic stresses, cavitation, corrosion fatigue, electrochemical fatigue, and the strength of heavy bronze castings.

The 22 papers will be presented in two concurrent sessions, and all the attendees will enjoy a banquet with Dr. **Frank LaQue,** dean of American Corrosion Experts, and founder of the International Nickel Company's Sea Horse Institute, as the principal speaker.

B&W To Transfer Control Of German Nuclear Firm To Brown Boveri Group

The Babcock & Wilcox Company and Brown Boveri have announced that a memorandum of understanding has been signed to restructure their relationship in the nuclear equipment business in Germany. Babcock-Brown Boveri Reaktor GmbH (BBR), a German supplier of nuclear steam supply systems, now owned 74 percent by B&W and 26 percent by Brown Boveri of Mannheim, Germany, would be owned 60 percent jointly by Brown Boveri of Switzerland and its German group company, Brown Boveri of Mannheim, and 40 percent by B&W. The memorandum of understanding of the new arrangements has been executed by B&W, Brown Boveri of Switzerland and Brown Boveri-Mannheim, subject to approval of the boards of the three companies.

BBR will continue to hold a license from B&W for pressurized water nuclear steam supply systems. In addition, technical cooperation in the nuclear equipment field between B&W and Brown Boveri will be fully maintained and B&W will continue to provide technical support to BBR. B&W will continue to be represented on the board of BBR.

BBR, in consortium with Brown Boveri, supplies complete nuclear powerplants. The consortium is currently supplying on a turnkey basis the 1,200-megawatt nuclear powerplant at Mulheim-Karlich, West Germany, scheduled for completion in 1980. This plant is being built for Rheinisch-Westfalisches Elektrizitatswerk AG. This consortium also holds letters of intent for two more nuclear powerplants to be built at Remerschen, Luxembourg, and Neupotz, West Germany.

of Tideland SolaViva® solar energy modules, each with 16 silicon cells encapsulated in tough, virtually weatherproof special 255 borosilicate crown glass—a Tideland exclusive. This glass "package" assures the ultimate in protection against moisture and the environment for the cells.

As light strikes the module, electrons are displaced from the cells and a charge flows to a bank of special charge-retaining storage batteries of a very slow self-discharging type. Note: solar arrays are high internal impedence current generators, not voltage devices. A 16-cell module will deliver about the same current to a six-volt battery as it would to a two-volt cell.

Tideland matched systems are sized and balanced, power to load, by computer analysis using a 10-year period of weather experience.

A 20-percent safety factor is added to the design of the system for increased reliability.

Sunswitches automatically turn off the lanterns in daylight. A matched system like this can give years of service.

For a complete description of matched systems, write to **S.N. Sprunt,** Tideland Signal Corporation, P.O. Box 52430, 4310 Director's Row, Houston, Texas 77052.

CAI Appoints Gerald Harrison VP And Director Of Engineering

Gerald S. Harrison

Communication Associates, Inc., Huntington Station, N.Y., has announced the appointment of **Gerald S. Harrison** as vice president and director of engineering. He will be responsible for the engineering design and development of the company's expanding line of marine communication products and systems.

Mr. **Harrison's** background includes varied and extensive experience in the marine product area. Most recently, he was senior research engineer at Dynell Electronics Corporation. Prior to that, he served as a department head at the Data & Controls Division of Lear Siegler, Inc., and as a program manager for the General Instrument Corporation.

A graduate of Pratt Institute, Mr. **Harrison** received his M.E.E. degree from Polytechnic Institute of Brooklyn. He has taken postgraduate courses at Columbia University and Polytechnic Institute.

Mr. **Harrison,** a resident of Long Island, N.Y., is founder and past president of The Long Island Computer Association.

Literature Describes Matched Systems Of Navigational Aids

Tideland Signal Corporation of Houston, Texas, reports outstanding results with systems of marine signal lanterns, fog signals and solar power stations "matched" as to power supply and demand.

These matched systems are designed for specific geographical locations, taking into account available sunlight exposure and the detrimental factors of environment. After six years of on-site testing, Tideland reports exceptional reliability of these systems.

The expected service life of Tideland matched systems is over 10 years, unattended with only occasional maintenance. This means substantial savings in manhours and parts replacement.

Offshore drilling rigs and production platforms are primary points of application. Matched systems would also find use in remote coastal areas where no power lines are available.

Key to the system is the array

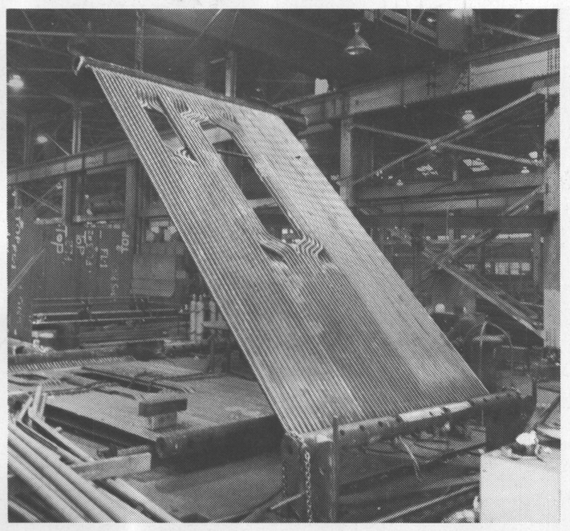
Our customers will tell you how they feel about our fully assembled boilers. Satisfied.

Supplying a knocked-down or sub-assembled boiler is a complex job. And supplying a fully assembled one is even tougher.

That's why we're proud of our track record. Over the years, we've satisfied many customers by supplying boilers in all stages of assembly.

Including fully assembled—which offers you the benefits of reduced storage space and materials handling, savings of time and money, and single source responsibility.

If you prefer to assemble your boilers, we can furnish you with furnace sub-assemblies which can significantly reduce your field assembly time and expense.



Sub-assembled furnace wall, utilizing welded wall construction.

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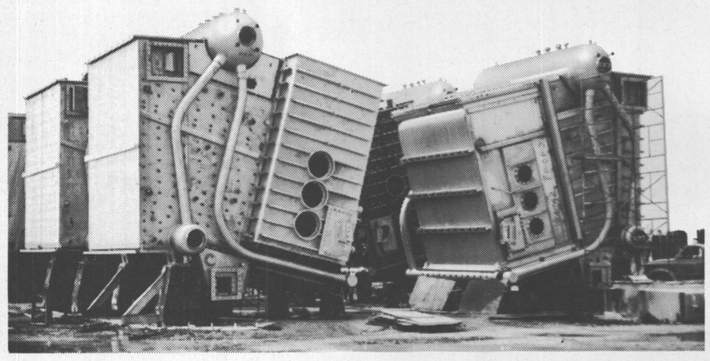
We'll tell you the names of our satisfied customers. When you learn how well we did the job for them, you'll get a good idea of the job we'll do for you.

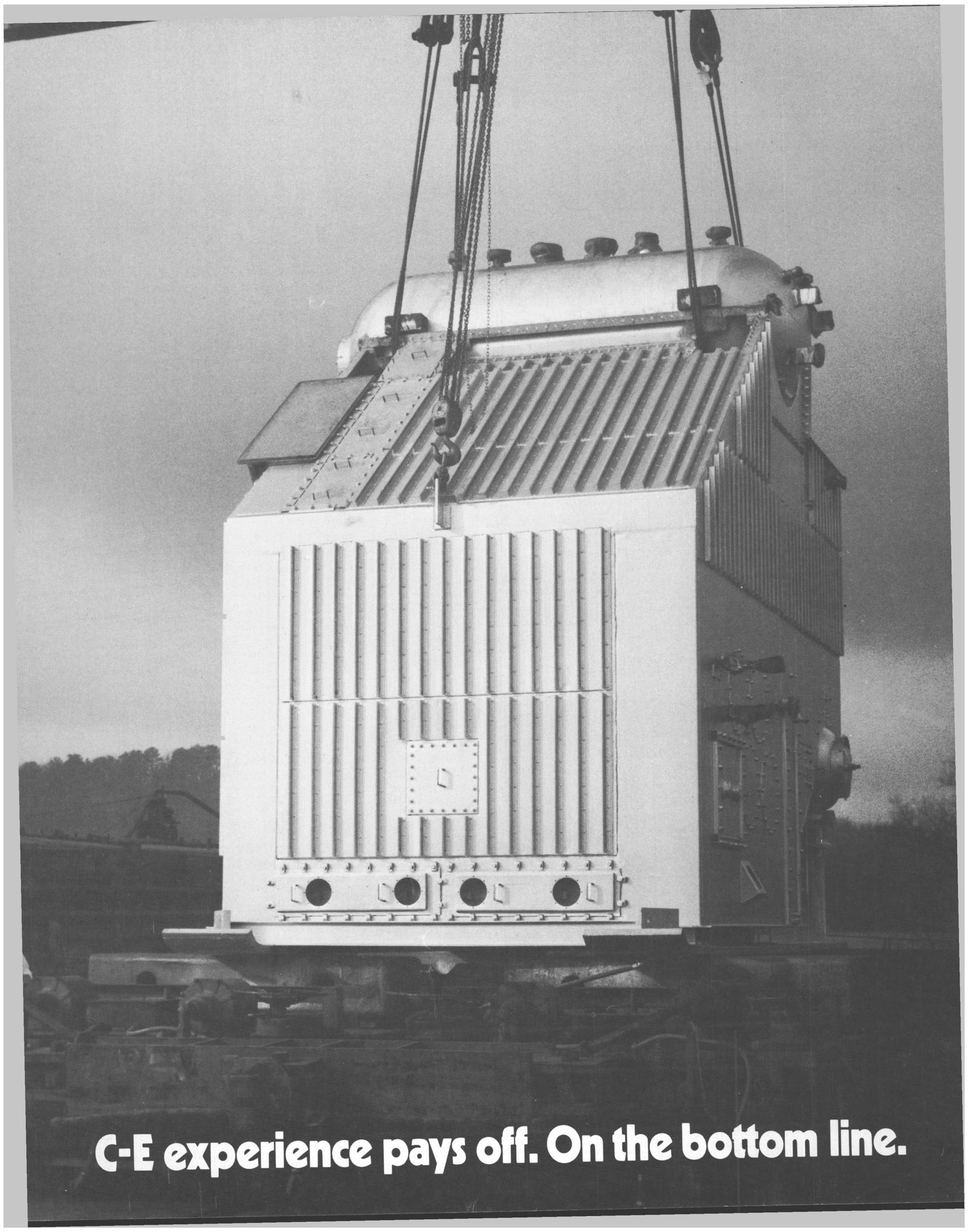
C-E Marine Power Systems, Combustion Engineering, Inc., Windsor, Connecticut 06095. Telephone: (203) 688-1911, extension 2222 or 2076.



V2M-8 welded wall boilers being assembled for installation in ULCC tankers.

POWER SYSTEMS
COMBUSTION ENGINEERING, INC.

V2M-VS assembled boiler for naval application.


C-E experience pays off. On the bottom line.

Sun Names Martinson Program Manager For Matson Containership

Sun Shipbuilding, Chester, Pa., has named **Albert M. Martinson Jr.** program manager for the Matson containership (Sun Hull No. 678) construction program.

In his new post, he will report to **Robert Galloway**, executive vice president, and will have ultimate responsibility for the overall success of the containership construction program within the framework of company policies and procedures. To this end, he will coordinate and direct the execution of all matters concerning the program so that it meets the budget and delivery schedule.

Terms of the contract call for delivery of the 720-foot containership by January 1980.

Mr. **Martinson** is a graduate of Webb Institute of Naval Architecture, with a B.S. degree in naval architecture and marine engineering.

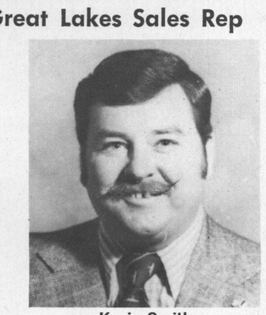
He held a number of engineering and naval architectural posts in 17 years with the Dravo Corporation in Pittsburgh, Pa., and was chief marine engineer of the Engineering Works Division when he left the company in 1970. He was then general manager of Matton Shipyard Co., Inc. of Cohoes, N.Y., before coming to Sun Ship in July 1971 as chief of the Machinery Technical Section. In August 1973, he was named a general superintendent and in 1976, he was appointed project manager for Industrial Products.

Albert M. Martinson Jr.

He is a member of The Society of Naval Architects and Marine Engineers, American Society of Naval Engineers, and the Marine Historical Association.

He is a World War II veteran, having served 2½ years in the U.S. Coast Guard.

Gamlen Chemical Names Kevin Smith Great Lakes Sales Rep



Kevin Smith

Joseph Nolet, marine sales manager of Gamlen Chemical Company, a division of Sybron Corporation, Elmwood Park, N.J., has announced the appointment of **Kevin Smith**, president of Supplier's Marine and Industrial, Inc., to the position of Great Lakes Area sales representative. In his new position, Mr. **Smith** will oversee the sales and servicing of Gamlen products to the marine industry in all Great Lakes ports.

Mr. **Smith**, a graduate of the United States Merchant Marine Academy, sailed for a number of years. Since coming ashore, he has used his engineering expertise in servicing marine and industrial markets on both coasts, as well as in the Great Lakes Area. Mr. **Smith** is a member of the United States Merchant Marine Academy Alumni Association, the United States Naval Reserve, The Society of Naval Architects and Marine Engineers, The Propeller Club, Naval Reserve Officers Club, the Great Lakes Historical Society, and the Marine Port Engineers.

The Gamlen Chemical accounts will be attended to from Mr. **Smith's** office at 7686 Shady Lane, Northfield, Ohio 44067.

Litton Exhibits New Load Monitoring System

Pictured during the exhibition at the Waldorf-Astoria, left to right: **Herbert H. Halperin,** managing director, Litton Automated Marine Systems; **Victor H. Prushan,** marketing manager, Litton Automated Marine Systems; **Ralph A. Nilssen,** Ogden Marine, Inc.; **Rene R. Descloux,** Ogden Marine, Inc., and **Neil M. Miller,** Republic Steel, Ocean Marine Division.

Litton Automated Marine Systems of Woodland Hills, Calif., a division of Litton Systems (Canada) Limited, Toronto, Ontario, recently held a private exhibition of their Load Monitoring System in New York City. The exhibition, held at the Waldorf-Astoria Hotel, was attended by key representatives of the marine industry located on the East Coast.

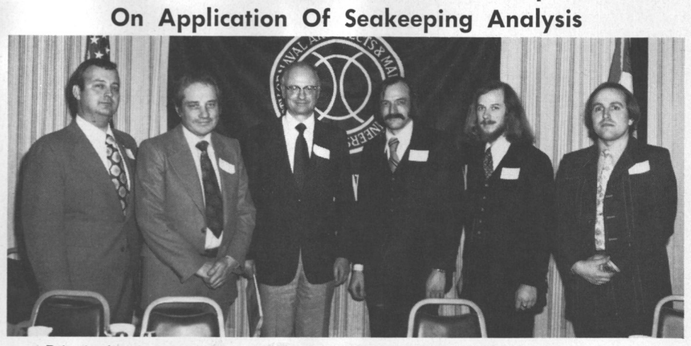
During the two-day period, Litton Automated Marine personnel demonstrated the ease with which the Load Monitoring System can be operated. The LMS calculates and displays the cargo-loading plan, shows shear force and bending moment curves for each condition, and provides a tabular summary of trim and stability data.

If installed as an on-line system, the LMS automatically receives ullage input from the ship's tank gauging system. The data is manually entered through the simplified keyboard for off-line systems. An off-line system can perform load calculations for more than one ship through the provision of additional tape cassettes containing pertinent characteristics of the ships involved.

Litton Automated Marine Systems markets a broad range of computer-based systems for the marine community. Included in the range of products are trend analysis systems for performance monitoring of steam and diesel plants and automatic navigation and steering control systems.

Literature describing Litton's computer-based systems can be obtained by writing to **Victor H. Prushan,** Litton Automated Marine Systems, 21101 Oxnard Street, Woodland Hills, Calif. 91364.

Pacific Northwest Section Hears Paper On Application Of Seakeeping Analysis



Principals shown above at the SNAME Pacific Northwest Section meeting, left to right: **W.A. Dahlbeck,** Papers Committee chairman, Pacific Northwest Section; **E. Horner,** vice chairman, British Columbia Area, Pacific Northwest Section; **W.E.G. Talbot,** chairman, Pacific Northwest Section; **J.T. Bringloe** and **B.L. Hutchison,** authors, L.R. Glosten & Associates Inc., and **L.P. Zankich,** vice chairman, Puget Sound Area, Pacific Northwest Section.

Ninety members and guests of the Pacific Northwest Section of The Society of Naval Architects and Marine Engineers recently attended a regular meeting held in Pier 91 Officers' Club, Seattle, Wash.

After dinner, a technical paper titled "Application of Seakeeping Analysis" was presented by **Bruce L. Hutchison** and **J. Thomas Bringloe,** naval architect and vice president, respectively, of L.R. Glosten & Associates Inc.

The authors stated that the basic purpose of the paper is to utilize the theoretical tool of modern seakeeping analysis in an approach to the solution of some shipboard engineering problems.

Deterministic and stochastic processes were explained, the latter being the current vehicle for the study of seakeeping, the historical development of which was traced from Sir Isaac Newton to the present state-of-the-art.

The study, analysis and prediction of ship motions takes place in the time, frequency and probability domains which are analagous to the different projections of the same object as drawn by the draftsman, each revealing salient features not observable in others. The above theory incorporates the use of tabulations of observed sea states as reported by ships.

Several excellent publicly available, high-speed, computer programs are used by the practicing engineer at moderate cost which, together with his own post processing program, will manipulate the basic response data into forms which directly answer his questions. Ship motions program "SCORES" and post processing program "CARGO" are being utilized by the authors.

In conclusion, the application of the foregoing analytical tool has been used by the authors' company in providing the best engineering techniques involving peculiar cargo stowage problems for such items as process plant modules or drilling platforms.

Other applications are the development of operating instructions or design criteria for ballasting of vessels, design analysis of heavy lift arrangements with particular reference to offshore construction operations, sailing instructions for a particular voyage or even real-time routing during the voyage. These are but a few of the potential applications for seakeeping analysis.

Copies of the paper can be obtained from the Section Librarian, **C.S. Bracken,** P.O. Box 24382, Seattle, Wash. 98124.

Burmah Oil Appoints Haddow To Board

Robert Scott Haddow has been appointed to the board of Burmah Oil Co. Ltd., it has been announced by the company. Formerly president of Amoco Shipping Inc., Mr. **Haddow** became shipping adviser to the Burmah Group in April 1975. He will retain his existing responsibilities as chief executive, Tankers Ltd., and president of Burmah Oil Shipping Inc.

