

# MARITIME REPORTER AND ENGINEERING NEWS

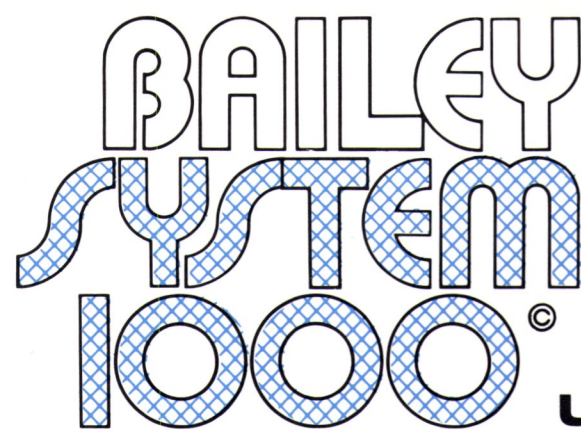


**Built By Jeffboat  
The Dennis Hendrix Joins  
ACBL Fleet Of 51 Towboats**  
(SEE PAGE 10)

**New Type Skeg  
Increases Towing  
Speed Of Barges**  
(SEE PAGE 14)

**AUGUST 15, 1977**





SS Austral Entente at Port Newark after jumboizing

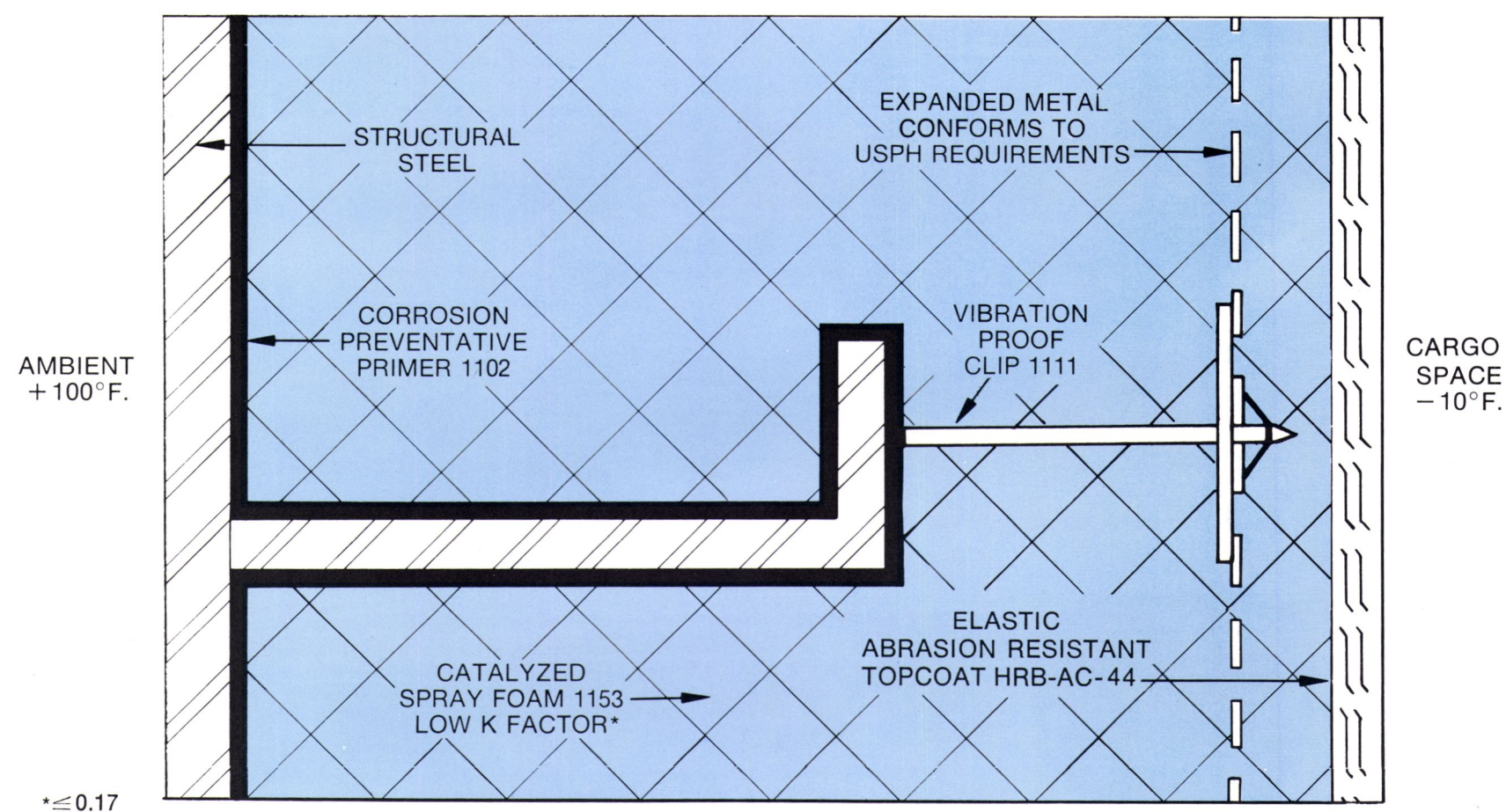
## used in the jumboization of **FARRELL LINES SS AUSTRAL ENTENTE**

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from steel to topcoat. Unique materials, manufactured to the most rigid specifications, permit rapid installation, minimum maintenance and ease of repair.

The Farrell Lines sister ship, SS Austral Envoy, will undergo similar jumboizing.



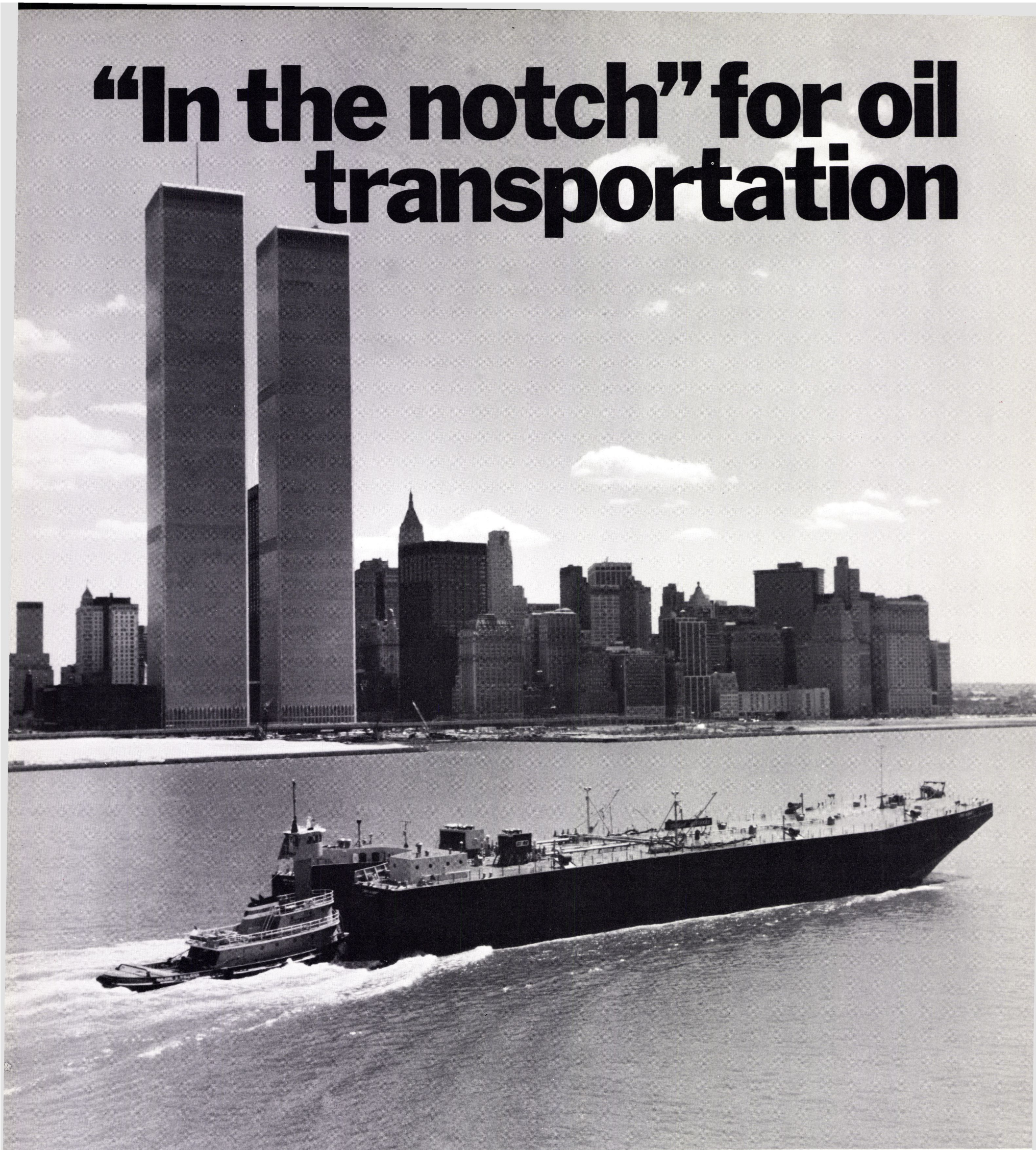
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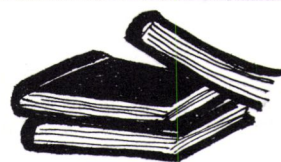
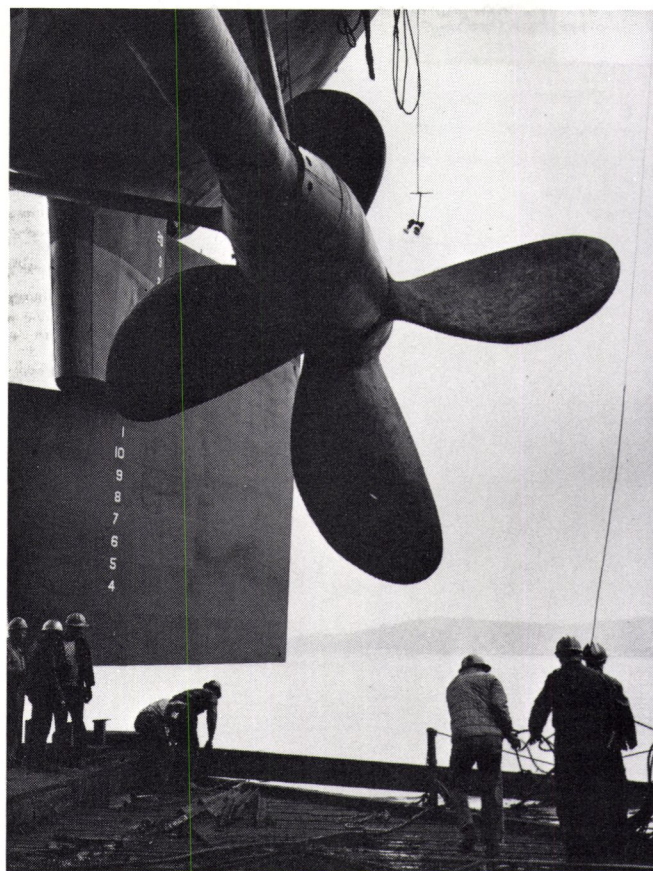
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### U Of Michigan Adds Naval Architecture— Engineering Facilities

Brightly plated anchors recently broke ground for the new facilities of the naval architecture and marine engineering department of The University of Michigan, Ann Arbor, Mich.

The new two-story addition to the department's headquarters on the North Campus will contain a drawing loft, the traditional center of naval studies, along with classrooms and offices.

"The groundbreaking is a landmark for the U-M College of Engineering," stated David V. Ragone, dean of the College. "It is the first construction provided by funds from our capital campaign. Although fellowships and endowments have already been made possible by the campaign, this is the first construction undertaken."

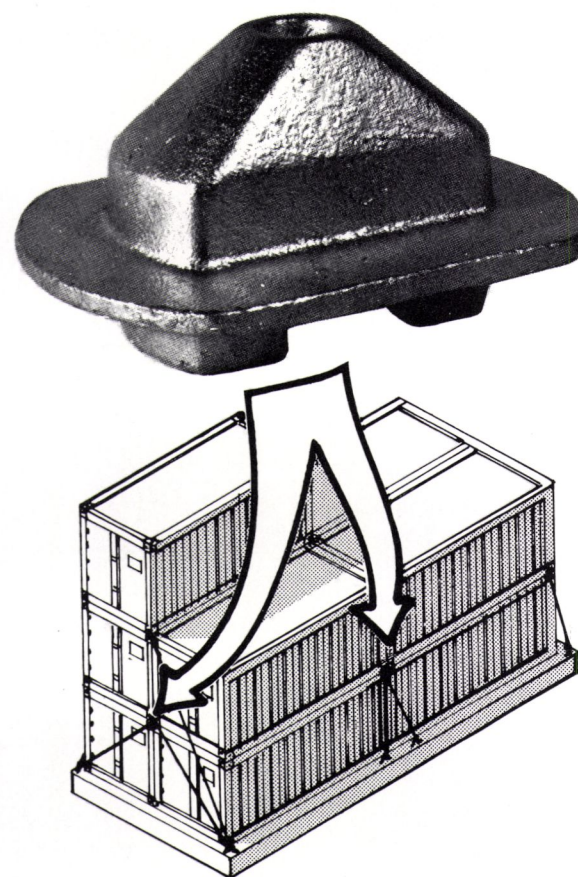
The capital campaign was begun in 1974 to raise \$20 million for the College of Engineering's continued development and its move to the U-M North Campus.

"This event is significant for us and the marine industry as well," said Francis Ogilvie, chairman of the department. "We graduate two-thirds of the new naval architects in the United States each year, and have a unique one-to-one relationship with the industry. If the United States is to remain a major shipbuilder, it must have a continuous supply of trained personnel and facilities for research and development. Because of the department's strong position, we may well become the national center for marine engineering and naval architecture."

Speakers at the groundbreaking ceremony included James E. Knott, vice president of General Motors and general manager of Detroit Diesel Allison Division, U-M president Robben W. Fleming, and Dean Ragone.