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March 1, 1978

Matson Navigation Promotes J.P. Gray And M.A. Griffin

Matson Navigation Company, 100 Mission Street, San Francisco, Calif. 94105, has announced the promotions of **James P. Gray** to the position of executive vice president-operations, and **Marvin A. Griffin** to group vice president-staff functions.

Both are newly created positions effective February 15, said **R.J. Pfeiffer,** Matson president.

Mr. **Gray,** formerly a senior vice president, headed the freight division and was president of the subsidiary Matson Terminals, Inc. Reporting to Mr. **Gray** in his new post will be the heads of the freight division, the engineering and marine operations division, Matson Terminals, Inc., Matson Agencies and Matson's area managers.

Mr. **Griffin** formerly was a vice president, corporate development. Reporting to him in his new position will be the heads of the finance division, law department, corporate development and industrial relations.

Fairbanks Morse Diesel Engines To Power Three Ocean Vessels

The keel has been laid for the first of three 2,000-dwt breakbulk vessels which will be powered by Fairbanks Morse opposed piston diesel engines. Equitable Shipyards, Inc. of New Orleans, La., will build the vessels for American Atlantic Shipping, Inc. of New York. **R.D. Jacobs,** manager of marine sales for Colt Industries, Fairbanks Morse Engine Division in Beloit, Wis., announced the $1.5-million order.

The shipsets for the three vessels each include a Fairbanks Morse Model 38TD8-1/8 twelve-cylinder nonreversing marine engine with a vertical offset reverse and reduction gear. Each engine is rated at 3,000 horsepower at 750 rpm.

The three vessels will be identical, 288 feet long with a 45-foot beam and a depth of 22 feet. Upon completion, the vessels will be placed in service between New York and Miami, and various ports throughout the Caribbean. The Equitable Shipyards are the world's largest builder of lighter aboard ship (LASH) and SEABEE barges. They also build tugboats, crewboats and supply vessels for the offshore oil industry.

Northwest Marine Iron Works Awarded $8-Million Navy Contract

The Portland, Ore.-based Northwest Marine Iron Works has started a 10-month overhaul of the USS Meyerkord under a $8.8-million contract.

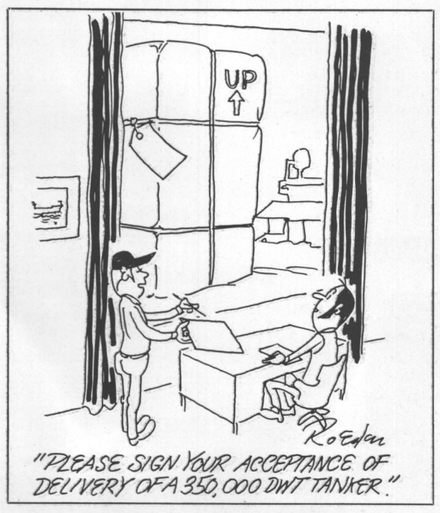
The pact is the third long-term contract awarded to Northwest Marine Iron Works by the Navy in the past two years. The firm, which operates in the Port of Portland-owned Swan Island Ship Repair Yard, is completing a major overhaul of the USS Lang, and earlier completed a fleet overhaul of the USS Stein including a sonar and dome.

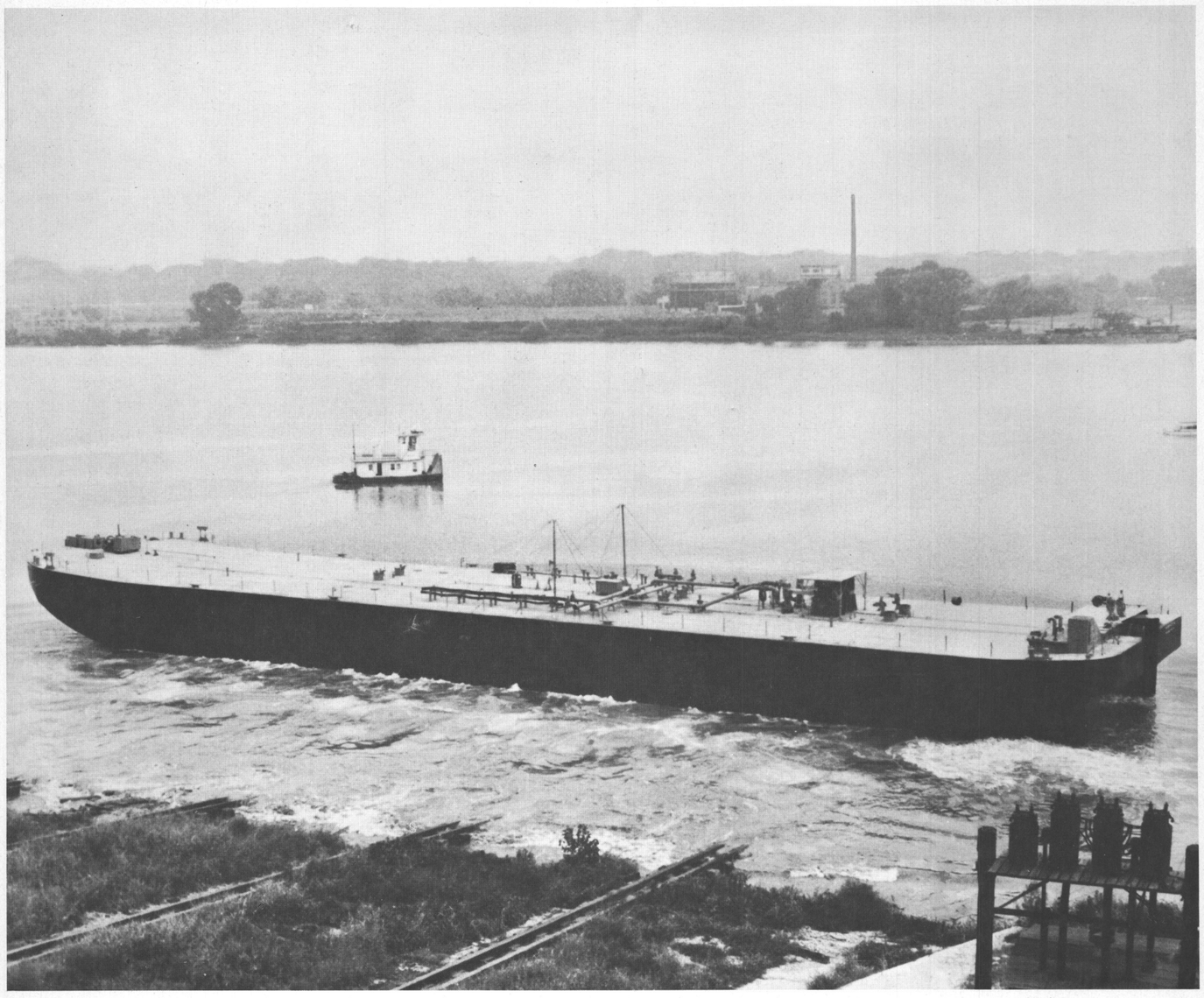
USS Meyerkord (FF-1058), U.S. Navy frigate, shown in Portland, Ore., Swan Island Ship Repair Yard for a regular overhaul by Northwest Marine Iron Works.

The Meyerkord will be in Portland through November of 1978. The 478-foot-long vessel is in the same squadron as the USS Lang. Due to be installed on the Meyerkord are an improved communications system, radar, sonar unit and weapons, plus hull repair.

The job will require about two months on drydock. The 300 Navy personnel on the Meyerkord will be housed by Northwest Marine Iron Works for the duration of the job.

Northwest Marine Iron Works' Marine Division specializes in major vessel repairs, ship conversions and new barge construction.





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At Jeffboat, we now have modernized building and launching facilities for ocean vessels up to 500 feet in length.

We're in an ideal location for efficient, timely Gulf delivery of either ocean-service barges or self-propelled ships. And we believe each of the vessels we build benefits from both inland shipyard economies and our own strong concern for craftsmanship.

So whatever type of ocean vessel you need, come inland to Jeffboat. Write Jeffboat, Division of Texas Gas Transmission Corp., Jeffersonville, Indiana 47130. Or call (812) 283-3551.

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Why every in the world And why

The self-propelled aerial work platform is almost as indispensable as the wrench today for large aircraft maintenance. And Manlift is the one name you see more than any other in this gruelling, round-the-clock duty.

The reasons are clear—and important—to anyone who has maintenance, construction, or installation work at heights of 8 ft. and above.

The operator can raise, lower, drive, and steer the Manlift from the work platform with the simplest controls in the industry.

Manlift built to last

The work records of Manlift units have made them favorites with airline ground service superintendents, as well as with maintenance people in scores of other industries. Carefully engineered and rugged, Manlifts take the toughest and most continuous duty with a minimum of maintenance and downtime.

Manlifts are powered by durable gasoline, L.P. gas, electric or diesel engines; they have automatic hydraulic drum brakes, three speed or fully proportional drives, fail-safe hydraulic controls, and dozens of other features that make them true work-horses.

More Manlift models to meet any need

You have more types and sizes of Manlift aerial work platforms to select from: 18 standard models, ranging from the compact mini-scissors, with a 1,250 lb. lift capacity, to large scissors models with capacities up to 4,000 lbs., to the biggest group of boom models in the industry, and the extendable zoom units that can reach up to 66 ft.

And of course, every Manlift model is a manhour saver with a thousand uses. Construction, maintenance, welding, repair and inspection work all go faster, safer, more efficiently. Manlifts put men and equipment right up where the work is, safely and quickly, moving from place to place, maneuvering, positioning crews up and over obstacles. They all but eliminate the need for scaffolds, ladders and costly specialized work stands.

Engineered for safety, performance

Safety, versatility, and maneuverability are engineered into every Manlift unit. They're stable in every position. In fact, Manlift units not only satisfy OSHA requirements for safety of this type equipment, they meet or exceed other U.S., Canadian and European standards.

Unlike other makes, Manlift boom units will carry their rated load capacities in all boom positions, and their proportional drives give you a smoother operation.

Maneuverable and long-reaching, the Manlifts all retract to the most compact profiles for storage.

Backed by Chamberlain Manufacturing Corporation

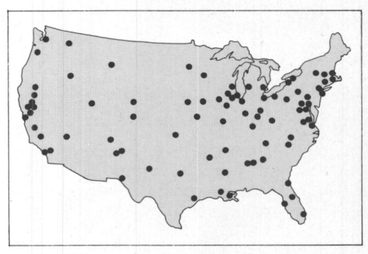
Quality construction and sophisticated engineering like this takes a lot of experience and production capability,

major airline uses Manlift.® you should.

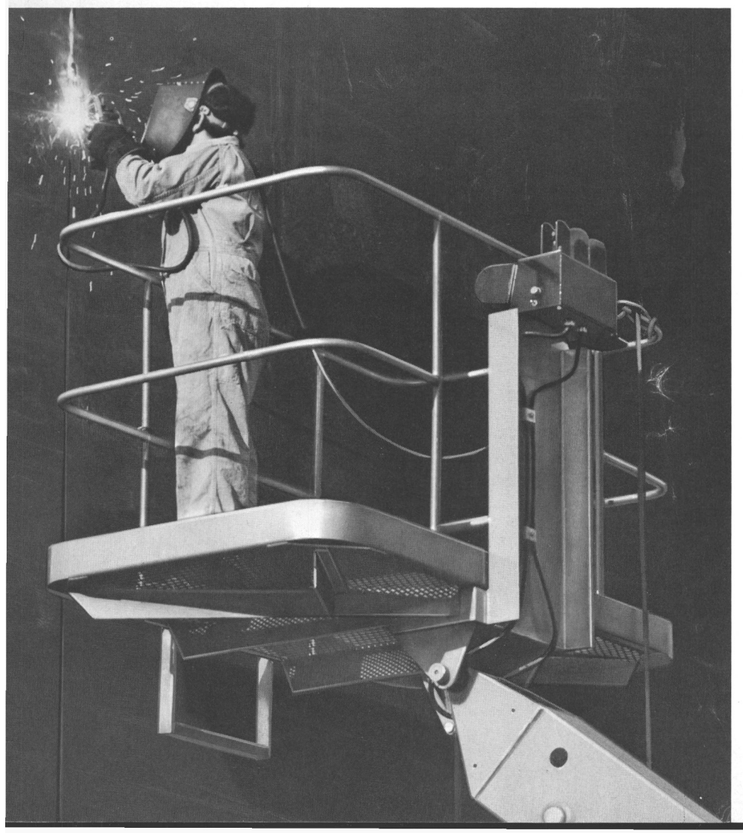
and that's another factor that separates Manlift units from the crowd. They are made by Chamberlain Manufacturing Corporation, one of the leading equipment producers in the Industry. Manlift design and engineering is backed by Chamberlain's Research and Development Division.

Nationwide, worldwide — service

Manlift service is far-reaching. Dealers, parts, warehouses, and factory-trained service people blanket this country and the major nations of the world for the best and most readily available service.



To see Manlifts in action, just visit the maintenance hangars of any major airline in the country. Or better yet, arrange for a demonstration to see what Manlift can do to cut your overhead manhours.



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Arab Shipbuilding And Repair Yard Officially Inaugurated At Bahrain

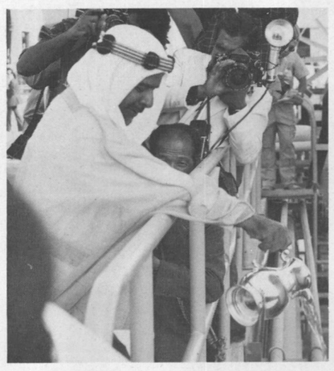
Shown with dignitaries of the Arab world attending the inaugural ceremony are His Highness Ruler of Bahrain, Shaikh **Isa bin Sulman Al-Khalifa** (in light robes), and His Highness Shaikh **Rashid,** Ruler of Dubai (in dark robes). Dubai is also building a large drydock.

The Arab Shipbuilding and Repair Yard Co. (ASRY) was inaugurated at a ceremony presided over by His Highness the Ruler of Bahrain. The Ruler, Shaikh **Isa bin Sulman Al-Khalifa,** blessed the yard by pouring holy water from the Well at Zam Zam into the drydock and declared it officially open. His Highness the Ruler of Dubai, Shaikh **Rashid,** attended the ceremony. Dubai also has a large drydock project which is expected, according to reports, to come into operation sometime during 1979. Many dignitaries of the Arab world were present, notable among whom was His Excellency Shaikh **Ahmed Zaki Yamani,** the Saudi Arabian Minister of Petroleum, as well as all Ministers participating in the Organization of Arab Petroleum Exporting Countries (OAPEC) Conference which took place in Bahrain the previous day.

Although the Inaugural Ceremony took place December 15, ASRY commenced docking of VLCCs in October 1977. The Mobil Pride (212,000 dwt), the vessel in the dock on the day of the ceremony, was ASRY's fourth VLCC. She had been preceded by the Ambrosiana (231,048 dwt), the Esso Dalriada (259,042 dwt), and the Stavros GL (357,054 dwt). The Mobil Pride was immediately followed into the dock on December 16 by the Texaco Japan (263,599 dwt), which in turn has been followed by the Safina Salamah (99,000 dwt), Berge Prince (284,002 dwt), and the Saudi Glory (276,386 dwt).

Principal Characteristics of Drydock

The new dock has a length of approximately 1,230 feet, breadth of 246 feet, sill level 30 feet below datum, and floor level 33 feet below datum. The dewatering time is approximately three hours without vessel, three pumps. Cranes are 100 tons and 15 tons.



Shaikh **Isa** is shown pouring holy water into the new dock, declaring it officially open.

The dock gate was built in Lisbon by Lisnave, who also have a 10-year contract to provide management expertise for ASRY. The gate is made of shipbuilding steel and measures approximately 253 feet (77 meters) by 21 feet (6½ meters) by 46 feet (14 meters). It is hinged at the bottom and is opened and closed by pumping ballast water out of it or into it. Similar designed gates have been successfully installed at both Lisnave and Setenave yards in Portugal.

The reinforced concrete floor slab is founded directly on the natural sands, although those have for the most part been excavated to a depth of about 7 feet and have been reinstated by compacting in layers to achieve appropriate density.

The dock pumphouse is also of reinforced concrete construction and measures approximately 164 feet by 79 feet. The main dewatering pumps, three in number, are vertically mounted single-stage with concrete volute and syphon discharge. In addition to those pumps, the pumphouse accommodates pumps for the underfloor drainage, firefighting, general service water and ballast water. The layout of the pumphouse has been so arranged as to facilitate connection to a second drydock should this at some future date be built alongside the first.

ASRY is very grateful to the shipowner acceptance which has accrued so early to a new repair yard. It seems that owners not only are satisfied with the quality of ASRY's repairs, but find its location adjacent to the loading terminals in the Arabian Gulf of great advantage. ASRY has set a target of more than 40 VLCCs for 1978.

C.F. Bean Names John Lescroart VP For Washington Office

The appointment of **John E. Lescroart** as vice president, C.F. Bean Corp.'s Washington, D.C., office has been announced by **Charles F. Bean,** board chairman of the New Orleans, La.-based international dredging and marine contractor.

Mr. **Lescroart's** activities will be concentrated in the areas of domestic and international business development, government relations, and other special projects. He will report directly to **J.W. Bean,** the company's president.

Mr. **Lescroart** has more than 25 years' experience in the dredging industry. From September 1975 to February 1977, he was director of deepwater ports for the U.S. Department of Transportation, where he developed policy and implemented procedures pertaining to the Deepwater Port Act of 1974.

His experience also includes serving as president and director of Atlantic, Gulf and Pacific Co. from 1971 through 1975.

Midland Enterprises Elects Ralph Plagge

Ralph E. Plagge

J.D. Geary, president of Midland Enterprises Inc., a wholly owned subsidiary of Eastern Gas and Fuel Associates, has announced the election of **Ralph E. Plagge** to assistant vice president, transportation, for The Ohio River and Orgulf Transportation Companies. Mr. **Plagge** was formerly transportation manager, and has been with Midland Enterprises Inc. for over 27 years. Mr. **Plagge's** responsibilities include the dispatching of 23 towboats and over 1,400 barges owned by the Cincinnati, Ohio-based corporation.

Sun Ship To Build Two 30,000-DWT Tankers

Sun Shipbuilding, Chester, Pa., has received a shipbuilding order for two 30,000-deadweight-ton product tankers from Sun Trading and Marine Transport, Inc., a Sun Company subsidiary.

The shipyard is moving rapidly ahead on the design and engineering of the two 612-foot tankers in preparation for keel-layings later this year. Delivery of the first of the two vessels is tentatively scheduled for 1979.

These two tankers are the first vessels Sun Ship has built for Sun Company or any of its other subsidiaries since delivery of the America Sun in 1969.

Maritime Industry Impact On Nation's Economy Shown In MarAd Report

The Maritime Administration has released the results of the first major Government effort to analyze the impact of the U.S.-flag shipping and American shipbuilding industries on the nation's economy. The findings demonstrate conclusively that these industries contribute greatly to the productive output of the United States.