The department moved earlier this summer to its present quarters on North Campus from the West Engineering Building, where it had been located since 1907. A 360-foot towing tank, literally part of the foundation of the old building, will still be used for instruction and research.

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## MARITIME REPORTER AND ENGINEERING NEWS

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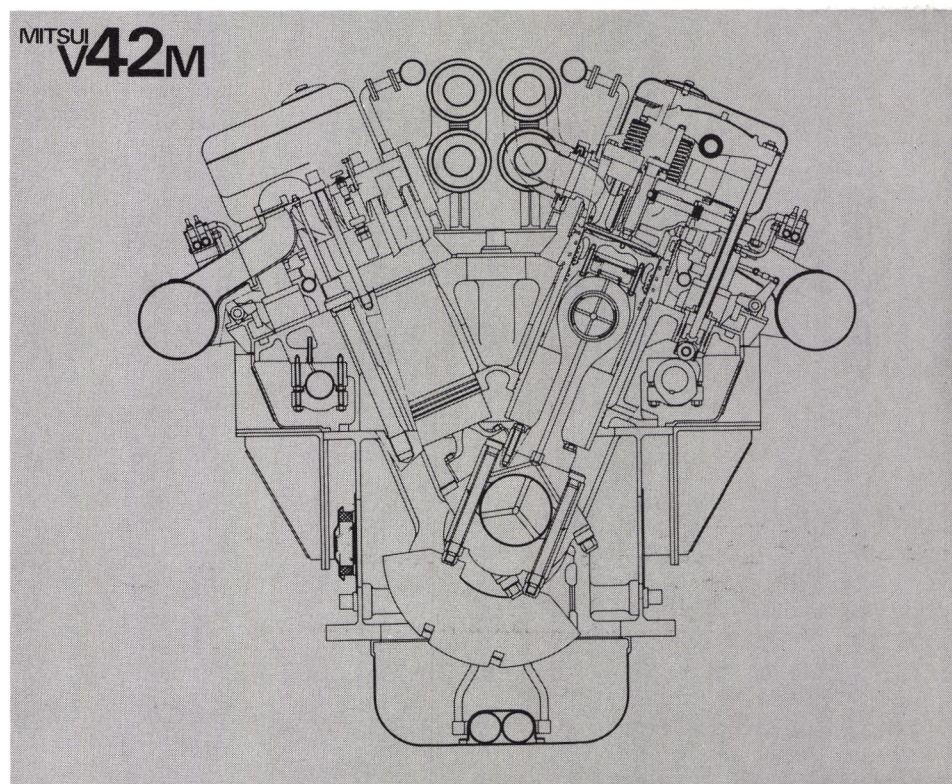
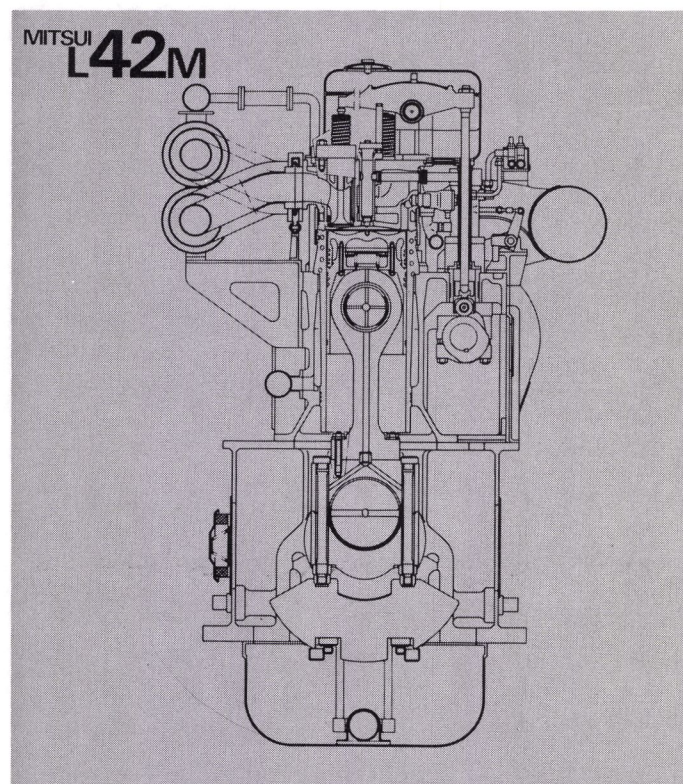


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# MITSUI 42M ENGINE

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Here is a new addition to Mitsui's repertoire as an engine builder. Called the Mitsui 42M engine, this high-output 4-stroke medium-speed engine is available in two types, the L and V.

The 42M engine is light-weight and compact. Used with suitable reduction gears, it yields propeller revolution for optimum performance. As a geared plant, it covers a wide output range on its own. Moreover, fuel consumption is low, which means high economy.

The development of the 42M engine is solidly grounded on the company's experience of more than half a century in the production of Mitsui-B&W engines. Though still quite new to the world, the 42M engine carries within it an old inheritance from a long history of engine production, as well as Mitsui's technological achievements resulting from the development of the Mitsui V60M engine. It is Mitsui's answer to today's demand for marine propulsion engines with diversified range of output and propeller revolution.



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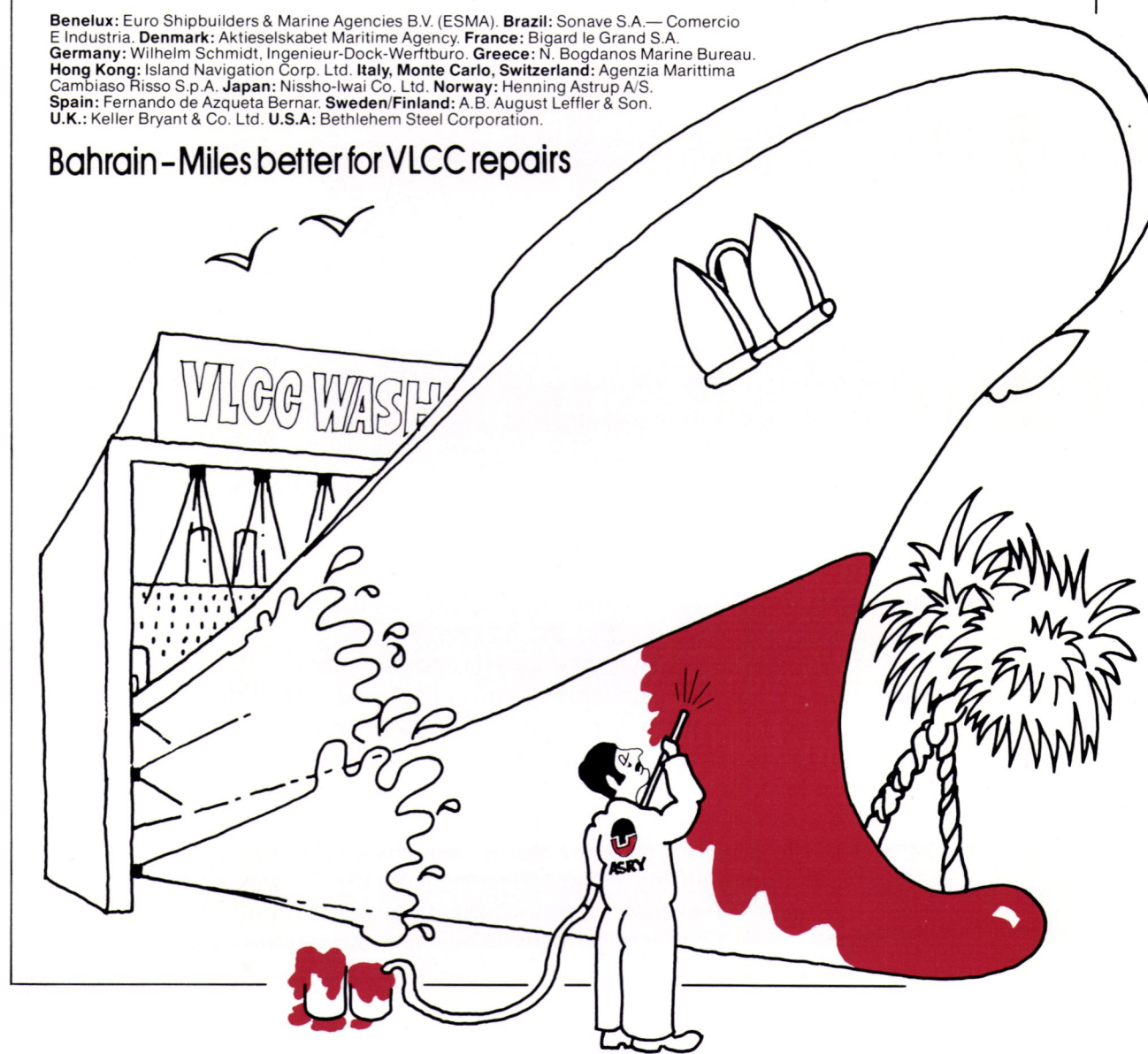
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**Bahrain — Miles better for VLCC repairs**





# General Dynamics Gets \$310-Million Contract For LNG Tankers

The Maritime Administration has announced the award of a \$310-million contract to the General Dynamics Corporation's Quincy, Mass., shipbuilding division for construction of two tankers to carry liquefied natural gas from Algeria to Lake Charles, La. The Maritime Administration said it would fund \$39.9 million of the cost.

The ships will be built for a partnership formed from units of Moore-McCormack Bulk Transport Inc., the General Dynamics Corporation, and the Panhandle Eastern Pipeline Company. Completion is scheduled for December 1979 and March 1980. The ships will be operated by Gastrans Inc., a subsidiary of Moore-McCormack Bulk Transport.

Each vessel will be 936 feet long and have a beam of 143 feet and a draft of 36 feet. Each will have a capacity of 125,000 cubic meters of liquefied natural gas.

# Canal Barge Plans To Build 112 Barges Costing \$21 Million

Canal Barge Company, Inc., 1200 Hibernia Bank Building, 812 Gravier Street, New Orleans, La., has applied for a Title XI guarantee to aid in financing the construction of 88 semi-integrated open hopper coal barges and 24 box-type open hopper coal barges.

Estimated actual cost of the project is \$21,076,000. The 88 semi-integrated barges will have a capacity of 1,500 tons each; the box barges 1,550 tons each. No shipyard was specified in the application.

The applicant operates a large number of towboats and barges to carry a variety of bulk cargoes, primarily petroleum products, on the Gulf Intracoastal Canal, the Mississippi River, the Illinois River, the Ohio River, and other inland waterways. The new vessels will be used primarily for coal transportation on the Mississippi River system.

# Moore-McCormack Lines Names Douglas Aiken To Washington Post

Moore-McCormack Lines, Incorporated, has announced the appointment of Douglas T. Aiken to the staff of the Washington, D.C., office.

Formerly a vice president of Carolina Shipping Company, Charleston, S.C., Mr. Aiken has had broad marketing and management experience in the ocean transportation field.

Moore-McCormack Lines is the ocean shipping subsidiary of Moore McCormack Resources, Inc., who operate a fleet of American-flag vessels, serving the east coast of South America and South and East Africa from the East Coast of the United States.

# Micro Line Systems Apply For Title XI For Ro/Ro Containerships

Micro Line Systems, Inc., 100 West 10th Street, Wilmington, Del., has applied for a Title XI guarantee to aid in financing the construction of two roll-on/roll-off (ro/ro) container vessels of 2,800-deadweight-tons capacity each.

The vessels will be 213 feet long,

50 feet wide, and will have drafts of approximately 16 feet. They will have capacities for 128 twenty-foot containers. Ro/ro capability will be provided via a stern ramp, and the main decks will have a load capacity of 5 tons per square foot, providing heavy-lift capability. Eastern Shipbuilding Corporation, Boothbay Harbor, Maine, is building the ships for approximately \$2.7 million each.

They are scheduled for delivery in June and September 1978.

Seres Shipping, Inc., One World Trade Center, New York, N.Y., will operate the vessels as tramps in various U.S. trades, particularly between U.S. Gulf and Atlantic ports and the Caribbean. They intend to carry preference cargoes, nuclear powerplant components, refrigerated containers, and various other cargoes.