The results of the study are presented in "Economic Impact of the U.S. Merchant Marine and Shipbuilding Industries: An Input-Output Analysis," a report prepared under a MarAd contract by the Planning and Development Department of the Port Authority of New York and New Jersey.

The following items are among the major findings of the study:

- The U.S.-flag merchant fleet accounts for total sales of $8.3-billion annually, and its activities create and maintain 244,900 jobs throughout the nation. This generates personal incomes of $2.4 billion, and corporate incomes of $0.8 billion.
- The American shipbuilding industry has a total annual output of $6 billion, and generates 235,400 jobs in this country. Personal incomes generated throughout the economy by this industry total $2 billion; corporate incomes total $0.6 billion. The privately owned and operated U.S. merchant marine is responsible for one-third of the shipbuilding industry's activities.
- Operating- and construction-differential subsidies are responsible for a combined total output of $2.5 billion in the national economy, and 88,500 jobs on ships and ashore. The subsidies generate personal incomes totaling $0.9 billion, and corporate incomes totaling $0.2 billion.
- From one-third to one-half of the total costs of the subsidy programs are recovered by the U.S. Treasury in the form of tax accruals induced by the economic activities of subsidized vessel operations and construction.

The study used an Input-Output (I-O) Model to measure the impact of the maritime industries on the economy. The model makes it possible to measure the interactions not only between producers and final consumers, but also among the industries.

The I-O Model revealed that through the chain of purchases initiated by maritime activities, the output of the U.S.-flag merchant fleet has a "multiplier effect" of 1.8, meaning that each dollar of sales produces a total output of $1.80 in sales throughout the economy. The multiplier for the American shipbuilding industry has an even higher rating of 2.1.

It should be noted that figures used in construction of the I-O Model were from 1970, the latest year for which complete input-output data were available. In 1976 dollars (adjusted for inflation), the figures for shipping would be higher by 36 percent, and the figures for shipbuilding would be higher by 44 percent.

The 56-page study (plus appendices) is available from the National Technical Information Service, 5285 Port Royal Road, Springfield, Va. 22161. The price is $10.75 and the order number is PB-272518/AS.

Fast bulk deliveries offshore in Los Angeles/Long Beach.
That's what you can count on from Shell with San Pedro Marine's Vicki Ann *on the job. Put the combination of Shell's quality marine lubricants, this unique lube supply vessel, and San Pedro Marine's 45 years' experience to work for you.*

Vicki Ann *owner, Tom Jankovich, Jr. (center) is continuing his father's tradition of 45 years' outstanding service as Shell marine distributor. Note his 440-gal. aluminum bulk bins on deck. With them he can pump lubricants aboard a ship three times as fast as with 55-gallon drums. Two simple hose lines carry* Alexia *Oil 50 and* Melina *Oil 30 from the bulk bins on deck up to the VLCC.*

3 hours 50 minutes was all it took for San Pedro Marine's 75 ft. Vicki Ann *to load 20,700 gals. of Shell marine lubricants on board 245,850 dwt VLCC 7.7 miles off the shore of San Pedro, California.*

Aluminum 440-gal. bulk bins are key to Vicki Ann*'s speedy transfer of marine lubes. Hose lines from four individual bins at a time feed lubricants into twin 2-inch feeder lines leading from* Vicki Ann *to the VLCC's bulk tanks.*

Orders of Shell Tellus®* *hydraulic oil,* Omala®* *gear oil, and* Shell Turbo®* *oil for turbine-driven pumps are hoisted aboard VLCC while* Alexia *Oil and* Melina *Oil main system lubricants are being pumped from* Vicki Ann*'s bulk bins. Time saver!*

Shell's super lube lighter helps trim vessel turnaround time.

Only 3 hours 50 mins. needed by San Pedro Marine's unique "Vicki Ann" to make 20,700-gal. true bulk delivery of Shell marine lubricants to a VLCC 7 miles offshore.
How much turnaround time, lay-berth expense, and money do you figure "Vicki Ann" could save you in LA/Long Beach harbors?

Port agents and owners! Trim the time and costs for vessel turnabouts in LA/Long Beach harbors.

Let San Pedro Marine, Inc. put its one-of-a-kind offshore lube supply vessel to work for you. Forget about lay-berth time and costs! Eliminate time- and money-consuming drum deliveries on large orders of such main system lubricants as Shell *Alexia*®* 50 cylinder oil and multi-purpose Shell *Melina*®* 30 oil.

The "Vicki Ann" is a real drum-beater. It pumps marine lubricants from 440-gal. aluminum bulk bins on its deck — at rates as high as 100 gal. per minute.

Our photo story takes you on a typical lubricants supply run made recently by the "Vicki Ann" 7.7 miles from her berth in San Pedro, California.

Interested in more information on fast bulk deliveries in LA/Long Beach? And our Shell Marine lubricants that are available in over 400 ports around the world? There's only one number to call toll-free: 800-231-6990

Come to Shell for answers

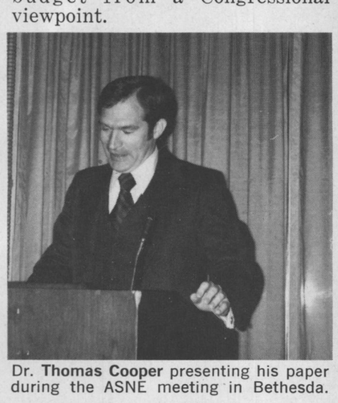
*These are trademarks and are used as such in this writing.

ASNE Flagship Section Hears Dr. Thomas Cooper On Military R&D Programs

The Flagship Section of American Society of Naval Engineers held its fourth 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 90 members and guests, vice chairman **James Schuler** opened the meeting by welcoming all those in attendance.

Vice chairman **Schuler** also acted as moderator for the technical program and introduced Dr. **Thomas Cooper,** who is assistant professor at the Post Graduate School, Monterey, Calif., but is presently serving as ASME Fellow on the staff of the U.S. House of Representatives Armed Services Committee. The subject of Dr. **Cooper's** talk was "An Overview of Congressional Perspectives on DOD Research and Development Programs." Through the use of visual aids, Dr. **Cooper** introduced the audience to the numerous military R&D programs under the cognizance of the House Sub-Committee, of which he is a staff member. Dr. **Cooper** highlighted the significant present and future weapons systems being evaluated by the Army, Air Force and Navy with a unique insight and commentary. The membership achieved a fuller understanding of the magnitude of the overall military R&D program and budget from a Congressional viewpoint.



Dr. **Thomas Cooper** presenting his paper during the ASNE meeting in Bethesda.

After the formal presentation, Dr. **Cooper** responded to numerous questions directly related to the Navy and sea-power aspects of the R&D budget. At the conclusion of the question and answer period, vice chairman **Schuler** presented Dr. **Cooper** with the Section's Certificate of Appreciation, and he received a standing ovation for his excellent presentation.

Santa Fe Drilling Names Parry Manager All Drilling Rigs

N.V. Parry, senior vice president of Santa Fe Drilling Co., Orange, Calif., has been named general operations manager with responsibilities for all of the company's drilling rigs in this country and abroad.

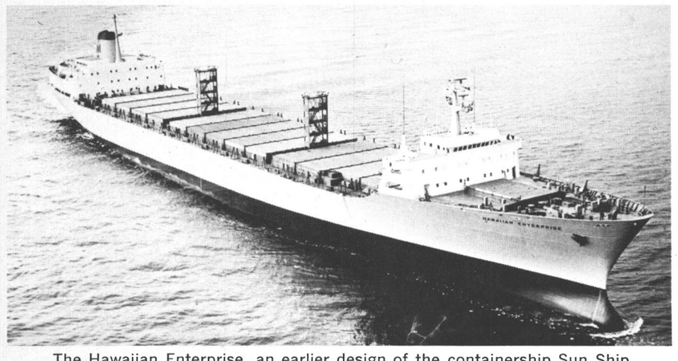
In other organizational changes announced by president **G.M. Anderson, C.F. Dawson** moved from London to company headquarters in Orange, Calif., to assume a new position as senior vice president and assistant to the president, and **I.J. Flowers** was promoted to senior vice president and marine operations manager.

Promoted to vice president were **C.L. Barnhill,** London, area vice president, Europe and Africa; **J.H. Morris,** Bahrain, area vice president, Middle East; **B.G. Parker,** Bahrain, vice president and operations manager, Middle East; **E.D. Shepherd,** Houston, area vice president, and **R.E. Hinson,** Orange, vice president and director of personnel.

Mr. **Shepherd's** new area of responsibility includes Brazil, Trinidad, and the Gulf of Mexico. He continues to report to **L.M. Jones,** Houston, senior vice president and Western Hemisphere manager.

Santa Fe Drilling Co. is a subsidiary of Santa Fe International Corp.

Sun Ship Lands Contract To Construct 720-Foot Containership For Matson Navigation



The Hawaiian Enterprise, an earlier design of the containership Sun Ship will build for Matson Navigation Company. The containership the shipyard will build for Matson is an advanced design of this 22-knot containership.

Matson Navigation Company has signed a contract with Sun Shipbuilding and Dry Dock Co. of Chester, Pa., for the construction of a 720-foot, 38,800-ton containership for Matson's West Coast-Hawaii freight service, with delivery by January 1980.

Total cost of the vessel will be about $75.5 million, including financing costs, said **R.J. Pfeiffer,** Matson president.

The containership will be capable of carrying 1,121 containers (911 twenty-four-foot units, 36 twenty-seven-foot units, 174 forty-foot units), including 302 refrigerated containers.

"When that ship joins our fleet, Matson will be in the strongest position in its 95-year history to provide complete freight service to Hawaii through the 1980s and beyond," Mr. **Pfeiffer** said.

The vessel will be built from an advanced design of Matson's S/S Hawaiian Enterprise and S/S Hawaiian Progress, which entered service in 1970, and the new S/S Maui, which will join the fleet in June.

The vessel will be powered by a geared steam turbine rated at 32,000 shaft horsepower, with a speed of more than 22 knots.

Advanced design features of the new ship include improved fuel economy, elimination of on-deck container lashing, and added capacity for carrying automobiles in garage-type stowage.

Deck lashings will be eliminated by stowing more containers below decks. Extended hatch coamings will provide greater protection to cargo containers from damage at sea.

CONTRACT SIGNING — Sun Ship president **Peter S. Hepp,** right, and Matson Navigation Company president **Robert Pfeiffer** sign contract for Sun Ship's construction of 720-foot containership.

The vessel will also be equipped with a bow thruster to aid in docking and undocking operations.

The shipyard is moving rapidly ahead on the design and engineering of the vessel in preparation for a keel-laying later this year.

Sun Hull No. 678 will be the largest containership ever constructed by the shipyard, and will be the third vessel Sun Ship has built for Matson in the 1970s. Two previous vessels, the trailerships S/S Lurline (Sun Hull No. 662) and S/S Matsonia (Sun Hull No. 664), are currently being operated by Matson in the U.S. West Coast to Hawaii trade.

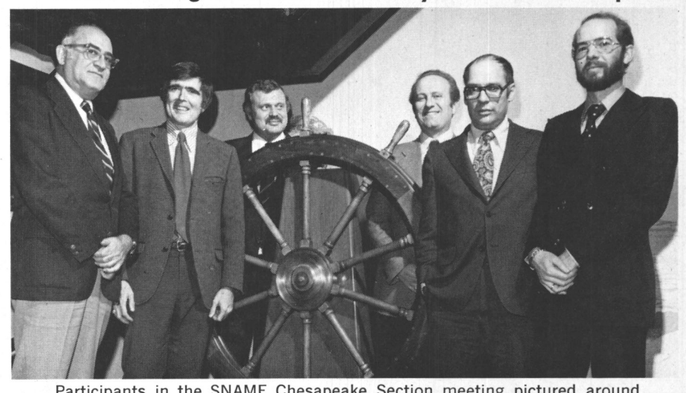
Culpepper And Renehan Announces Formation Of New Steamship Agency

J. Daniel Culpepper and **Lawrence Arthur Renehan** have announced the formation of Gulf and Eastern Steamship and Chartering Corp., with offices in New York, New Orleans, and Houston. The new company will represent owners of liner and bulk vessels providing full steamship agency marketing, sales and operations service in all of North America.

Mr. **Culpepper,** formerly president of Roberts Steamship Agency, Inc., and chief freight executive of Cunard Line in the United States, will be located in Houston and will supervise all offices in the U.S. Gulf.

Mr. **Renehan** was a vice president of Tilston Roberts Corporation. He served at sea as master of Farrell Lines vessels, was vice president of Prudential-Grace Lines, and was director of export and marine services of International Paper Co. In the latter position, he was responsible for the development and introduction to service of the first LASH vessel. He will be headquartered in New York and will be responsible for the East Coast and Midwest offices of the company.

SNAME Chesapeake Section Discusses Steering, Maneuvering And Controllability Of Surface Ships



Participants in the SNAME Chesapeake Section meeting pictured around the ship's wheel in the Officers' Club at the Washington Navy Yard, left to right, are: **Phillip Eisenberg,** Hydronautics Inc., past president of the Society of Naval Architects and Marine Engineers; **Frank Sellars,** MPR Associates, past chairman of the SNAME Chesapeake Section; **C. Glansdorp,** Delft University of Technology, author; **Reuven Leopold,** Naval Ship Engineering Center, chairman of the Chesapeake Section; **Gerald Cann,** Deputy Assistant Secretary of the Navy for Systems, session moderator, and **Gerald van Oortmerssen,** Netherlands Ship Model Basin, author.

The Chesapeake Section of The Society of Naval Architects and Marine Engineers met at the Officers' Club at the Washington Navy Yard on January 18, 1978, to hear **C.C. Glansdorp** and Dr. **Gerald van Oortmerssen** discuss "Research on Steering, Maneuvering, and Controllability of Surface Ships." Mr. **Glansdorp** is the senior scientific officer of the Netherlands Maritime Institute and Delft University of Technology in the Department of Naval Architective and Maritime Studies. The paper was divided into two sections, with Mr. **Glansdorp's** portion being concerned with "Ship Maneuvering Trials and Some New Concepts in Ship Controllability." His presentation included a general treatment of the execution of maneuvering trials for practical nautical purposes, and for compliance with recent resolutions on maneuvering adopted by the General Assembly of the International Maritime Consultative Organization. Mr. **Glansdorp** also discussed the function and application of a ship maneuvering simulation to the training of navigators and helmsmen, noting the encouraging experience that the institute had encountered in the modeling of a navigator's behavior.

The second part of the presentation covered the "Hydrodynamic Research by means of Model Tests," which developed the technology base upon which the motions simulator was constructed. Dr. **van Oortmerssen,** who is senior scientific officer at the Netherlands Ship Model Basin in Wageningen, presented a general description of the mathematical models required for describing the horizontal plane motions of a maneuvering ship. The model testing techniques which are used to determine the coefficients in the mathematical model were discussed in detail by Dr. **van Oortmerssen**. He gave special attention in his presentation to the interesting and often anomalous effects of shallow water, proximate canal banks and soft mud bottoms. Dr. **van Oortmerssen's** presentation of the interesting modeling and scaling problems generated in soft bottom model testing was particularly entertaining as well as instructive. This was followed by an analysis of the maneuvering disturbances produced by wind, waves, currents and passing ships. Dr. **van Oortmerssen** concluded with a presentation of correlations of predictions of standard maneuvers with the results of free-running model tests and full-scale trials.

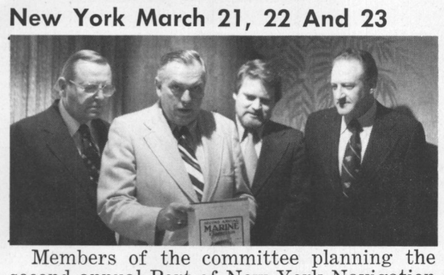
The session was chaired by **Gerald Cann,** who is presently serving as Deputy Assistant Secretary of the Navy for Systems. Mr. **Cann** is a geophysicist who held the position of Assistant Director for Ocean Control in the OSD D.D.R. & E office in years prior to his present appointment. Following technical presentations, Mr. **Cann** called for a presentation of the written discussions prepared by seven members of the Society, (**R. Falls,** DTNSRDC; **A. Landsburg,** MarAd; **G. Miller,** Hydronautics; Lt. Comdr. **W. Snider,** Coast Guard; **A. Taplin,** NSEC; **V. Keith,** ECO, and **L. Crane,** Exxon).

Mr. **Cann** also presented a brief summary of the Navy's ship design program. Mr. **Cann** encouraged the community of naval architects to remember three key areas when considering naval ship design: vulnerability, modularity, and maintenance.

The fact that the currently planned ships will have to serve the needs of the Navy into the next century requires that weapon suites be modular. It further requires that the special maintenance problems created by both modularity and an all-volunteer service be carefully addressed in the near future.

NEW CRANE TURNS CORNER — The 40-long-ton-capacity Paceco Portainer® crane shown above with specially designed features has been erected for Crescent Wharf & Warehouse Company at the Pacific Container Terminal, Port of Long Beach, Calif. Designed and built by Paceco, Inc., a subsidiary of Fruehauf Corporation, Alameda, Calif., the Rail-Mounted crane is able to negotiate a curve of 150- 7½″ minimum radius on Pier F at the Long Beach facility. Special articulating equalizer beams and trucks were designed into the Paceco Portainer crane to facilitate this maneuver. The crane has a 115-foot outreach and 50-foot backreach over the terminal. A Quick Change Headblock makes the crane adaptable to various sized spreaders and cargo beams to handle a wide variety of containers and general cargo. Fabricated at Paceco's Alameda plant, the huge crane components were barged through the Golden Gate and down the West Coast to Long Beach. Paceco was in charge of erection on site.

Planning Navigation/Communication Conference To Be Held In New York March 21, 22 And 23



Members of the committee planning the second annual Port of New York Navigation and Communication Conference and Exhibition, sponsored by the Maritime Association of the Port of New York and co-sponsored by the Council of American Master Mariners and scheduled to be held at the Downtown Athletic Club in Manhattan on March 21, 22 and 23, gaze nostalgically at cover of brochure that announced a Marine Exhibition in 1927. Shown above are, left to right: **Robert McCarthy,** Raytheon Marine Co.; **R.E. Wills,** Norton Lilly & Co., Inc.; **Roy Thompson,** ITT Decca Marine, and **Roy Andres,** Western Union International. The Conference and Exhibition March 21-23 will consist of panel sessions, conducted by experts, which will discuss current technical developments in navigation and communication aids as they relate to maritime operation. Held concurrently will be a Demonstrator Exhibition of the latest equipment in the two fields. Members of Congress and Congressional aides and counsels will address the conferees, and prominent authorities will be honored guests and principal speakers on March 21 and 22. Space for display of equipment by manufacturers is now being allocated, according to the Maritime Association. Further information for display reservation space, or for conferees wishing to register, may be obtained by writing to Maritime Association of the Port of New York, 80 Broad Street, New York, N.Y. 10004.

Maryland Shipbuilding Names Richard Seitz

Richard G. Seitz

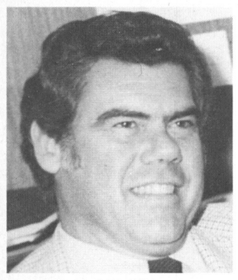
Richard G. Seitz, who has been employed at Maryland Shipbuilding & Drydock Company since 1946 in the Engineering Department, has been promoted to vice president of engineering, Maritime Operations.

Mr. **Seitz,** a long-time resident of Howard County (Md.), is a graduate of the University of Michigan School of Naval Architecture. In 1960, he was appointed to the position of chief naval architect at Maryland.

In his new position, he will be responsible for all the engineering activities at the Jacksonville Shipyards at Jacksonville, Fla., and Maryland Shipbuilding & Drydock Company located in the Brooklyn-Fairfield section of Baltimore, Md.

Mr. **Seitz** will now be headquartered in Jacksonville, Fla. Both shipyards, of which **A.P. McIlwain** is president, are subsidiaries of the Detroit, Mich.-based Fruehauf Corporation.

AMETEK Straza Division Promotes Daniel Johnson



Daniel A. Johnson

AMETEK, Straza Division, El Cajon, Calif., has announced the promotion of **Daniel A. Johnson** to the newly created post of vice president, Advanced Programs. In this position, he is responsible for coordinating divisional efforts in meeting developing and long-term offshore requirements for undersea work vehicles and sophisticated electroacoustic systems, and will direct proposal activity in these areas.

Mark L. Hyland has been appointed as manager, Undersea Vehicle Programs. He succeeds Mr. **Johnson** in this post and is responsible for engineering, production and testing of SCORPIO and other specialized undersea vehicle systems.

Red Fox Announces New Type Marine Sanitation Device

The Red Fox Type II Marine Sanitation Device features a unique, pressurized clarifier chamber which keeps liquid in a motionless state. Sludge settling rate is not affected by vessel pitch or roll. Efficient flow-through system eliminates periodic sludge dumping. Effluent discharge consistently meets strict EPA, IMCO and U.S. Coast Guard requirements for Type II Marine Sanitation Devices.

The unit contains no moving parts; has no filters or filter media. There are no knobs to turn or dials to set. The Red Fox Type II MSD operates around-the-clock, in any port, on inland waterways or the high seas around the world. Special bacterial activator provides immediate startup in separate aeration chamber.

The Red Fox MSDs are now available in 1 to 600-man rated units; all 22 sizes are certified and labeled by the U.S. Coast Guard. Other models are available for installation on rig platforms, and for land-based operation in municipal sewage systems and commercial buildings. For descriptive literature, write to **Belden Fox Jr.,** Red Fox Industries, Inc., Pollution Control Division, P.O. Drawer 640, New Iberia, La. 70560.

TURBO GENERATOR SETS

G.E. 1500 KW A.C. TURBO GENERATORS

1 

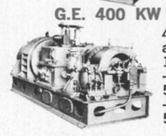
1500 KW — 450/3/1200 RPM —0.8 P.F.—2450 amps—525 PSI—850°TT—8145 RPM—11-stage geared 8145/1200—type FN4 — 3½" steam inlet. Unit will deliver full power at 440 lbs & 760°TT. OAL 16' 3-3/8"—OAW 6'6"—OAH 7'5¼"—wt. 36000 lbs. Almost equal to new. Very little use. With ABS or Lloyds.

G.E. 600 KW GEARED TURBO GENERATORS

2 

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

G.E. 400 KW TURBO GENERATORS

3 

450/3/60/1200—0.8 PF—641 amps. TURBINE: 6-stage — 10059 RPM—525 lbs/825°TT — type GE 618N. Steam rate 5100 lbs/hr. — OAL 10' 10½" — OAW 4' 10½" — OAH 5' 5¼" — wt. 14,855 lbs.

400 KW WESTINGHOUSE TURBO GENERATOR SETS FOR BETH-SPARROWS POINT HULLS 4467 TO 5400; QUINCY HULLS 1600 SERIES

4 

400 KW (500 KVA) — 0.8 PF — 1200 RPM — 450/3/60. TURBINE: 585 lbs—840°TT—28½" vacuum—9018 RPM—serial 10A4462-3 & 10A4462-4. GEAR: 9018/1200 RPM. A.C. GENERATOR: 500 KVA — 400 KW—450 volts—641 amps—0.8 PF — 3-phase 60-cycle — 1200 RPM — CR 40° — excitation amps 41 — excitation voltage 120. Instruction book 5442. Switchgear available.

UNUSED WESTINGHOUSE 60 KW 120 VDC M-20-EH

5 

120 VDC — 1800 RPM. TURBINE: M-20-EH — 20 lbs dry & saturated — 25" vacuum. 7283 RPM. GEAR: 7283/1800. GENERATOR: 60 KW — 120 VDC — 500 amps — SK — stab. shunt wound.

UNUSED 500 KW DELAVAL-WESTINGHOUSE GEARED TURBO GENERATOR

6 

GENERATOR: Westinghouse 500 KW — 120/240 volts DC — 2080 amps — 1200 RPM — stab. shunt. TURBINE: DeLaval — 730 HP — 440 PSI working pressure condensing. Temperature 740° — 9977 RPM. HELICAL GEAR: 9977/1200 RPM. Serial # of turbine 245204 — weight 22,000 lbs.

TURBINES & ROTORS

BETH-SPARROWS POINT, QUINCY HULLS

7
1 HP Turbine or rotor — Bethlehem
1 400 KW Stator only — Westinghouse
1 HP turbine casing only — Bethlehem
1 Complete Westinghouse 400 KW turbo generator set
1 Forced draft motor fan
1 Anchor windlass — 2 11/16"
Steering gear motors — 15 HP
Forced draft fan impeller

WESTINGHOUSE C-25 CARGO PUMP TURBINE ROTOR
VICTORY-AP2 MAIN PROPULSION

8 Westinghouse AP2 19-stage HP rotor for 6000 HP Victory — serial #4A-2079 — equal to new.
Unused surplus AP2 — Victory Ship complete HP & LP turbines
Allis-Chalmers HP & LP
Westinghouse LP AP2 with throttle valve
G.E. HP & LP with throttle valve

VICTORY-AP3 MAIN PROPULSION NEW 8500 HP G.E. TURBINES

9 Large Victory or C-3
HP #72271 LP #72272
10 Boxes spare parts, tools & fittings. With maneuvering valves.

8500 HP G.E. — C-3 OR VICTORY

10 H.P. — 8-stage — 6159 RPM — serial 62043
L.P. — 8-stage — 3509 RPM — serial 62042
G.E.I. 16263

VICTORY SHIP AUXILIARY TURBO GENERATOR SET ROTORS

11 300 KW 5965 RPM JOSHUA HENDY

Turbine — 3H-69	Gear — 52269
Turbine — 3H-52	Gear — 52252
Turbine — 3H-62	Gear — 52262

ALSO WESTINGHOUSE 2A & 5A SERIES

— FOR T-2 VESSELS —

12 

TURBINE: DORV-325M — 525 KW — 5645 RPM — 435 PSIG — 28" exhaust. REDUCTION GEAR: S-162 — form D — 5641/1200. A.C. GENERATOR: 500 KVA — 400 KW — 440/3/60 — 1200 RPM — 0.8 PF. D.C. EXCITATION GENERATORS: 75/55 KW — form AL — 110 volts DC. With new type amplydines.

538 KW WESTINGHOUSE T-2 AUXILIARY GENERATOR — COMPLETE

13 TURBINE: 538 KW @ 5010 RPM — 438 PSIG — 750°TT — 28½" vacuum. GEAR: 5010/1200 RPM. A.C. GENERATOR: 400 KW—450/3/60/1200—0.8 PF. DC EXCITER: 32.5 KW — 120 volts (variable voltage) — shunt — 4-pole — DC excitation 5 KW. ALWAYS WELL MAINTAINED BY MAJOR OIL CO.

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

14 10-Stage — 435# — 720°TT — turbine complete with rotor — serial #109166 — 4925/5400 KW — 3600/3720 RPM — 28.5" vacuum.

WESTINGHOUSE MAIN PROPULSION STEAM TURBINE WITH ROTOR EX-CHEVRON VESSEL "MACGAREGILL"

15 Shrouded—like-new condition. Will sell rotor separately.
WESTINGHOUSE MAIN PROPULSION TURBINE
Ex"Pecos" — unshrouded — serial 2A-7733-2 type A

UNUSED G.E. MAIN PROPULSION STATOR

16 

Type ATB-2—serial #6978272. 2300/2370 volts — 60/62 cycles — 3-phase — 3600/3720 RPM — armature amps 1237/1315 — 4925/5400 KW — 1.0 PF.
Westinghouse stator — from Ex "Pecos"

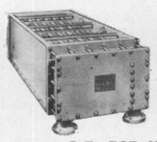
WESTINGHOUSE 538 KW AUX. GENERATOR EXCITER ARMATURE

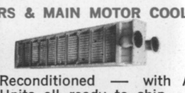
17 

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

18 **538 KW WESTINGHOUSE AUXILIARY TURBINE ROTORS**

WESTINGHOUSE T-2 TANKER MAIN GENERATOR COOLERS & MAIN MOTOR COOLERS

19 



Reconditioned — with A.B.S. Units all ready to ship.
Also G.E. Main Generator Coolers

G.E. 525 KW AUX. GENERATOR EXCITER ARMATURE

20 

75-55 KW

NEW STYLE AMPLIDYNE

21 

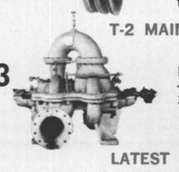
5LY148A2 — type A.M. — frame 605

AUXILIARY GENERATOR ROTORS

22 

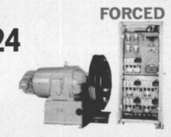
G.E. aux. generator rotors — DORV-325M — for 525 KW turbo generator sets

T-2 MAIN CARGO PUMPS

23 

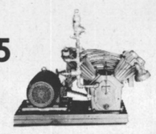
Ingersoll-Rand 6GT — 2-stage — bronze — 2000 GPM — 280' head

LATEST DESIGN 5-SPEED FORCED DRAFT FAN MOTORS

24 

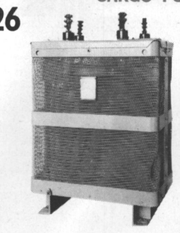
G.E. Model 5M505FE-1 — frame 5055—type M—440/3/60 — serial S.E.6731807. Controller available. (Complete with fan impeller)

T-2 SHIPS SERVICE AIR COMPRESSORS

25 

Worthington—5½x3½x3½ — VA2 — 20 C.F.M. — 100 lbs.—5 H.P. Motors—440/3/60 — 1750 RPM.

WESTINGHOUSE DRY TYPE T-2 CARGO PUMP TRANSFORMERS

26 

200 KVA — single phase — 60 cycle 2300/450 volts—weight 3720 lbs. each. 4 available.

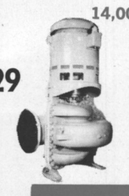
G.E. PYRONOL OIL COOLED TRANSFORMERS

27 200 KVA — single phase — 60 cycles — 2300/450 volts — 3 available.

MISCELLANEOUS DRY-TYPE TRANSFORMERS

28 Lighting Transformers—15 KW— 450/120 volts
Galley Power Transformers—15 KW—450/220 volts

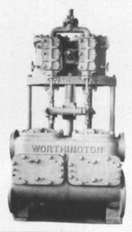
INGERSOLL-RAND 14,000 GPM MAIN CIRCULATOR

29 

14,000 GPM @ 25' head — model 24UCM — bronze — with 125 HP 440/3/60 580 RPM motor. 26" suction — 24" discharge. Can furnish with Westinghouse type CS frame B-876C or GE type KF vertical motors.

PUMPS

BRONZE T-2 TANKER STRIPPING PUMPS

30 

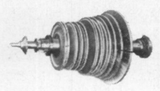
14x14x12 — 700 GPM at 100 lbs. Same pump available in steel for fuel oil transfer, etc.

31 **WESTINGHOUSE 200 H.P. CARGO PUMP MOTORS**
440/3/60 1750 RPM — 40°

MISSION TANKER T2SEA2 CIRCULATING PUMP MOTOR

32 150 HP — 440/3/60/590 RPM. Frame 6335 — type KF — 204 amps

T-2 MAIN ROTOR

33 

LARGE G.E. MAIN PROPULSION SCHENECTADY TURBINE ROTOR

Turbine serial 77418 — reconditioned with certificate. Just out of Beth shop 1970

T-2 MISCELLANEOUS, PUMPS ETC.

34 10 HP Labour Self-Priming Bilge Pumps • Rudder 13½" Rudder Stocks • Main Injection 3-Way Valve Main Condensate Pumps • Fuel Oil Service Pumps Magnablast Breaker • 1 Set New Bull Gear & Pinion for G.E. 525 K.W. Diesel Gen Model S-162 • 32", 24", 15" Rubber Expansion Joints • Mission Tanker Steering Gear Pumps

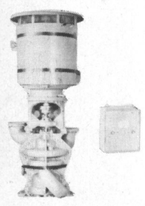
TURBINE FIRE PUMPS — BRONZE

35 Worthington turbine — 440# — 448° — 3500 RPM — 75 HP — 15# back pressure — 750 GPM @ 125 lbs — 6" suction — 4" discharge.

NEW BLACKMER FUEL OIL TRANSFER PUMP

36 

Rotary — 50 GPM — 50 lbs. — 2″ — 5 HP — 440/3/60 — with starter & spares

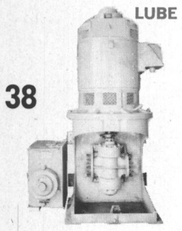


UNUSED BRONZE FEED-WATER BOOSTER PUMPS

37

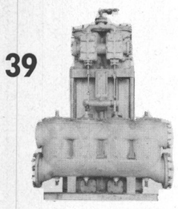
220/237 GPM @ 144′ head — 2-stage — 1750 RPM with 30 HP 440/3/60 motor control & spares. Built for USN

LUBE OIL SERVICE PUMP

38 

Quimby-Rotex — size 6D — 500 GPM @ 70 lbs — 6″x6″ flange — 720 RPM. MOTOR: Allis-Chalmers — 40 HP — 230 VDC — type EBV-147S — stab. shunt — 148 amps. Complete with starter and rheostat — designed originally for C-1MAV-1 vessels.

WORTHINGTON 16″x14″x18″ VERTICAL DUPLEX STRIPPING PUMP

39 

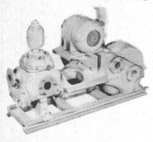
1400 GPM @ 110 PSI; suction lift 11.5 ft. Steam back pressure 15 lbs. Suction 14″ — discharge 10″ — steam 2½″ — exhaust 4″. Overall width 6′ 8″ — overall height 9′ 1½″ — depth 3′ 9½″ — approx. wt. 10,000 lbs.

NEW WORTHINGTON VERTICAL SUBMERSIBLE BILGE PUMP

40 

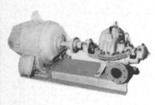
For emergency use on passenger ships, etc. PUMP: JAS — 264 GPM — 171′ head — two 6″ inlets — one 5″ outlet. MOTOR: 40 HP — 230 VDC — 149 amps.

MOTOR-DRIVEN GARDNER-DENVER RECIPROCATING BILGE PUMP

41 

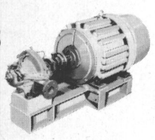
50 GPM — 150 PSI — Model ALAXE — serial #106335. 3¾″ bore — 4″ stroke — 2½″ suction — 2″ discharge. 51″ long — 21″ wide — 21″ high — weight 750 lbs. MOTOR: Diehl — 2.5 HP — 440/3/60 — 1750 RPM — 3.53 amps.

GOULD FIRE AND BILGE PUMP

42 

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

43 

Single stage — 2½″ suction — 2″ discharge. 3000 RPM — 250 GPM. 100 lb. head. Impeller diameter 9½″. MOTOR: Air cooled heavy duty 25 HP Reliance T type ON-2S-2½ 230 VDC — 110 amps — stab. shunt.

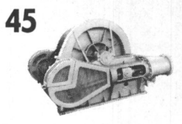
DIESEL GENERATOR SETS

44 410 KW ENTERPRISE DIESEL GENERATOR SET

Enterprise DSG-6 6-cylinder diesel engine driving Westinghouse generator. 250 volts DC — 1640 amps — 650 RPM — shunt wound.

MISCELLANEOUS

AUTOMATIC TENSIONING 12X14 STEAM WINCH

45 

American Engineering. Drum diameter 24″. Will stow 1500 ft of 1½″ in 8 layers. Capacity 1st layer: 20,000 lbs/100 FPM — 16,000 lbs/50 FPM. Drum width 2′ 6¾″. Steam inlet 3″—exhaust 4″. 8′ 4½″ wide over cylinders. Base 6′ x 6′ 3½″.

46 

16″ BRASS PORTLIGHTS

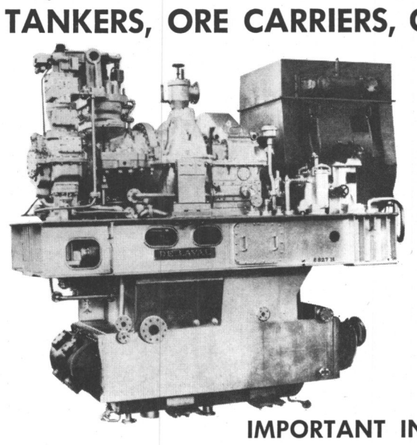
15″ and 16″ brass portlights. 16″ portlights are 3-dog type.

47

IF YOU'RE GOING TO JUMBO-IZE YOU CAN ECONOMIZE WITH THESE

ALLIS-CHALMERS — DELAVAL 1000 KW GEARED MARINE TURBO-GENERATORS

If you are contemplating the new construction of TANKERS, ORE CARRIERS, CONTAINER VESSELS, ETC.



YOU CAN SAVE THOUSANDS OF DOLLARS

with these modern, practically new units — built to highest Navy standards. Send for our free descriptive brochure. You'll be glad you did.... and money ahead!

IMPORTANT INFORMATION

DELAVAL TURBINE: 1442 HP — 10019 RPM — Class GJ-N — 9-stage — 10,000 RPM — 1050 PSI — 950°TT — condensing steam rate 10.30 lbs. Typical serial number 652468. DELAVAL DOUBLE HELICAL GEAR: 10000/1200 RPM—Allis-Chalmers—1000 KW—450 volts—3-phase—60 cycle—1200 RPM—0.8 PF—static excitation—totally enclosed air-to-water cooling—temperature rise: Stator 130°C—Rotor 110°C—class H insulation—typical serial number 160615—type M.A.K.G. Complete with 525 sq.ft. condenser—190 lbs/hr air ejector—oil coolers—strainer—piping & valves—generator switchgear—static excitation control—voltage regulator. Total weight of unit 40,300 lbs. OAL 12′ 9″—OAW 6′. Turbo-generator height 5′ 8″—total height of turbo-generator & condenser 12′ 8″. UNITS IN EQUAL-TO-NEW CONDITION. Originally designed for DLG Guided Missile Frigate Program. Installed only about 2 years, then removed and carefully re-boxed by U.S.N. at Bath Iron Works 1964-65. Navy installed larger units due to increased load requirements.