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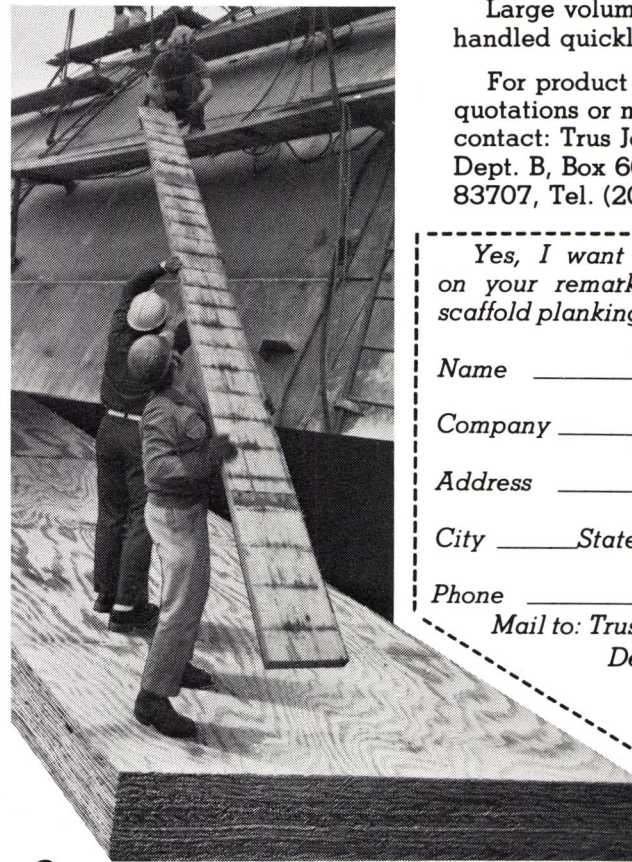
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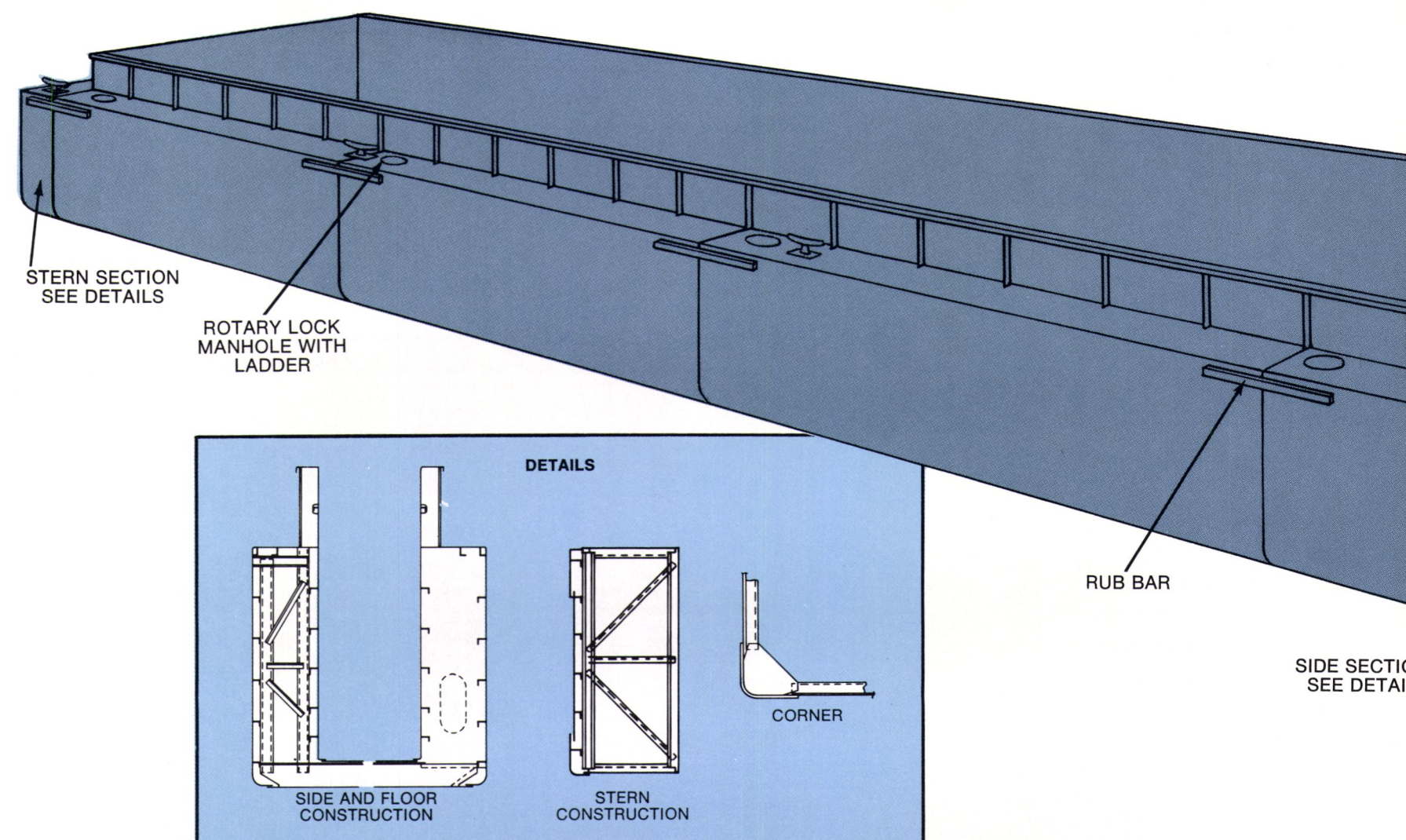
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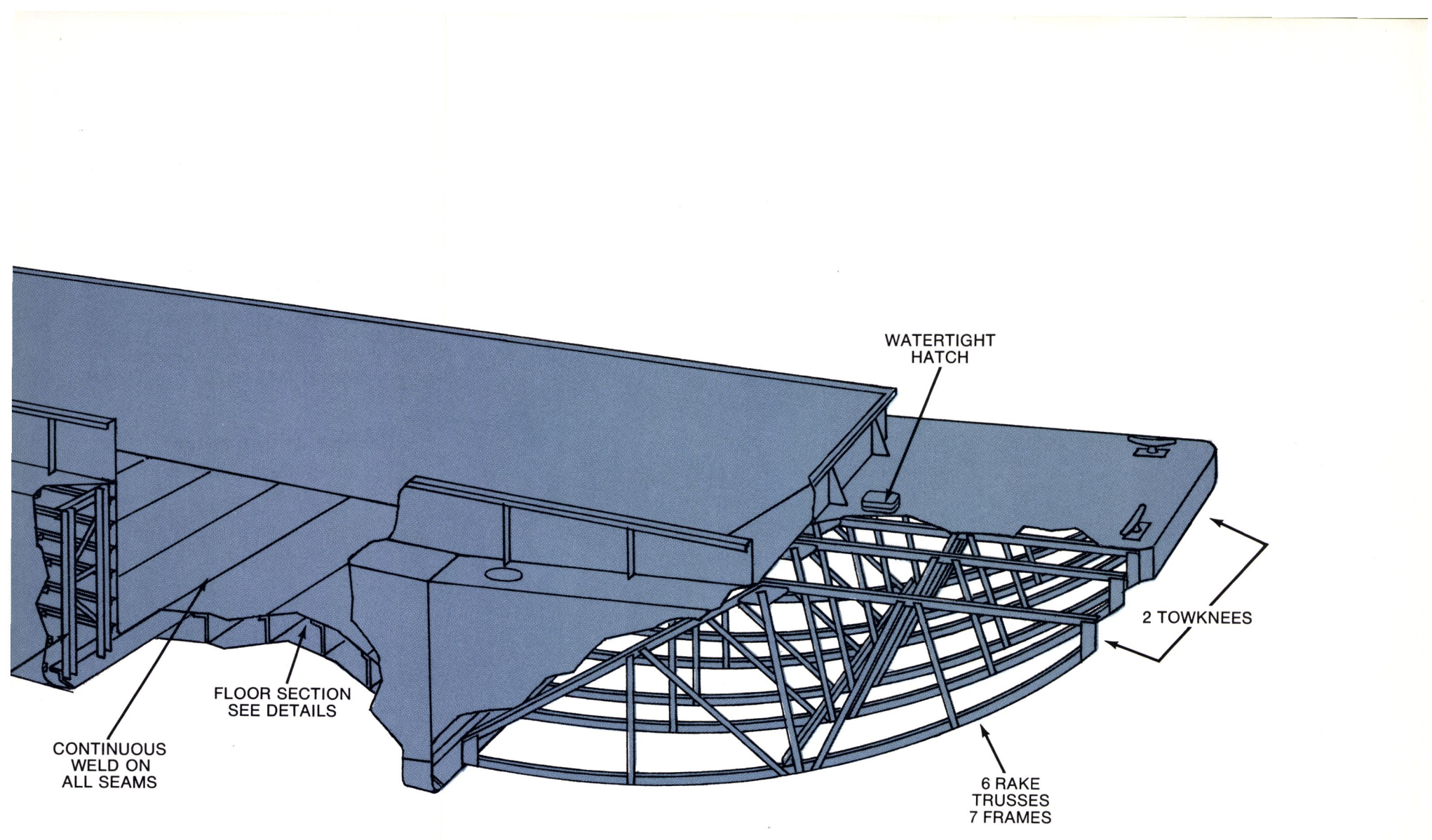
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Description	Jeffboat	Your Specs	Description	Jeffboat	Your Specs
Dimensions	195'x35'x12'		Side Plating	3/8"	
Cubic Capacity	70,000		Side Framing	5x3x3/16" 1 Long l.	
Tons at 9'0" Draft	1,536		Hopper Side Pl.	5/16"	
Steel Weight	266.4 T		Stern Box Length	5'6"	
Height at Side	12'		Stern Corners	5/8"	
Coaming Height	4'		Top Knuckle	5/8"	
Length of Rake	27'6"		Lower Knuckle	5/8"	
Rake Bottom Pl.	1 1/32"		Deck Pl.	5/16"	
Headlog Pl.	5/8"		Transom	Straight	
Trusses & Frames	6 & 8		Transom Pl.	3/8"	
Bottom Pl.	1 1/32"		Deck Fittings	2 butt checks 12 kevels	
Innerbottom Pl.	1/2"		Rub Bars	Intermittent at top	
Side Box Width	3'3"		Wheelabrator	Yes	
Top Hopper Flange	13"		Paint	1 ct. barge paint	