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OUR NEW PHONE NO. IS (301) 752-1077

'The Seaborne Transportation Of Liquefied Natural Gas 1977-1985 —Trades, Costs And Revenues'

The expected boom in LNG shipping, which has been forecast consistently during the past decade or more, remains as far from being realized now as it has ever been. This generalization holds despite 1977 having emerged as a peak year for interest in LNG shipping, with both the press and the shipping industry avidly reporting any development in this sector of energy transportation. Most of the interest in 1977 focused on expectations for future LNG trades and their shipping requirements. The latest survey, "The Seaborne Transportation of Liquefied Natural Gas 1977-1985 —Trades, Costs and Revenues," from HPD Shipping Publications, has in the light of 1977 developments thoroughly analyzed the mid-1977 existing and potential future LNG trades and their shipping requirements. This analysis pays especial attention to the comparative transportation costs and revenues associated with LNG shipping.

Some of the most notable LNG shipping developments in 1977 suggest an improving and an encouraging market outlook for LNG tankers by the early 1980s. Just one example was the announcement by Kockums, the financially troubled Swedish shipbuilding group, that it was going ahead with the construction for stock of two 133,000-cubic-meter carriers at a total cost of at least $250 million. This decision to build for stock was taken on the strength of the hoped-for early employment of the two newbuildings soon after their completion scheduled for 1979. However, the Drewry analysis shows that this faith in the early employment potential for LNG carriers was unfounded and now seems to have rebounded on Kockums, which faces the prospect of financing lay-up expenses for at least three years on top of the extremely high capital charges on the two ships. Kockums is not alone in this, however, and other owners with charter-free, or chartered but inactive, LNG ships are confronted by the same bleak outlook.

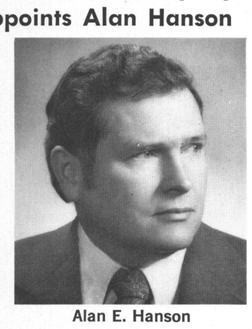
The Drewry analysis of the LNG carrier market shows that in 1977, the expected boom in LNG shipping was still some five years in the future, i.e., LNGC supply is forecast to stay in excess of demand until some time in 1982, when it will balance. The implications for the LNG trades are that from the mid-1977 base of existing contracted trade, the volume of seaborne trade in LNG will treble by end-1980, it will increase by between five and almost seven times by end-1985, and if all currently mooted projects materialize, has the potential to multiply by almost 12 times sometime beyond 1985. The analysis also quantifies the forecast LNG carrier supply / demand disequilibria at each year end during the period 1977-1985 by a comparison of the known shipping supply — based on the existing LNG carrier fleet plus the presently scheduled newbuilding fleet of LNG carriers—with the shipping demand generated by the forecast LNG trades. Consequently, a continuation of the large LNG carrier surplus apparent at mid-1977 is forecast until 1982—the apparent surplus at mid-1977 was equivalent to 52 percent of the then existing fleet, but the actual oversupply was greater than this because the LNG projects in operation were functioning at less than contracted levels due to liquefaction plant inefficiencies. Beyond 1982, the rapid LNG trade growth will generate a growth in shipping demand which will outpace the currently scheduled shipping supply until, at end-1985, a deficit LNGC supply of 2.8-8.2 million cubic meters is indicated. This shipping capacity shortfall is an equivalent 22-66 large ships of the standard 125,000-cubic-meter size and would require investment of some $3-9 billion to eradicate, assuming average 1977 LNGC newbuilding prices. The large capital investment required to finance the shipping element in an LNG export project is significant in determining the cost of transportation, and hence the delivered cost of LNG. In its thorough examination of LNG shipping costs and revenues and LNG prices, the analysis shows that the delivered cost of LNG in 1977 was: $1.50-1.55 per million BTU at a trading distance of 1,000 nautical miles (transportation accounting for 13-16 percent of total traded cost of LNG), $2.00-2.05 per million BTU at a trading distance of 5,000 nautical miles (35-37 percent of total traded cost), and around $2.90 per million BTU at a trading distance of 12,000 nautical miles (accounting for around 55 percent of total traded cost). The capital costs associated with LNG ships were calculated to account for 60-73 percent of total annual fully built-up trading costs of these vessels, taking into consideration a range of trading distance of 1,000-12,000 nautical miles, and a ship size of 50,000-330,000 cubic meters. The cost of transportation is thus more influential in determining the delivered cost of LNG as the shipping distance increases. The future LNG trades which are presently without committed shipping supply are principally medium/long-range projects, and therefore the delivered cost of LNG in these will be heavily dependent upon the cost of capital for shipping.

It is because the capital element in the transportation of LNG is so very great that it is essential to have a fully integrated LNG export project which has shipping supply committed well in advance of trade start-up, and which is tied for the duration of the contract for the sale and purchase of LNG — usually 20 years. The prerequisite of long-term security of shipping supply in LNG trades precludes any regular short or medium-term employment poten-

tial for charter-free LNGCs ordered on speculation. It appears that a substantial spot market for LNG ships will not develop. This comment underlines the discouraging immediate future for charter-free LNGCs (there were 21 such ships which totaled 1.3 million cubic meters in the existing and newbuilding LNGC fleet at mid-1977). Unless the owners of these ships can secure their long-term commitment to future LNG trades, which are as yet deficient in shipping supply, they face a bleak future.

"The Seaborne Transportation of Liquefied Natural Gas 1977-1985 — Trades, Costs and Revenues," priced at U.S. $140 for all overseas orders or £65 for U.K. orders, is available from HPD Shipping Publications, 34 Brook Street, Mayfair, London W1Y 2LL.

Bird-Johnson Company Appoints Alan Hanson



Alan E. Hanson

Alan E. Hanson has been appointed manager of Bird-Johnson Company's Parts Department. In this capacity, he will supervise and coordinate all production and related customer service activities for KaMeWa controllable-pitch propeller and thruster spare parts. He will also assist management in developing long-range plans and new procedures for handling the department's future requirements.

"This appointment," noted **Francis L. Narbut,** customer services manager, "will enable us to more efficiently and effectively support the increased number of installations to be made in the coming years.

Mr. **Hanson** is a graduate of Massachusetts Maritime Academy with a Bachelor of Science degree in marine engineering. He sailed as a second assistant engineer for American Trading Transportation Company, Inc. and was employed as a field service engineer for Northrup Nortronics prior to joining Bird-Johnson in 1968. Following his initial assignment as assistant to the chief engineer, he participated in cost estimating and schedule preparation activities for the proposal phase of the 30-ship DD963 program. Upon the award of this contract, Mr. **Hanson** was promoted to production coordinator of the Special Projects Department.

International Ocean Transport Corporation Names Joseph Kearney

Joseph T. Kearney has been named assistant vice president, engineering by International Ocean Transport Corporation, Philadelphia, Pa., and affiliated companies Grand Bassa Tankers, Inc. and Interocean Management Corp. He will be based in their Philadelphia home office.

Formerly manager of engineering, Mr. **Kearney** has been with the affiliated companies for over 35 years.

Replacing Mr. **Kearney** as manager of engineering is **Richard C. McFarland**. After serving as a consultant during the construction of three of their VLCCs in Japan, Mr. **McFarland** joined the home office as engineering superintendent.

Donald E. Lindquist has been named engineering superintendent, replacing Mr. **McFarland** in this assignment. Mr. **Lindquist** has been a port engineer for International Ocean Transport and its affiliates, and has served as chief engineer in Interocean Management's VLCCs.

Gotaas-Larsen Names Nyholm Executive VP

Poul C. Nyholm has been named an executive vice president of Gotaas-Larsen Shipping Corporation, a subsidiary of IU International, 1500 Walnut Street, Philadelphia, Pa. 19102. The announcement was made by **Kenneth A.B. Trippe,** Gotaas-Larsen's president.

In his new position, Mr. **Nyholm** will have overall responsibility for marketing, chartering and insurance functions. He will report to Mr. **Trippe**.

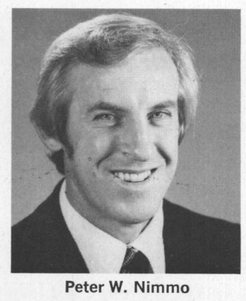
Mr. **Nyholm** joins Gotaas-Larsen with 30 years of experience in shipping and petroleum industry activities worldwide. Most recently, he was sales manager with Kuwait National Petroleum Company. His previous associations include Amoco (American International Oil Company), Gulf Oil Corporation, and A.P. Moller, Copenhagen.

Mr. **Nyholm** is a graduate of the Commercial University and the Naval Academy in Copenhagen. He also holds a master's degree from the Harvard Graduate School of Business Administration, and has completed Harvard's Advanced Management Program.

Gotaas-Larsen is a diversified shipping company whose activities include transportation of liquefied natural gas (LNG), crude and refined petroleum products, chemicals, coal and grain. The company also operates semisubmersible drilling rigs and has interests in cruise ships, primarily serving Caribbean ports. Its principal offices are in New York and Oslo.

IU International is a diversified company serving worldwide ocean shipping, trucking, distribution, utilities, agribusiness, and industrial markets.

Nimmo Named President Baker Marine Engineers


Peter W. Nimmo

Larry Baker Sr., president of Baker Marine Corporation, Houston, Texas, has announced that Texas USA Engineers, Inc., a wholly owned subsidiary of Baker Marine Corporation, has been renamed Baker Marine Engineers, Inc.

Baker Marine Engineers, Inc. provides engineering services to the petroleum-related industries, primarily in the offshore drilling and production sector. Texas USA Engineers, Inc., the predecessor company, was formed in August 1977 when Baker Marine Corporation purchased the assets of ETA Engineers, Inc. Thus, Baker Marine Engineers, Inc. is able to offer the full range of ETA jackup designs and technology, as well as the ETA structural analysis expertise and computer software.

Baker Marine Engineers, Inc. is located at 6250 Westpark, Houston, Texas.

In a parallel development, **Peter W. Nimmo** was named president of Baker Marine Engineers, Inc., following the resignation of **E.L. Lowery,** who will be pursuing other consulting work. Prior to joining Baker Marine Engineers, Inc., Mr. **Nimmo** was involved in the design and construction of mobile offshore drilling units for nine years with Bethlehem Steel Corporation in Beaumont, Texas. Mr. **Nimmo** is a registered professional engineer in Texas and received his B.S. degree in civil engineering from Lamar University.

option for expansion to two berths at a future date. RayTech's design contract covers the basic docks, breasting dolphins, mooring dolphins, tug pier, and berth preparation.

Mr. **LeMieux** noted that RayTech previously provided conceptual design, budget estimates and final design for LNG marine terminals at Savannah, Ga., and Cove Point, Md. A Raymond-sponsored joint venture constructed the Cove Point offshore structure, which was completed in 1976.

The Cove Point facility was the largest of its kind constructed on the East Coast of the United States. The terminal has two loading berths, for 125,000-cubic-meter tankers, reached by a one-mile-long onshore access tunnel. Each berth has six breasting dolphins, six mooring dolphins, a platform for unloading LNG from the ship with fuel and supplies.

RayTech also has been selected to provide conceptual designs for an LNG marine facility at Point Conception, Calif., which will accommodate two 165,000-cubic-meter tankers simultaneously.

Raymond International is a worldwide engineering and heavy construction firm, with expertise in heavy marine construction and foundations for industrial and commercial facilities.

Watson To Manage Sun Product Tankers Construction Program

William Watson

Sun Shipbuilding has named **William Watson** program manager for the Sun Product Tankers construction program, reporting to **Robert Galloway,** executive vice president.

In his new post, Mr. **Watson** will be ultimately responsible for the overall success of the tanker program within the framework of company policies and procedures. To this end, he will coordinate and direct the execution of all matters concerning the Product Tankers program so that it meets the budget and delivery schedule.

The delivery of the first of the two tankers is tentatively scheduled for 1979.

LNG Docking Facility Contract Awarded To Raymond International

Henry F. LeMieux, president and chairman of Raymond International, Inc., 2801 South Post Oak Road, Houston, Texas 77027, has announced that Raymond Technical Facilities Inc. (RayTech), a wholly owned subsidiary, has received a contract to provide final engineering design of marine and docking facilities which will be an integral part of a $164-million liquefied natural gas (LNG) receiving-storage-regasification plant being developed by Trunkline LNG Company at Lake Charles, La. Trunkline LNG is a unit of Trunkline Gas Company, a subsidiary of Panhandle Eastern Pipe Line Company, Houston.

RayTech, a specialist in the design of the waterfront aspects of LNG import terminals, also prepared conceptual layouts and budget estimates of construction costs for that portion of the Trunkline LNG project. Construction will start later this year on the Lake Charles facilities, and first deliveries of LNG by tanker from Algeria are scheduled during the last half of 1980.

In addition to the marine and docking facilities, the import terminal will include three 600,000-barrel LNG storage tanks, regasification facilities, and attendant support and utility systems. The deepwater dockage is designed to unload one 125,000-cubic-meter LNG tanker at a time, with an

Anastassios Fondaras Elected Chairman Tuned Sphere Int'l

Anastassios Fondaras was elected chairman of the board and chief executive officer of Tuned Sphere International, Inc., designers and builders of spherical-hulled offshore vessels, filling an existing vacancy.

Tuned Sphere International is a subsidiary of Energy Systems Corporation, both companies headquartered in Nashua, N.H.

Mr. **Fondaras's** new responsibilities follow his election as a director of Tuned Sphere International last September. Mr. **Fondaras** formerly served as a partner of Kidder, Peabody and Co., and later as a voting stockholder of White Weld & Co., both investment banking firms headquartered in New York.

Prior to that, he was managing director of Niarchos Shipping Company, in charge of overall fleet operations, including chartering, financing, and technical development. During World War II, Mr. **Fondaras** served as lieutenant commander with various destroyer commands in the mixed British/Greek flotilla which saw action in the Mediterranean, Atlantic and Indian Oceans. He was graduated from the Greek Naval Academy with a degree in naval architecture and marine engineering in 1938, and later entered Harvard Law School, graduating in 1956.

Mr. **Fondaras** lives in New York City and Paris.

DeLaval Turbine Appoints C.J. Link General Manager Condenser And Filter Div.

Carl J. Link

F.N. McClure, Group vice president, DeLaval Turbine Inc., has announced the appointment of **Carl J. Link** as general manager of DeLaval's Condenser and Filter Division, Florence, N.J. He replaces **Fred W. Beltz Jr.,** who has been appointed general manager of DeLaval's Turbine and Compressor Division in Trenton, N.J.

Mr. **Link,** who has more than 15 years in the manufacturing field, served as the Condenser and Filter Division manager of manufacturing for the past four years. He is a BSME graduate from Drexel University.

DeLaval Turbine Inc., a Transamerica Company, has 14 operating divisions in 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.

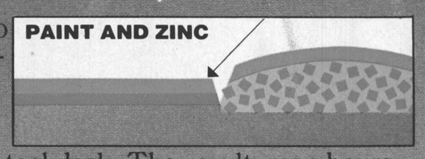
Hartmann Subsidiary To Build Offshore Vessels At Cost Of $20 Million

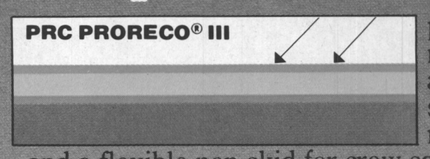
Deepsea Operating Co., Inc., 17 Battery Place, New York, N.Y., has applied for a Title XI guarantee to aid in financing the construction of two 1,000-gross-ton offshore supply vessels. Deepsea is a wholly owned subsidiary of F.W. Hartmann and Company, Inc., same address. Total cost for the vessels is estimated at $20 million.

The application indicates the vessels would be time chartered to OSA, Inc., a Texas corporation, and Deutsche Dampfschifffahrtsgeselschaft "Hansa" and Preussag Aktiengesellschaft, both German corporations. The vessels have been designed for the supplying and servicing of offshore oil and gas exploration and production facilities, but would be suitable for worldwide trading.

A shipbuilder has not been selected.

Before a coating can protect your deck, it has to protect itself.





Any damage to the surface of commonly used paint-type coatings will allow moisture to penetrate to your steel deck. The result: man-hours and materials must be invested in deck maintenance constantly, to control corrosion.

After rust has started to deteriorate the metal, you incur additional metal loss in sanding to remove the rust. The high costs of metal replacement become inevitable.

The PRC PRORECO® III system can virtually eliminate both on-going maintenance and major replacement costs. Unlike other coatings on the market, the resilient PRORECO® III system protects against abrasion and impact as well as corrosion. It does this with three layers: a corrosion inhibitive primer which does not sacrifice itself as do the zinc primer systems; an abrasion resistant base coat; and a flexible non-skid for crew safety.

PRC products have a proven track record in the most demanding high-wear conditions. Decks coated with PRORECO® III have seen years of heavy abuse with absolutely no repairs.

Whether you operate towboats, crew or supply boats, offshore drilling platforms, or the largest commercial vessels, you will find that PRC deck coatings pay for themselves many times over.

For information, call your nearest PRC representative or write to Rodney N. Morris, Marine Products Manager, PRC, 5454 San Fernando Road, Glendale, Calif. 91203.

The PRORECO® III Deck Coating System

Goodwin And Ritchie Named Vice Presidents By Cleveland Tankers

Clinton F. Goodwin has been named executive vice president, and **David J. Ritchie** has been named vice president for chartering of Cleveland Tankers, Inc., according to **G. Ward Disbrow,** vice president of marine transportation for Ashland Petroleum Company, its parent firm.

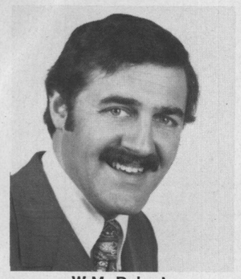
Mr. **Goodwin,** who reports to **Carl H. Stuber,** president of Cleveland Tankers, is responsible for the administration and operations of the company, which transports petroleum products on the Great Lakes.

A native of Chattanooga, Tenn., Mr. **Goodwin** is a graduate of the University of Notre Dame. He most recently served as an executive assistant to the management of Cleveland Tankers, and earlier held marketing and administrative posts with Ashland Petroleum Company. He will remain in Cleveland, Ohio, in his new post.

Mr. **Ritchie** is responsible for sales, chartering, and the scheduling of all Cleveland Tankers' vessel movements. A Cleveland native, Mr. **Ritchie** attended Cleveland State University. He joined the company in 1969 as a scheduling manager and was named charter manager in 1976. He reports to Mr. **Stuber,** and will remain in Cleveland in his new post.

Ashland Petroleum Company is the largest operating division of Ashland Oil, Inc.