### Liaison With Maritime Industry Subject Of Stevens Tech Meeting

Representatives of 19 companies with maritime operations met recently with administrators of Stevens Institute of Technology to discuss a liaison program between the maritime industry and the engineering and science college.

The meeting was hosted by **Anthony J. McAllister**, chairman of

the Finance Committee, McAllister Brothers, Inc., and a graduate of Stevens in 1921, and **Dr. Kenneth C. Rogers**, president of Stevens.

The proposed liaison would affect a program in which members from the maritime industry would cooperate in establishing a curriculum of a current and practical point of view to the industry; arrange short courses, seminars and workshops of interest to the industry; provide for a transferral

of technical information, and participate in research and development projects.

The liaison would also set up programs to promote graduate studies in fields of interest to the industry, and to foster careers in the industry through the recruitment of graduate and undergraduate students.

Stevens offers graduate programs in ocean engineering that lead to the master's and doctoral degrees. The Institute is also the

home of the Davidson Laboratory, a research facility with a world-wide reputation in the areas of ship hydrodynamics, terrestrial and amphibious vehicles, and building technology.



**Anthony J. McAllister**

The history of Davidson Laboratory and areas of current research were discussed by **Dr. John P. Breslin**, director of the laboratory, during the meeting. **Dr. Breslin** explained the laboratory had pioneered in the development of the use of small models to predict the performance of sailing yachts, including all America's Cup defenders since the 1930s, all types of merchant and naval ships and water-based aircraft, planing boats and surface-effect ships.



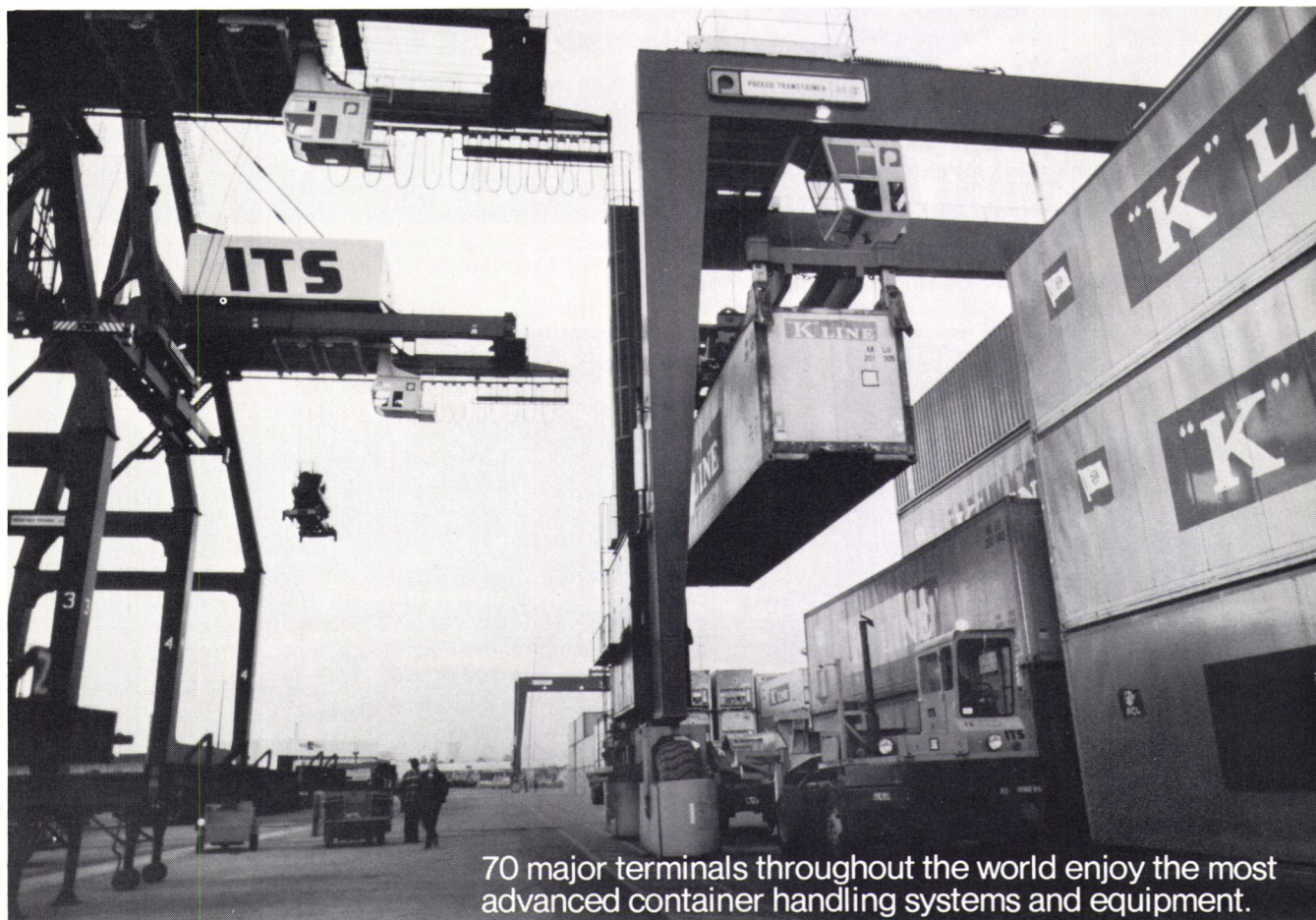
**Dr. Kenneth C. Rogers**

Maritime industry companies represented at the meeting were Atlantic Container Line Ltd.; Bethlehem Steel Corporation; Designers & Planners, Inc.; EDO Corporation; Emerald Marine Corporation; Exxon International, Inc.; Ferguson Propeller Ltd.; Gibbs & Cox, Inc.; J.J. Henry Co., Inc.; McAllister Brothers, Inc.; Mobil Oil Corporation; N.Y. Towboat & Harbor Carriers Association; M. Rosenblatt & Son; Sea-Land Service, Inc.; George G. Sharp, Inc.; Strachan-MacKoe Corporation; Texaco Inc.; Todd Shipyards Corporation, and Anthony J. Tozzoli.