Cryogenic Structures Corp. Names W.M. Roberts VP



W.M. Roberts

W.M. (Mel) Roberts has been appointed a vice president of Cryogenic Structures Corporation, a subsidiary of Baltek Corporation, 10 Fairway Court, Northvale, N.J.

Mr. **Roberts** has been senior marketing and technical director for CSC since 1972. Mr. **Roberts** is a naval architect and former professor at the U.S. Merchant Marine Academy, Kings Point, N.Y.

Formed in 1972, Cryogenic Structures Corporation specializes in cryogenic insulation systems. The firm has been a leader in the development of marine liquefied natural gas (LNG) insulation since the industry's conception in 1952. The company's products are used extensively in existing LNG tankers and land-based LNG facilities. A 160,000-square-foot Central Valley, N.Y., facility is outfitted with the most efficient equipment for fabrication of insulation materials to precise tolerances.

MarAd Names Clausen To Operations Post In Norfolk

Charles Clausen has been appointed Operations Planning Officer for the Maritime Administration in Norfolk, Va. His duties will include serving as the direct representative of the Eastern Region Director in administering Region activities relating to the Ready Reserve Fleet Program.

Mr. **Clausen** has been Region Ship Management Officer since the office was established in 1971. Prior to that, he served as Ship Repair and Maintenance Officer. He joined the Maritime Administration in 1951. When the Secretary of Commerce determined that there would be a MarAd backup crew for the commercially operated world's first nuclear-powered ship, Mr. **Clausen** was the first candidate to be certified as Senior Reactor Operator. He then served as chief engineer when the MarAd crew took the N.S. Savannah on sea trials. In 1971, Mr. **Clausen** was awarded the U.S. Department of Commerce's Bronze Medal for outstanding performance of duty.

Economical Gas Turbine Paper Presented At ASNE Meeting In Groton

The Southern New England Section of the American Society of Naval Engineers held its quarterly meeting recently at the New London Naval Submarine Base, Groton, Conn. **Norman L. MacIntyre** of Seaworthy Engine Systems, Inc. (Essex, Conn.), presented a clear and stimulating paper on ways of obtaining more economical gas turbine systems.

Since the early installation on the commercial ship GTS Admiral William M. Callaghan, aircraft-derivative gas turbines have become the accepted powerplant for commercial and high-speed combatant ships by the navies of the world. However, the increased cost and unreliable availability of the high-grade distillate fuels required by these engines on a worldwide basis requires that future applications consider all possible alternatives for saving energy and using lower grade fuels. The discussion was particularly timely in view of recent NAVSEA decisions regarding future gas turbine propulsion systems. Improvements in economics for both the full power and cruising conditions were shown to be possible with four different schemes.

1. Increase the maximum pressure and temperature of the cycle to improve the thermodynamic efficiency. Comparable improvements of 25-percent in aircraft engines suggest the need to pursue the materials problem associated with this scheme.

2. Reduce fuel cost by enabling the engine to successfully burn a lower grade fuel. Recent experiments with blended residual fuel oil (BFO), a sodium washing system, magnesium injection to inhibit vanadium, and water-in-fuel emulsion are showing promise of achieving 23-percent savings in fuel costs.

3. Recover heat energy normally wasted in the GT exhaust by employing a waste heat recovery boiler which would operate a self-contained steam propulsion system (i.e., GOGAS). Increases of 8,500 hp in a 35-khp plant and a 20-percent reduction in specific fuel consumption were theoretically demonstrated.

4. Provide diesel engines for the cruise condition where the gas turbine fuel rate is poor. This plant design also lends itself to incorporating one or more of the above features.

A lively and extended question-and-answer period followed. Section chairman **David Motherway** presented a Section plaque to Mr. **MacIntyre** and expressed the members' appreciation for an excellent presentation. Mr. **Motherway** also conducted a brief business meeting and announced the upcoming slate of new officers.

Literature Available On Galbraith-Pilot Marine Packaged System Concept

A colorful brochure describing the new Galbraith-Pilot Marine "Packaged System Concept" in Marine Diesel Engine Automation Systems for ACC & ACCU operations is available from Marine Electric RPD Inc.

The Galbraith-Pilot Marine Automation Systems consist of an Engineer's Central Control Console containing Ballasting Control and Monitoring, Propulsion Control and Monitoring, and Ship Service Diesel Generator Sets Monitoring. The Central Control Console is supplemented with Bridge Control Consoles, Local Control Panels, and Engineer's Accommodation Alarm Panel.

GPM Ship Automation Systems conform to the latest IEEE #45 Marine Electrical Installation Standards, ABS Rules, USCG Regulations and Maritime Administration Requirements in conjunction with manned and unmanned engine room operation.

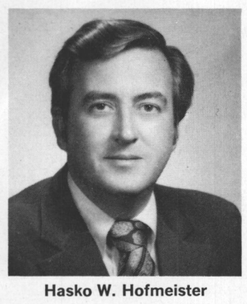
For a copy of the brochure, write to **Harry Parke,** Marine Electric RPD Inc., 166 National Road, Edison, N.J. 08817.

Hofmeister Named VP Flexi-Van Leasing, Inc.

Leo L. Mellam, chairman of Flexi-Van Corporation, the New York City-based maritime equipment leasing company, recently announced the appointment of **Hasko W. Hofmeister** as vice president, Western Region of its subsidiary, Flexi-Van Leasing, Inc. Mr. **Hofmeister** will direct the company's container and chassis leasing activities from San Francisco.

Flexi-Van Leasing, Inc. spans five continents, with over 219 offices where over $400 million in intermodal equipment is provided to the transportation industry worldwide.

Prior to joining Flexi-Van, Mr. **Hofmeister** was a vice president at Pacific Far East Line, Inc., a San Francisco-based steamship company. Previous to that, Mr. **Hofmeister** was associated with, and one of the founders of, Trans Ocean Leasing, a West Coast-based international intermodal leasing corporation. During his association with the intermodal container-leasing industry, he developed and implemented intermodal transportation service systems for U.S. exporters and importers throughout the world. Using his extensive experience and expertise in all modes of transportation, he was responsible for developing total distribution programs for exporters and importers.



Hasko W. Hofmeister

Flexi-Van Corporation, the parent company, recently announced third quarter earnings for 1977 of $5,545,000. The corporation also announced net income for nine months, September 30, 1977, of $13,368,000. According to Mr. **Mellam,** chairman of Flexi-Van: "Mr. **Hofmeister** brings to the corporation's West Coast operations personal expertise and an in-depth knowledge of the region's marketing needs."

Flexi-Van Leasing, Inc. is located at 351 California Street, San Francisco, Calif. 94104.

Bearing Condition Checked By New SPM Technique

The SPM Method provides a completely new approach with regard to both theory and application for the measurement of rolling type bearings. It has resulted in a new technique allowing a quantative measurement of bearing condition.

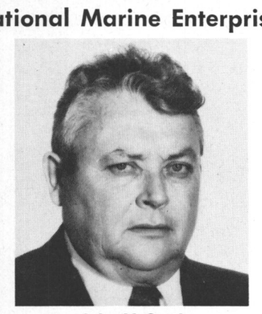
The Shock Pulse Method (the SPM Method) measures the magnitude of the mechanical impacts caused by damage in rolling bearings, and gives a direct measure of the actual condition of the bearings, so that necessary action can be taken at the appropriate time.

This is a unique and patented method for determining the operating condition of bearings in running machinery without being influenced by normal machine vibration, noise, temperature or other outside influences.

Instruments consist of portable and permanent multi-monitoring systems. Extremely simple to use, an immediate assessment of the working condition of the bearing can be determined. It provides immediate readout of individual bearing condition and gives an indication of the extent of damage.

For literature completely describing the Shock Pulse Method, write to **Karl Barthel,** Testing Machines Inc., 400 Bayview Avenue, Amityville, N.Y. 11701.

Lucian Q. Moffitt Names National Marine Enterprises



John McGrath

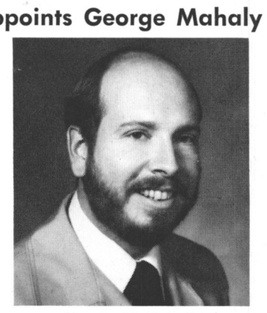
Lucian Q. Moffitt, Inc. of Akron, Ohio, a leading distributor of marine bearings, has named National Marine Enterprises, Inc. of Santa Ana, Calif., as manufacturer's representative serving Texas, according to **Claire A. Drach,** president of Moffitt.

National Marine Enterprises is headed by president **John McGrath.** His address is P.O. Box 6442, Kings Street Station, Santa Ana, Calif. 92706. They will also continue to represent Moffitt in California.

A native of Boston, Mass., Mr. **McGrath** has a B.A. degree in business administration from the University of Notre Dame, Notre Dame, Ind. He has also taken additional courses in management, sales and engineering.

He has worked for Borg-Warner Corporation as general manager of the Molded Rubber Products Division, and was plant superintendent for the National Seal Division of Federal-Mogul Corporation.

Timmons & Charles, Inc. Appoints George Mahaly



George S. Mahaly

Bruce Kasen, vice president, marketing, Timmons & Charles, Inc., has announced the appointment of **George S. Mahaly** to manager, technical services.

Mr. **Mahaly** joined T&C in 1973, and has previously held the positions of field service section chief and consulting engineer. In his new position, Mr. **Mahaly** assumes full responsibility for all field service and consulting service activities, and the technical development of products and services. Mr. **Mahaly** holds a Bachelor of Science degree from Monmouth College, and is a member of the National Association of Corrosion Engineers.

Timmons & Charles is a worldwide engineering consulting firm, specializing in marine water treatment and specialty chemicals. Timmons & Charles's headquarters is in Linden, N.J., with branch offices in San Francisco, Calif. and Singapore.

Nicolai Joffe Corp. Offers Brochure On Replacement Machinery

Nicolai Joffe Corporation, one of the leading suppliers of repair and replacement machinery to the marine industry, has published a brochure listing the various types and models available for equipment such as: turbines, gears, generators, pumps, compressors, evaporators, valves, motors, winches and windlasses, anchors and chain, etc.

The company maintains inventory on the East, Gulf and West Coasts of the United States, with its main warehouse in South San Francisco, Calif. They specialize in the supply of machinery difficult to obtain or no longer stocked by manufacturers. All equipment is offered ready-to-install, fully reconditioned where necessary, with American Bureau or other certification when required, and prompt shipment anywhere in the world.

For a copy of the detailed brochure, write to **Philip M. Hofmann,** Nicolai Joffe Corporation, 9171 Wilshire Boulevard, Beverly Hills, Calif. 90210.

Gibbs & Cox Awarded NOAA Buoy Study

Gibbs & Cox, Inc., naval architects and marine engineers, 40 Rector Street, New York, N.Y. 10006, has been awarded a contract by the National Oceanographic and Atmospheric Administration to evaluate the design of large data buoys. The first phase of the study will evaluate the response of alternative buoy concepts to extreme sea conditions. In the second phase, selected buoy configurations will be developed and tested for a mission requiring very close control of motions. Gibbs & Cox will be assisted in this effort by Hoffman Maritime Consultants, Giannotti & Buck Associates, Alan C. McClure Associates, and Tuned Sphere International.

Dr. Irene Peden Named To Kings Pt. Advisory Board

Dr. **Irene Carswell Peden,** an educator, radio scientist, and leader in an effort to involve women in professional engineering careers, has become the first woman to be named to the Advisory Board at the U.S. Merchant Marine Academy in Kings Point, N.Y.

Commerce Secretary **Juanita M. Kreps,** who last year became the first woman to head the U.S. Department of Commerce, announced the appointment.

Dr. **Peden,** professor of electrical engineering and associate dean, College of Engineering at the University of Washington in Seattle, will serve a three-year term as one of the seven advisors to the Academy, which trains young men and women for service as licensed officers in the U.S. merchant marine.

The Academy is a four-year accredited institution under the direction of the Maritime Administration (MarAd), an agency of the Commerce Department. The objective of the Advisory Board is to examine the Academy's management and course of instruction, and advise the Assistant Secretary of Commerce for Maritime Affairs (who also heads MarAd) regarding policy program guidance.

Kings Point set a significant precedent in coeducation in 1974 when MarAd revised its policy and regulations to permit the nomination and appointment of women as midshipmen at the Academy, the first of the U.S. service academies to do so. The initial class including women candidates arrived at Kings Point in July of that year, and will graduate in June 1978.

Dr. Irene Carswell Peden

Dr. **Peden** was a successful engineer in industry before her 1961 appointment at the University of Washington. She is listed in Who's Who in Engineering. She was the first woman engineer/scientist to conduct field work in the interior of the Antarctic Continent.

She holds a B.S. degree from the University of Colorado and M.S. and Ph.D. degrees from Stanford University, all in electrical engineering.

In 1973, she received the Achievement Award, highest honor of the Society of Women Engineers, which cited her for her contributions to radio science and engineering education, and in 1974 was named a Distinguished Engineering Alumnus by the University of Colorado.

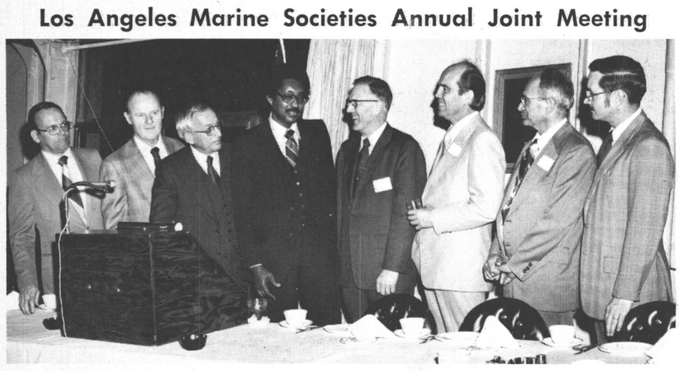
Dr. **Peden** is a Fellow of the Institute of Electrical and Electronics Engineers, and presently is serving a second 1-year term as IEEE's vice president for Education Activities.

She has been an advisor and consultant to or member of a number of other international, government, academic, and scientific organizations. Her memberships in honorary and professional societies include Tau Beta Pi, Sigma Xi, Mortar Board, and the New York Academy of Sciences.

Armco HITCO Division Offers Product Bulletin On REFRASIL Insulation

A four-page product data bulletin on REFRASIL, a refractory silica insulation in textile form, is available from HITCO Materials Division, subsidiary of Armco Steel Corporation. The illustrated brochure describes the material, gives performance capabilities, applications and benefits. All product forms are described and illustrated. For a copy, contact **Robert E. Portik,** HITCO Materials Division, 1600 West 135th Street, Gardena, Calif. 90249.

Los Angeles Marine Societies Annual Joint Meeting



Pictured aboard the Princess Louise during the joint meeting, left to right: **William A. Hood,** vice chairman, SNAME; **Frank A. Kuntz,** chairman, SNAME; **Howard Craig,** master of ceremonies, vice chairman Student Sections, MTS; **Armond J. Bryce,** author and guest speaker; **Robert T. Young,** guest, national president SNAME; **Ken Kvammen,** Board of Councilors, MTS; **Philip Finkelstein,** chairman, ASNE, and Comdr. **Richard J. Kinnear,** USN, vice chairman, ASNE and secretary-treasurer, SNAME.

The annual joint meeting of the three major marine societies in the Los Angeles, Calif., area turned out, as usual, to be a success. The Marine Technology Society acted as host. Their guests were The Society of Naval Architects and Marine Engineers and the American Society of Naval Engineers. Many of those attending were active members of more than one of these organizations.

The meeting was arranged by **Gary Bane,** newly installed chairman of the Los Angeles Region Section, MTS. **John Evans,** vice chairman for Technical Programs, invited the speaker for the evening. Unfortunately, at this—the first of their scheduled activities for the year — neither was able to attend. They were represented, instead, by **Ms. Pat Messerly,** executive director. **Howard Craig,** vice chairman for Student Sections, acted as master of ceremonies.

In his introduction of guests, Mr. **Craig** made a special note of the presence of **Robert T. Young,** national president of SNAME. Mr. **Young** had been especially invited to this meeting by **Frank Kuntz,** chairman, and **William A. Hood,** vice chairman of the Los Angeles Metropolitan Section, SNAME. "It is particularly fitting," Mr. **Young** commented, "that these meetings be held in such an ideal marine atmosphere aboard the Princess Louise." He noted that few other sections in the country enjoy such a compatible location or a more attractive one.

For the American Society of Naval Engineers, **Philip Finkelstein** presided as the acting chairman for that group. His role was to welcome his own members, and to join with them in sharing common interests with those of the other two organizations. The ASNE vice chairman was also present. He is Comdr. **Richard J. Kinnear,** USN, also the acting secretary-treasurer for the local section of SNAME.

In the absence of the senior officials for the Marine Technology Society, **Ken Kvammen** of the MTS Board of Councilors presided as their representative.

The guest speaker for the evening was **Armond J. Bryce,** technical director for the Marine Biomass Programs of the General Electric Company. He is working locally with Global Marine Development, Inc. to provide support on the installation of the biomass structure described in the paper. This will be in April of 1978. The location will be off Corona del Mar.

Mr. **Bryce** authored the paper he presented, "A Research and Development Program To Assess The Technical and Economic Feasibility of Methane Production From Giant Brown Kelp." His presentation with slides and discussion made it both interesting and exciting. He demonstrated how thoroughly all aspects of the project had been investigated.

The engineering challenges of cultivating a harvestable crop in the ocean environment, and subsequently converting it to useful products, seem significant. The economic potential for a return on the investment seem debatable. Yet this is the major purpose for the evaluation of this concept, to test its feasibility. The paper itself is well documented with technical detail and bibliographic references. The project is sponsored by the American Gas Association and by the United States Energy Research and Development Administration (ERDA).

The meeting was adjourned by Mr. **Craig** following the question and answer period at which Mr. **Bryce** discussed details of his project with individuals.

Chapman And Company Relocates To Westport

Paul D. Chapman and Co. has announced the relocation of their offices to 191 Main Street, Westport, Conn. 06880. The new phone numbers will include a New York City tie line (212) 483-9198 and a WATS line (800) 426-2829.

Formed in 1976, the firm specializes in management consulting in the marine field, providing their shipowner and industrial shipper clients with transportation and financial studies, charter/buy/sell decision analyses, and marketing programs for liner operators and agents. Recently, the firm has also begun acting as marketing consultants for marine industry products vendors.

Sydney Tharrington Elected President Marine Square Club

Walter Thorsen, president, Walter Thorsen Inc. and past president of the Marine Square Club, recently announced the election and installation of officers in the Marine Square Club. The officers are as follows: Comdr. **Sydney Tharrington,** USCG (ret.), Amoco International Oil Company, president; **Gerhart Malunet,** American Bureau of Shipping, first vice president.

The remaining officers are: **Bruce Batalie,** second vice president; **Otto Myer,** treasurer; **George Allen,** secretary; **Albert Estes** and Comdr. **Albert Schroeder** masters-at-arms.