### Yarrow Shipbuilders Receives \$94.6-Million Contract From Iran

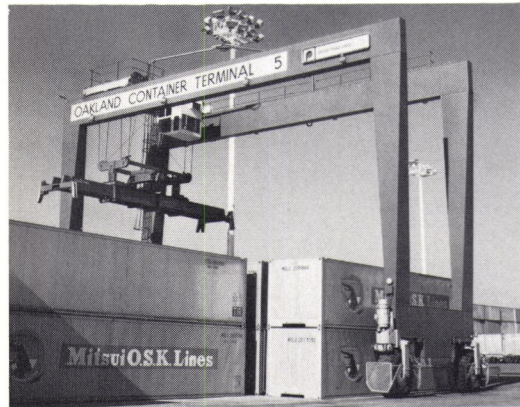
Yarrow (Shipbuilders) Ltd., South Street, Scotstoun, Glasgow, Scotland, recently received an order valued at the equivalent of \$94.6 million for four 2,500-ton support ships for the Iranian Navy.

Yarrow, which was nationalized under British Shipbuilders Ltd. earlier this year, said it is the



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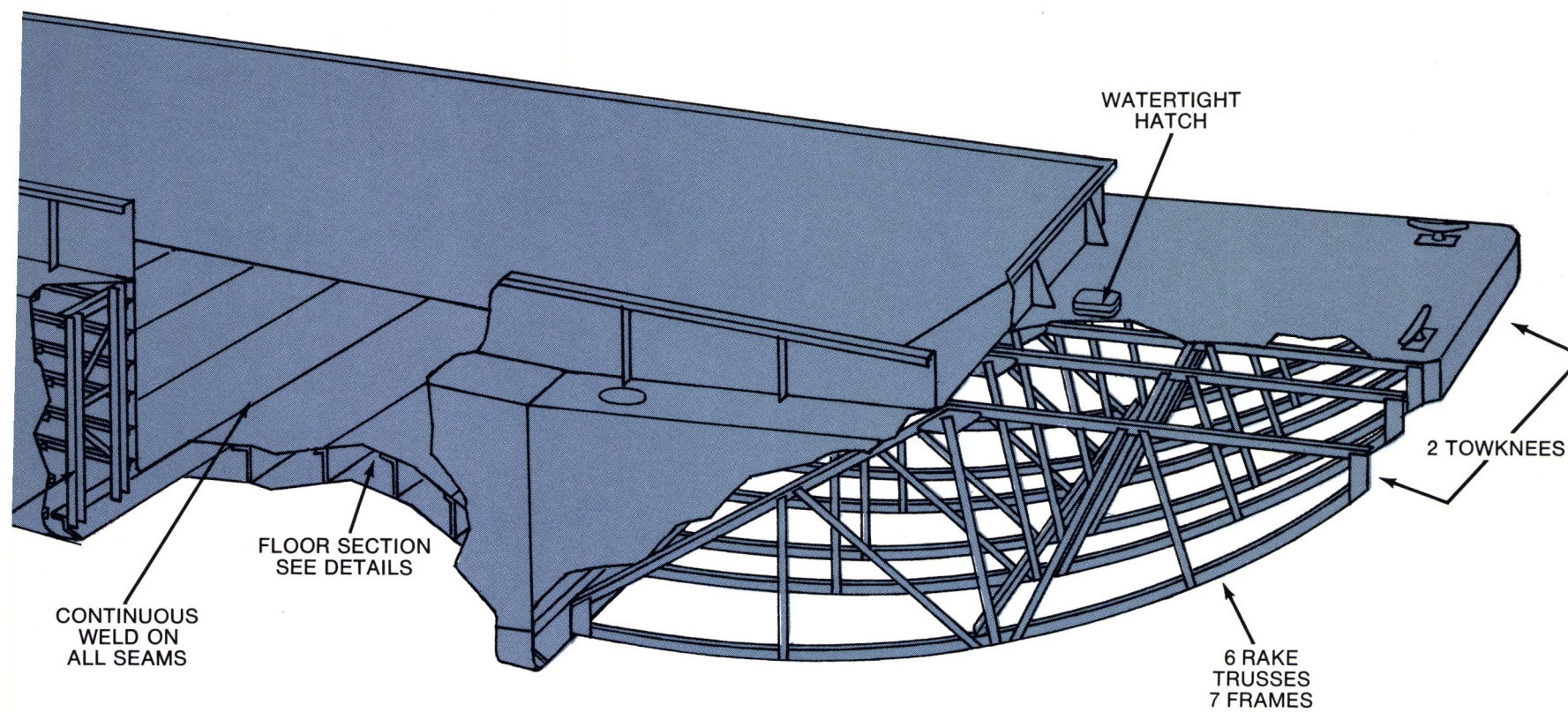
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FILL IN YOUR BARGE SPECS AGAINST  
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Description	Jeffboat	Your Specs	Description	Jeffboat	Your Specs
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Cubic Capacity	70,000		Side Framing	5x3x3/16" 1 Long'l.	
Tons at 9'0" Draft	1,536		Hopper Side Pl.	5/16"	
Steel Weight	266.4 T		Stern Box Length	5'6"	
Height at Side	12'		Stern Corners	5/8"	
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Trusses & Frames	6 & 8		Transom Pl.	3/8"	
Bottom Pl.	1 1/32"		Deck Fittings	2 butt. chocks 12 keels	
Innerbottom Pl.	1/2"		Rub Bars	Intermittent at top	
Side Box Width	3'3"		Wheelabrator	Yes	
Top Hopper Flange	13"		Paint	1 ct. barge paint	



## Newest Addition To ACBL Towboat Fleet Named For Texas Gas Transmission President



The motor vessel Dennis Hendrix, newest 8,400-hp vessel to join the fleet of American Commercial Barge Line Company, is decorated for christening ceremonies.

The motor vessel Dennis Hendrix, a new 8,400-horsepower towboat in the fleet of American Commercial Barge Line Company, was christened in ceremonies Saturday, July 16, at the riverfront in Owensboro, Ky.

The vessel, which is equal to the largest and most powerful towboats operated by ACBL, the principal operating company in the Inland Waterways Services Division of Texas Gas Transmission Corporation, was named to honor Texas Gas president Dennis Hendrix.

The ceremony was held at the foot of Frederica Street, where the new towboat was docked. Master of ceremonies was H. J. Bobzien Jr., president of the Inland Waterways Services Division. J. W. Hershey, chairman of American Commercial Lines, Inc., and a member of the Texas Gas board of directors, was the principal speaker.

The highlight of the traditional ceremonies was the actual christening of the towboat, at which time the sponsor, Mrs. Jennie Hendrix, broke a bottle of champagne over a capstan on the forward deck and officially named the vessel in honor of her husband.