Twelve members were elected to the board of governors with **Gerhart Malunet,** first vice president, as chairman of the board.

A total of 22 committee members were elected. Probably the best-known in the marine industry is the Banquet Committee with **Wilbur Stiles,** Victory Carriers, chairman, and **James Bergstrom,** Texaco Marine Department, vice chairman.

The Marine Square Club has just completed its 50th successful year of operation. It is an organization of men in the Masonic Fraternity affiliated with the marine industry. Its primary objective is promotion of brotherhood within the industry, and to further and support the marine industry in general.

It has a number of activities planned for the coming year. The most prominent is its Annual Banquet. The proceeds of the banquet go to the Scholarship Fund of the Maritime College, Fort Schuyler, N.Y.

MarAd Releases Report On Feasibility Of Exporting Slurried Coal

The Maritime Administration has released a technical report prepared under a MarAd contract by Hydronautics, Inc. of Laurel, Md., and Marconaflo, Inc. of San Francisco, Calif. The study, "A Preliminary Feasibility Study of Steam Coal Slurry Marine Transport Systems," examines the economic feasibility of exporting large quantities of steam coal from the United States; the use of converted vessels for its transportation; and the advantages of this concept over more conventional systems.

A slurry system uses the suspension of solid matter in a liquid. Through the use of slurry technology, solids can be pulverized, liquefied, and then pumped through pipes.

The report, which was co-sponsored by American Bulk Cement Systems, Inc. of New York, N.Y., concludes that coal, a major U.S. export commodity, could be exported on a competitive basis on the world market. It also notes that the foreign demand for coal is likely to increase.

The carriage of slurried coal in two converted U.S.-flag ships — one a 225,000-dwt tanker and the other an 80,000-dwt oil/bulk/ore carrier—was found to be competitive with other modes of transportation in the international marketplace, and to offer special export opportunities for the movement of U.S. steam coal to a powerplant in the Eastern Mediterranean.

The study also concludes that the proposed coal slurry transport concepts would provide rapid loading and discharge rates; ability to operate at offshore terminals; and elimination of air pollution during loading and unloading.

Major disadvantages identified were the requirement for large quantities of fresh water, and "dewatering" problems for both the ship's loading and the powerplant receiving portions of the system.

Copies of the 142-page report are available from the National Technical Information Service, 5285 Port Royal Road, Springfield, Va. 22161. The order number is PB-276165/AS, and the price is $6.

DeLaval Appoints Foltz General Manager For Middle East

Arthur L. Foltz Jr.

E.B. Koelliker, vice president, DeLaval Turbine Inc., has announced the appointment of **Arthur L. Foltz Jr.** as general manager, Middle East.

Mr. **Foltz** will be based at DeLaval's Middle East Headquarters in Riyadh, Saudi Arabia, where they have a sales and service organization, and are planning a warehouse and repair facility.

In addition to his responsibilities in Riyadh, Mr. **Foltz** will be responsible for DeLaval's sales in other areas of the Middle East, and the existing DeLaval sales office in Amman, Jordan.

Mr. **Foltz,** who received his BSME degree from Purdue University, is a 25-year DeLaval veteran. His most recent assignment was general sales manager for DeLaval's Engine and Compressor Division, Oakland, Calif.

DeLaval has been supplying diesel generators to the Middle East since 1948, and has been actively involved with compressors and turbine drivers used for a wide variety of natural gas and processing applications, including gathering, transmission and reinjection.

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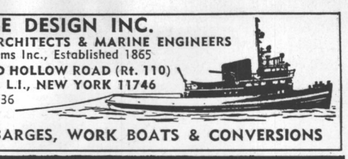

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Metalock Brochure Describes Latest Developments And Improvements In Cold Repairs

Metalock Casting Repair Service, Inc., Long Island City, N.Y., has published an illustrated brochure describing Metalock systems of cold repairs to broken equipment.

The brochure contains information on Metalock systems; marine repair; general machinery; punch presses; drop hammers; engine frames; machining—shop and aboard ship, etc.

The Metalock organization is made up of professional engineers and skilled mechanics who are well-versed in the problems of engineering design and techniques of inspection and repairs which must be considered collectively in order to accomplish a satisfactory result.

For a copy of the brochure, write to **C.J. Dollear,** Metalock Casting Repair Service, Inc., 36-15 48th Avenue, Long Island City, N.Y. 11101.

Dravo Engineering Works Division Names Kowalski And Rosenbeck

Dravo Corporation, Pittsburgh, Pa., has appointed **David P. Kowalski** as sales engineer, material handling sales, and **Dennis J. Rosenbeck** as sales engineer, equipment sales for its Engineering Works Division.

Mr. **Kowalski,** a civil engineering graduate of Pennsylvania State University, joined Dravo in 1972. He is a registered professional engineer in the state of Pennsylvania.

A mechanical engineering graduate of Ohio University, Mr. **Rosenbeck** was formerly a design engineer and field superintendent for Dravo. He is a member of the American Institute of Mechanical Engineers (AIME).

Dravo is a diversified engineering, construction and manufacturing firm involved in shipbuilding, bulk materials handling, water transportation, power generation, synthetic fuels, mining, minerals and metals processing, heavy construction, pollution control, rapid transit, and urban development.

Moran Appoints Capt. McVay —Names William Watt Assistant

Capt. Russell George McVay

William Anthony Watt

Capt. **Russell George McVay** has been appointed manager of harbor operations of the Moran Towing & Transportation Co., Inc., it was announced by **Thomas E. Moran,** president of the company.

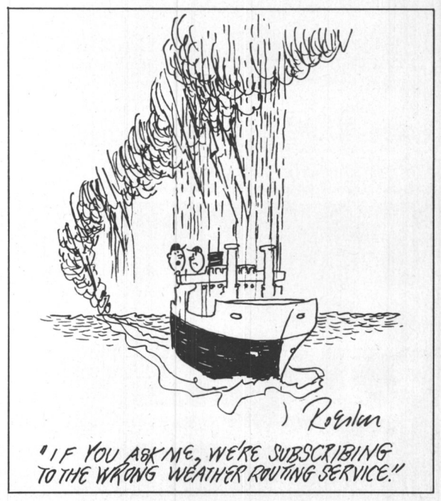
Captain **McVay** was appointed manager of the Seaboard Shipping Company, a Moran oil barge transportation subsidiary in New York, in 1973. His additional responsibilities will include the management of the operations of all Moran harbor tugs and oil barges throughout the Greater Port of New York, Long Island Sound and adjacent waterways.

A graduate of the U.S. Merchant Marine Academy at Kings Point, N.Y., Captain **McVay** has specialized in tug/oil barge operations since he began at the helm of Moran's offshore tugs in 1964.

William Anthony Watt will assist Captain **McVay** in the management of the Seaboard Shipping Company, according to the announcement.

Mr. **Watt** was vice president of the Florida Towing Company in Jacksonville, Fla., prior to joining the home offices of the Moran organization in New York City.

A native New Yorker and a graduate of Paul Smiths College, Paul Smiths, N.Y., Mr. **Watt** brings to his new position a strong background of harbor towing, charter brokerage and shipyard sales.



Capt. Stream And L.R. Glosten Form M.A. Stream Associates

Formation of a new corporation, M.A. Stream Associates, Inc., to engage in marine surveying assignments throughout the world, was announced in Seattle, Wash., by its principals, Capt. **M.A. Stream** and **L.R. Glosten.**

Captain **Stream** has been engaged worldwide in marine surveying and maritime activities, specializing in Alaska, for the past 40 years. Mr. **Glosten** is head of L.R. Glosten Associates, a 20-year-old Seattle firm of naval architects with an equally wide range of assignments and specialities, including towboats, barges and exploration vessels.

The new firm, a wholly owned subsidiary of L.R. Glosten Associates, Inc., will engage in hull, damage, evaluation and other surveys, as well as providing consulting and technical services on loading, towing and other cargo movements.

"We are pleased and gratified that Captain **Stream,** who enjoys the highest respect of all who know him, has agreed to head up this new firm," Mr. **Glosten** said in Seattle. "We are confident it will fill a need not only in the Pacific Northwest and in Alaska, but elsewhere in the shipping and towing world."

Associates in the new firm are, left to right: Capt. **Dick Parenti, L.R. Glosten,** Capt. **M.A. Stream** and **Harish Gidwani.**

Associated with Captain **Stream** will be Capt. **Dick Parenti** and **Harish Gidwani,** both with extensive deepsea and towboat experience.

Captain **Stream,** better known along the Pacific Coast as "Doc," started to sea in 1929, moving to towboats in 1937. Over the years, he rose to tug master, associated with such firms as Puget Sound Tug and Barge, Harbor Tug and Alaska Freight Lines, where he ultimately served as port captain in Seattle. In 1957, he joined U.S. Salvage Assn. as staff surveyor, becoming resident surveyor in charge of the Seattle office in 1962. He held this post until retiring from U.S. Salvage in November 1977. During his service with U.S. Salvage, he completed assignments from the tropics to the Arctic.

Captain **Stream,** Captain **Parenti,** Mr. **Gidwani** and the Glosten firm all played an active technical role in the tug and barge movement of modules and other heavy equipment from Seattle to Alaska's Prudhoe Bay oilfields.

Captain **Parenti** first went to sea in 1944, working offshore and in the towing industry, where he became chief mate and master for Foss Launch & Tug and Crowley Maritime Corp. During this period, he served as port captain for Crowley's PAC and Fed PAC International operations. For the past three years, Captain **Parenti** has been totally involved in international towing and cargo operations. As manager of marine operations, field operations and special projects for Global Transport Organization on a worldwide basis, he specialized in heavy-lift cargo movements, including oil rigs and dredge fleets.

Mr. **Gidwani,** a graduate of the Marine Engineering College in India, had nine years of deepsea experience, including five years as chief engineer on outside tugs for Crowley Maritime Corp. prior to serving in such shoreside supervisory posts as chief test and trials engineer for Lockheed Shipyard in Seattle, and most recently as staff surveyor for U.S. Salvage Assn. in Seattle.

Also associated with M.A. Stream Associates, Inc. as a consultant is **Frank E. Hanson,** well-known in the Pacific Northwest and Alaska, who recently retired after 20 years with U.S. Salvage.

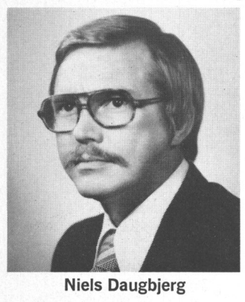
DeLaval Names Scordo Turbine And Compressor Division Sales Manager

P.R. Scordo

DeLaval Turbine Inc. in Trenton, N.J., has announced the consolidation of its Turbine and Centrifugal Compressor Divisions. The new division, which will be known as the "Turbine and Compressor Division," manufactures steam turbines and feedwater pumps for the electric utilities, centrifugal compressors and process turbines for the hydrocarbon and chemical processing industries, and steam turbines and turbine generators for the marine industry.

Appointed as the general sales manager of the new Turbine and Compressor Division is **P.R. Scordo.** His sales group will be organized on a market, rather than product-oriented basis, to enable DeLaval to more effectively respond to the needs of its customers. Reporting to Mr. **Scordo** will be **J.G. Popek,** manager, utility marketing; **P.C. Keith,** manager, process marketing (including oil and natural gas), and **R.J. Nesbitt,** manager, marine products.

Niels Daugbjerg Joins Blue Water Marine Supply



Niels Daugbjerg

Niels Daugbjerg has joined the staff of Houston, Texas-headquartered Blue Water Marine Supply, Inc. The four-year Air Force veteran was sales manager of a Houston-based marine equipment manufacturing and distribution firm immediately prior to joining Blue Water.

Mr. **Daugbjerg,** with eight years' experience in the aviation field and four years in the marine supply industry, will specialize in products and services offered by Blue Water's Offshore Safety/Survival Division. He is currently an officer of Marine Services Association of Texas.

Richard M. Currence Named President Pott Offshore Division

Pott Industries Inc. of St. Louis, Mo., has announced that **Richard M. Currence** has been named president and chief executive officer of Pott's Offshore Marine Services Division headquartered in New Orleans, La. Mr. **Currence** succeeds **Vern E. Easterling,** who assumes the position of chairman.

Mr. **Currence** joined Pott's Offshore Marine Services Division in 1973 and recently, for a period of more than two years, was manager of its North Sea and European Operations. He is a graduate of Tulane University Law School.

Pott also announced that **M. Lavell Isbell** had been named senior vice president-marketing, and **William H. Sewell Jr.** senior vice president-operations of its Offshore Marine Services Division.

Gulf Mississippi Marine Corporation and DeFelice Marine Contractors, Inc. are the principal operating companies of Pott's Offshore Marine Services Division. This division owns and operates a fleet of approximately 85 vessels which serve the offshore petroleum industry on a worldwide basis.

Pott Industries Inc. is a wholly owned subsidiary of Houston Natural Gas Corporation.

Ocean Fleets Limited Appoints Steven And Adams

R. Steven, C.Eng.M.I.Mar.E., has been appointed general manager of Odyssey Works, Ocean Fleets' ship repair and engineering works, Birkenhead, England.

This is a new appointment to meet Odyssey Works' future program, which will involve marketing projects and consolidation of the ship repair, engineering and laboratory services.

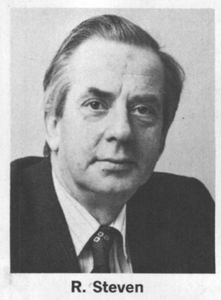
E.M. Adams, B.Sc(Hons) C.Eng.F.I.E.E., M.I.Mar.E., succeeds Mr. **Steven** as deputy chief superintendent engineer.

Mr. **Steven's** appointment comes shortly after the announcement that Odyssey Works has taken the lease on the West Float Dry Docks, Birkenhead.

Speaking about Odyssey's future work program, Mr. **Steven** said: "We can offer a wide range of ship repair, engineering and laboratory services backed up by a highly skilled work force and expert management team.

Mr. **Steven** joined Alfred Holt & Co. in 1948 as a junior engineer officer, and was subsequently promoted to assistant superintendent engineer in 1954, superintendent engineer in 1959, and deputy chief superintendent engineer in 1972.

Mr. **Adams** joined Alfred Holt & Co. in 1953 as a technical assistant in the Engineering Department in India Buildings, Liverpool. He was subsequently promoted to assistant superintendent engineer in 1955, superintendent engineer (electrical) in 1957, and principal superintendent engineer (electrical) in 1972.



R. Steven

E.M. Adams

Ocean Fleets Limited is the ship management subsidiary of Ocean Transport & Trading Limited, the Liverpool, England-based shipping, transportation and distribution group.

Port Of Palm Beach Building $4,500,000 Sugar Terminal

Ground-breaking ceremonies were recently held at the Port of Palm Beach, Fla., for a $4,500,000 bulk sugar terminal. Taking part in the ceremonies were the Port Commissioners, and officials of the Florida Sugar Marketing and Terminal Association, Inc. and the City of Riviera Beach. According to **George H. Wedgworth,** director of the Terminal Association, the projected volume of sugar moving through the terminal could amount to as much as 25 percent of the state's total annual production.

Pictured at the ground breaking for a new sugar terminal and warehouse at the Port of Palm Beach are, left to right: **Lee K. Spencer,** chairman of the Port Commission; **George H. Wedgworth,** director of the Florida Sugar Marketing and Terminal Association, builders of the terminal; Port director **Frank Donahue,** Col., USA (ret.), and **Miguel Rubio,** executive vice president of the Food Products Division of Gulf & Western. The $4,500,000 terminal will have the capacity to handle 25 percent of the state's annual raw sugar cane product.

To be located on three acres of Port property, the terminal will be constructed and operated by the Terminal Association, whose members are Atlantic Sugar Assn., Gulf & Western Food Products Co., Osceola Farms Co., Sugar Cane Growers Cooperative of Florida, and United States Sugar Corp.

Guests were welcomed by **Lee K. Spencer,** chairman of the Port of Palm Beach Commission. Port director **Frank Donahue,** Col., USA (ret.), presided over the ceremonies.

Mr. **Wedgworth** stated that raw sugar will be trucked to the Port from mills in Florida's Glades area, the nation's largest sugar cane growing region. It will subsequently be transported by barge or ship to refineries on the East Coast or Louisiana.

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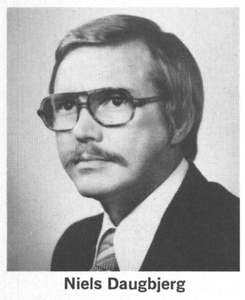

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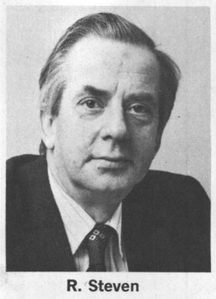

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Stewart & Stevenson Appointed Maxim Evaporator Distributors To The Oil And Gas Industry

Stewart & Stevenson Services, Inc., Houston, Texas, has signed an agreement with Riley-Beaird, Inc., Shreveport, La., to act as an exclusive stocking distributor of Maxim® evaporator products (seawater desalinators) to the oil and gas industry. Both sales and service of Maxim evaporators will be provided by Stewart & Stevenson.

Standing and observing, left to right, are **Fred Gilbert,** chief engineer for Maxim evaporator products, Riley-Beaird, Inc., and **Louis Duncan,** manager petroleum sales, Stewart & Stevenson. Seated are **Carsey Manning,** vice president and general sales manager, Stewart & Stevenson, signing the agreement, and **Alan Hale,** Riley-Beaird market manager, Maxim standard desalinator products.

Maxim products included are the standardized models of the Maxim Thermal Circulation Flash evaporators, heat recovery desalinators for special applications, as well as Maxim feed treatment and descaling chemicals. Stewart & Stevenson has designed the diesel engine power module with the Maxim evaporator which produces potable water from seawater.

The agreement with Stewart & Stevenson is expected to greatly further sales and service of Maxim evaporator products on a worldwide basis.

Great Lakes And Great Rivers Section Holds Winter Meeting

The winter meeting of the Great Lakes and Great Rivers Section of The Society of Naval Architects and Marine Engineers was convened on January 19 at the Bond Court Hotel in Cleveland, Ohio. The attendance for the meeting was 150, with numerous people unable to attend because of the weather. However, those in attendance heard three papers as follows during the Technical Session.

"Automated Vessel Traffic Reporting and Control System," by the Honorable **Philip E. Ruppe,** U.S. House of Representatives from Upper Michigan.

"New Application Efforts in Marine Switch Gear," by **G.D. Stockinger** and **T.L. Bradley**.

"Port Revel Marine Research and Training Center," by **Edmond E. Chapus**.

Following the luncheon, a tour was made for interested attendees of the U.S. Coast Guard Headquarters in Cleveland, with special emphasis on the Operations Control Center and the Ice Navigation Center.

The next meeting of the Section will be held on May 25, 1978 at the Holiday Inn in Marinette, Wis.

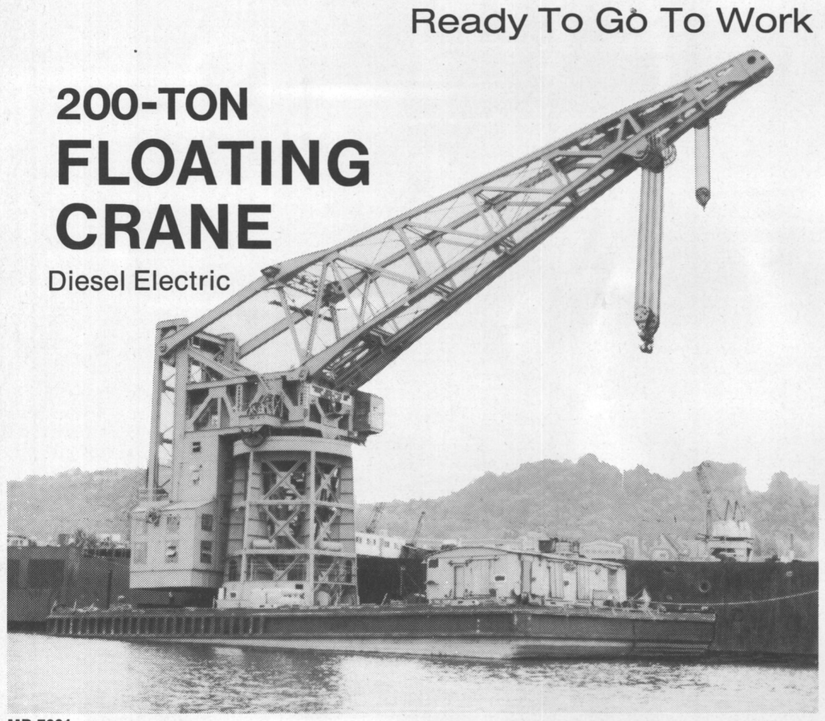
The BIG ONES at ZIDELL

FOR SALE — RENT — CHARTER

Ready To Go To Work NOW

200-TON FLOATING CRANE

Diesel Electric



MR 7601

VESSEL CHARACTERISTICS
200-TON LIFTING CAPACITY

LENGTH OVERALL ..... 140 FT.
BEAM ..... 84 FT.
DRAFT ..... 7 FT.
LIGHT DISPLACEMENT ..... 2,334 TONS
ALL STEEL CONSTRUCTION
ELECTRIC REVOLVING TYPE — FULL 360°
WEB BOOM ..... 146 FT.
MAIN HOIST: 200-Ton—By 2 only, 8 part blocks. Each block carries 2,050 ft. of 1½″, 6 x 37 I.P.S. wire rope (New).
AUX. HOIST: 25-Ton—By 1 only 4 part block. Block carries 1,110 ft. of 1⅜″, 6 x 37 I.P.S. wire rope (New).

ADDED FEATURES

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

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

Contact: Hugh Sturdivant
Sales Manager
Phone: 503/228-8691

and 2 FLOATING DOCKS

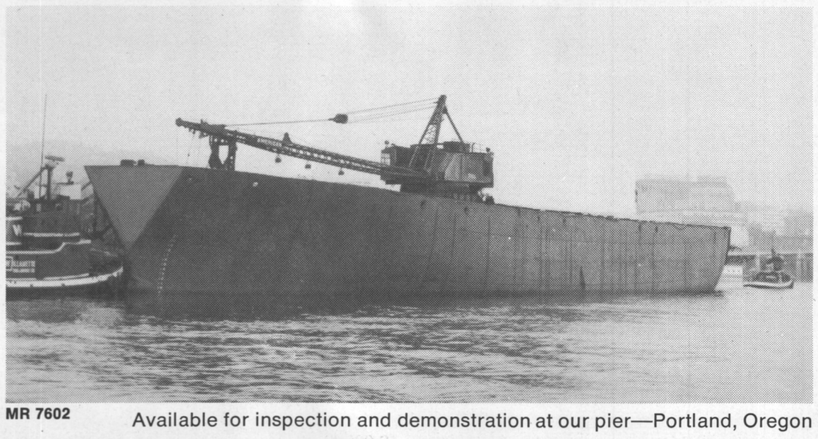
with 50-Ton Whirley Cranes

VESSEL CHARACTERISTICS

LENGTH OVERALL ..... 442 FT.
BEAM ..... 57 FT.
DRAFT ..... (Light Displ.) 14 FT.
CRANES: Main Hoist 50 Tons
Whip Hoist 10 Tons
Boom 105 Ft.

Check these ADDED FEATURES

- 400 ft. Whirley Track on deck.
- 564,000 Cubic ft. of inside storage—5 Holds
- YES—IMMEDIATELY Available for Use.
- 3 Units in One—A Dock, A Whirley Crane and Large Dry Storage Facility.



MR 7602

Available for inspection and demonstration at our pier—Portland, Oregon

Contact: **Hugh Sturdivant**
or A. D. Canulette, Jr.
Phone: 503/228-8691
Telex: 36-0503 • Cable "ZIDELL"

ZIDELL EXPLORATIONS, INC.
3121 S.W. Moody Avenue
Portland, Oregon 97201

SHIPBOARD EQUIPMENT

From

ZIDELL EXPLORATIONS INC.

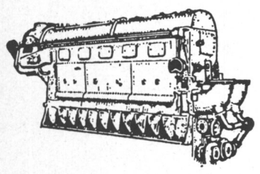
Contact: Hugh Sturdivant
3121 S. W. Moody Ave., Portland, Ore. 97201
Telex: 36-0503 • Cable "ZIDELL"
PHONE: A/C 503 • 228-8691

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.

MARINE DIESEL ENGINES



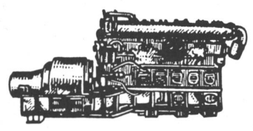
MATCHED PAIR . . . FAIRBANKS-MORSE Model 38D8-⅛ — 1 Port; 1 Starboard. Used condition, 1800 HP, 800 RPM, 2 cycle, 8½″ bore, 10″ stroke, Air Start.. Complete with Westinghouse Reduction Gears, 2.216:1 ratio —with Hydraulic Coupling.

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!

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.

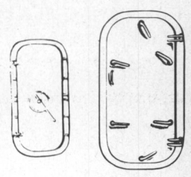
EXAMPLE LISTING:

Size A¼	Size A3	Size A8
Size A½	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).

STEEL WATERTIGHT DOORS

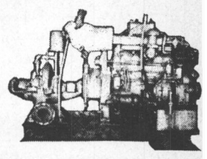


Used, Good Condition, Trimmed Frames.

Many sizes available, priced reasonabl Some Typical Prices shown below. Pleas Inquire for other sizes.

26″x48″-4 Dogs
26″x57″-6 Dogs
26″x60″-4 Dogs, 6 Dogs
26″x66″-6 Dogs, 8 Dogs
26″x66″-Q.A. Type

FIRE PUMPS



2—BUDA, Model 6-LD-468, Diesel Engine 6 cylinders, 100 BHP, Marine, Gardne Denver, centrifugal Pumps, Bronze, ho zontally split case, 1000 GPM, 280′ head, suction and 5″ discharge.

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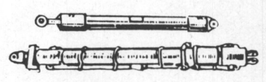

Bore	Overall Stroke	Rod Diameter	Retracted Length	Action
10″	12″	3.75″	45½″	double
10″	26″	3.75″	58½″	double
2″	8″	1½″	20″	double
2.5″	15″	1.12″	25½″	double
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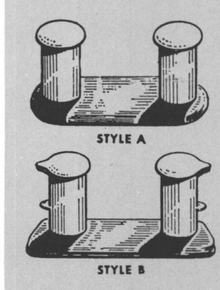

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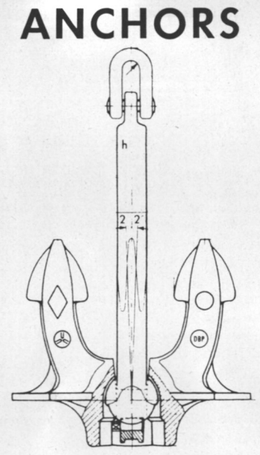

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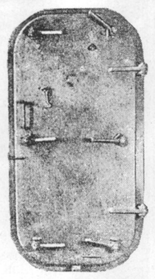

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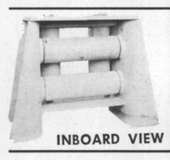

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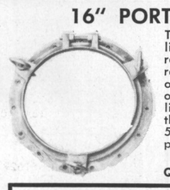

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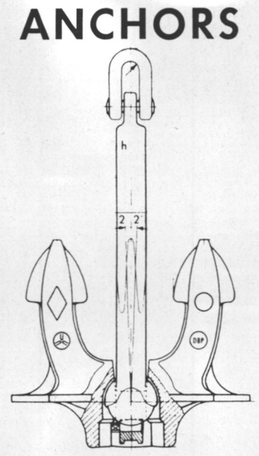

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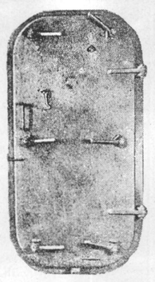

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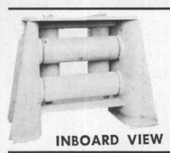

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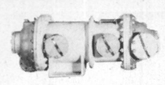

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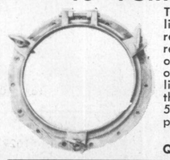

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Gibbs & Cox, Inc., 40 Rector Street, New York, N.Y. 10006
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Phillip Gresser & Associates (PTE) Ltd., 122 Eng Neo Ave., Singapore 11
Morris Guralnick Associates, Inc., 550 Kearny Street, San Francisco, Calif. 94108
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Hydronautics, Incorporated, 7210 Pindell School Road, Howard County, Laurel, Maryland 20810
Jantzen Engineering Co., 6655-H Amberton Drive, Baltimore, Md. 21227
James S. Krogen & Co., Inc., 3333 Rice St., Miami, Fla. 33133
Littleton Research and Engrg. Corp., 95 Russell St., Littleton, Mass. 01460
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
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George E. Meese, 194 Acton Rd., Annapolis, Md. 21403
Metritape, Inc., 77 Commonwealth Ave., West Concord, Mass. 01742
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Nickum & Spaulding Associates, Inc., 811 First Ave., Seattle, Wash. 98104
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Proto-Power Management Corporation, P.O. Box 494, Mystic, Conn. 06355
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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
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Timsco, 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

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Griffith Marine Navigation, Inc., 134 North Avenue, New Rochelle, N.Y. 10801
Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
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Iotron Corp., 5 Alfred Circle, Bedford, Mass. 01730
ITT Decca Marine Inc., P.O. Box G, Palm Coast, Fla. 32037
ITT Mackay Marine, 2912 Wake Forest Road, Raleigh, N.C. 27611
Konel Corporation, 271 Harbor Way, So. San Francisco, Calif. 94080
Krupp Atlas—Elektronik, A Div. of Krupp Intl. Inc., P.O. Box 58218, Houston, Texas 77058
Lorain Electronics Corp., 2307 Leavitt Road, Lorain, Ohio 44052
Magnavox Navigation Systems, 2829 Maricopa St., Torrance, Cal 90503
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North American Philips Corp., Communications Systems Div., 31 McKee Drive, Mahwah, N.J. 07430
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Raytheon Co., Submarine Signal Div., P.O. Box 360, Portsmouth, R.I. 02871
Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.
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Golten Marine Co., Inc., 160 Van Brunt St., Brooklyn, N.Y. 11231
Gulf Oil Corp./Gulf Oil Co.-U.S., P.O. Box 1563, Houston, Texas 77001

(Continued Next Page)

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Texaco, Inc. (International Marine) 135 East 42nd St., N.Y., N.Y. 10017

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Eureka Chemical Co., P.O. Box 2205, So. San Francisco, CA 94080
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Woolsey Marine Industries, Inc., 100 Saw Mill Road, Danbury, CT 06810

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Schottel of America, Inc., 21 N.W. South River Dr., Miami, Fla. 33128
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National Metal & Steel Corp., 691 New Dock St., Terminal Island, Cal. 90731
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Bethlehem Steel Corp., 25 Broadway, New York, N.Y. 10004

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Avondale Shipyards, Inc., P.O. Box 52080, New Orleans La. 70150
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Boston Marine Industrial Park, Public Drydock No. 3, 60 Congress St., Boston, Mass. 02109
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CCL Shipcare Limited, Easton Lane Winnall Estate, Winchester Hampshire, England SO237QU
Conrad Industries, P.O. Box 790, Morgan City, La. 70380
Curacao Drydock Co., Inc., P.O. Box 153, Willemstad, Curacao, Netherlands Antilles
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Dravo Steelship Corp., R.4, Box 167, Pine Bluff, Ark. 71602
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General Dynamics, Quincy Division, Quincy, Mass. 02169
Gladding-Hearn Shipbuilding Corporation, 1 Riverside Avenue, Somerset, Mass. 02725
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Halter Marine Services, Inc., Route 6, Box 287H, New Orleans, La. 70126
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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, Kuta-ku, Kobe, Japan
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Lisnave Estaleiros, Navais de Lisboa, Apartado 2138, Lisbon 3 Portugal
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
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J. Ray McDermott & Co., Inc., P.O. Box 60035, New Orleans, LA 70160
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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 Jeloy/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
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O.A.R.N. (Officine Allestimento-Riparazioni Navi), P.O. Box 1395, Genoa, Italy 16100
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Port Allen Marine Service, Inc., P.O. Box 108, Port Allen, LA 70767
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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
Sun Shipbuilding, Foot of Morton Ave., Chester, Pa. 19013
Swiftships Inc., P.O. Box 1908, Morgan City, LA 70380
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Todd Shipyards Corp., 1 State St. Plaza, New York, N.Y. 10004
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McAllister Bros., Inc., 17 Battery Pl., New York, N.Y. 10004
McDonough Marine Service, P.O. Box 26206, New Orleans, La.
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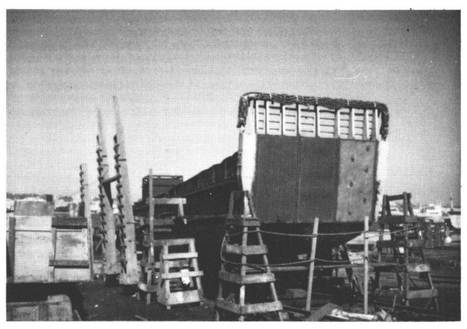

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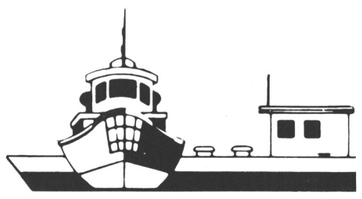

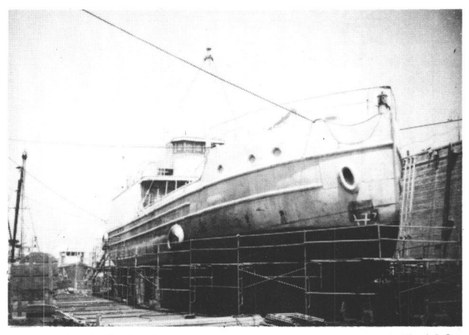

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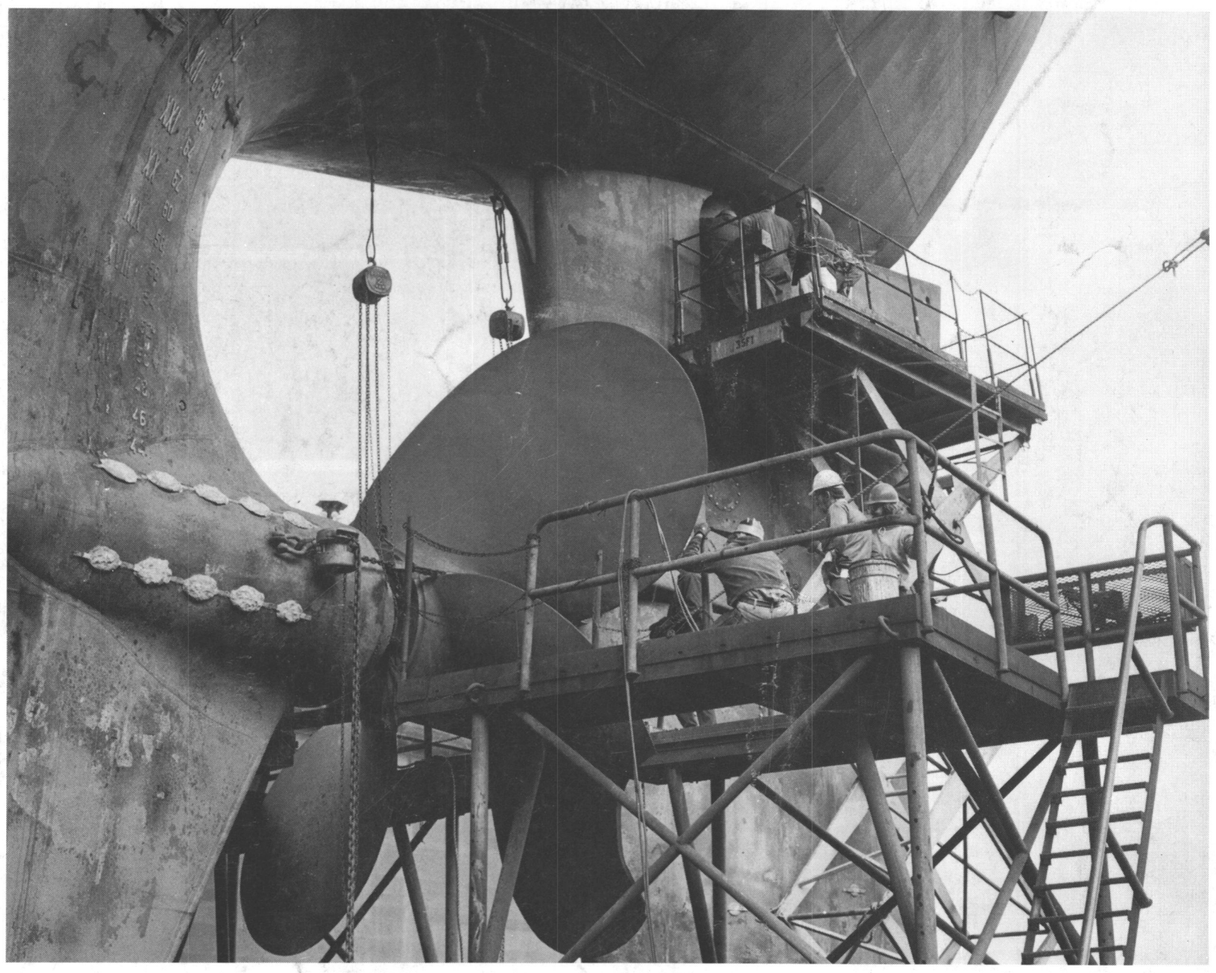

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