The Dennis Hendrix is the sixth ACBL towboat in the 8,400-horsepower series. It will join 51 other towboats in the ACBL fleet, which also includes approximately 1,500 barges, in moving tows of various types of freight on the inland waterways. The Hendrix was constructed by Jeffboat, Incorporated of Jeffersonville, Ind., and was launched there May 28 to undergo final outfitting while it floated on the Ohio River. Jeffboat also is a unit in the Inland Waterways Services Division of Texas Gas.

The Hendrix, like the other towboats in the 8,400-horsepower series, is a triple-screw craft capable of moving barge tows of

50,000 tons or more. The vessel's three diesel engines, which will generate 2,800 horsepower each, turn three five-bladed propellers that are 9 feet 2 inches in diameter. Three steering rudders and six flanking rudders, all streamline, are operated by independent hydraulic systems. The vessel is 180 feet long and 52 feet wide.



Dennis Hendrix, president of Texas Gas Transmission Corporation, receives congratulations following the christening of the towboat named for him. The ceremony was held at Owensboro, Ky., home of Texas Gas's general offices.

Equipment aboard the Hendrix provides outstanding features of safety, handling ease, and crew comfort. Highly sophisticated communications and ship-control equipment includes radar, digital depth indicator, and swing-o-meter.

Closed-circuit television enables the vessel's captain or the pilot on duty to maintain a constant visual check on the engine room and other areas of the towboat.

## Paul-Munroe Acquires Rucker Marine Systems

Paul-Munroe Hydraulics, Inc., Orange, Calif., has acquired certain products of the Rucker Marine Systems Division, including intrinsically safe valve control systems, rotary flow-through deck stand valve operators, U.S. Navy Fast Systems, and specialized hydraulic equipment for ro/ro containerships.

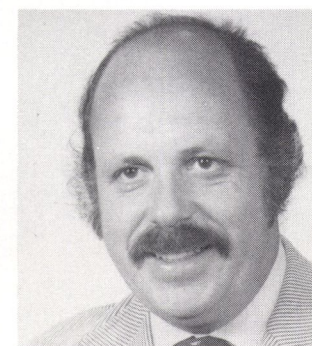
This acquisition adds additional marine equipment designs to Paul-Munroe's already impressive capabilities, which rank the company as one of the leading suppliers of cargo control systems, deck machinery hydraulic drives, central hydraulic power units and hydraulic steering systems.

Paul-Munroe's new 50,000-square-foot facility in Orange, Calif., will handle the additional production provided by this acquisition. This facility currently produces specialized hydraulic control equipment for the marine, nuclear and process industries in both the U.S. and foreign markets.

The California market is served in depth through Customer Service Centers conveniently located in Sacramento, San Francisco, Bakersfield, Los Angeles, Orange County, and San Diego. The acquisition will further increase Paul-Munroe's capabilities to provide total service to California's diverse fluid power markets.

For further information regarding Paul-Munroe/Rucker marine hydraulic equipment, contact Larry Cloward, Paul-Munroe Hydraulics, Inc., Marine Marketing Division, 1901 West Sequoia Avenue, Orange, Calif. 92668.

## Flume Stabilization Names Peter Maschke



Peter C. Maschke

Flume Stabilization Systems, a division of John J. McMullen Associates, Inc., has announced the appointment of Peter C. Maschke as sales manager of the division. Mr. Maschke's responsibilities will include sales of the Flume and Elektrofin Roll Stabilization Systems, the White Gill Bow Thruster, and the Becker Rudder throughout the United States and in Latin America.

Mr. Maschke has been employed by McMullen Associates in their domestic and overseas offices for more than 10 years. Prior to joining McMullen Associates, Mr. Maschke held sales positions with the Maryland Shipbuilding and Drydock Company and the American Ship Building Company, and engineering positions with a number of marine consulting companies.

Mr. Maschke is an associate member of The Society of Naval Architects and Marine Engineers.

Mr. Maschke will continue to make his headquarters at 820 Threadneedle No. 249, Houston, Texas 77079, and will make regular visits to the market areas under his responsibility.

Flume Stabilization Systems is the division of John J. McMullen Associates responsible for sales and services of the Flume and Elektrofin Roll Stabilization Systems, the White Gill Bow Thruster and Becker Rudder on a worldwide basis. McMullen Associates is an engineering consulting company serving the marine transportation industry in the areas of naval architecture, marine engineering, transportation economics and project management.

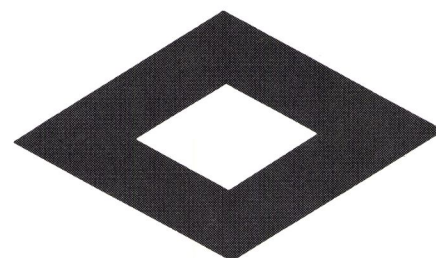


Champagne sprays into the air as Mrs. Jennie Hendrix christens the motor vessel Dennis Hendrix, named for her husband, in ceremonies at the Owensboro riverfront. Mr. Hendrix is president of Texas Gas Transmission Corporation, and the 8,400-hp towboat will join the fleet of American Commercial Barge Line, the principal operating company in Texas Gas's Inland Waterways Services Division. Others in the picture (from left) are: Capt. Mack Hester, captain of the vessel, and Mrs. Hester; H. J. Bobzien Jr., president of the Inland Waterways Services Division of Texas Gas; Comdr. Lee Gregg, of the United States Coast Guard; Capt. J. D. Wofford, vice president of barging operations, American Commercial Barge Line Company, and Dr. William G. Walker, pastor of the First Presbyterian Church at Owensboro, who gave the invocation.



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# Liaison With Maritime Industry Subject Of Stevens Tech Meeting

Representatives of 19 companies with maritime operations met recently with administrators of Stevens Institute of Technology to discuss a liaison program between the maritime industry and the engineering and science college.

The meeting was hosted by Anthony J. McAllister, chairman of

the Finance Committee, McAllister Brothers, Inc., and a graduate of Stevens in 1921, and Dr. Kenneth C. Rogers, president of Stevens.

The proposed liaison would affect a program in which members from the maritime industry would cooperate in establishing a curriculum of a current and practical point of view to the industry; arrange short courses, seminars and workshops of interest to the industry; provide for a transferral

of technical information, and participate in research and development projects.

The liaison would also set up programs to promote graduate studies in fields of interest to the industry, and to foster careers in the industry through the recruitment of graduate and undergraduate students.

Stevens offers graduate programs in ocean engineering that lead to the master's and doctoral degrees. The Institute is also the

home of the Davidson Laboratory, a research facility with a world-wide reputation in the areas of ship hydrodynamics, terrestrial and amphibious vehicles, and building technology.



Anthony J. McAllister

The history of Davidson Laboratory and areas of current research were discussed by Dr. John P. Breslin, director of the laboratory, during the meeting. Dr. Breslin explained the laboratory had pioneered in the development of the use of small models to predict the performance of sailing yachts, including all America's Cup defenders since the 1930s, all types of merchant and naval ships and water-based aircraft, planing boats and surface-effect ships.



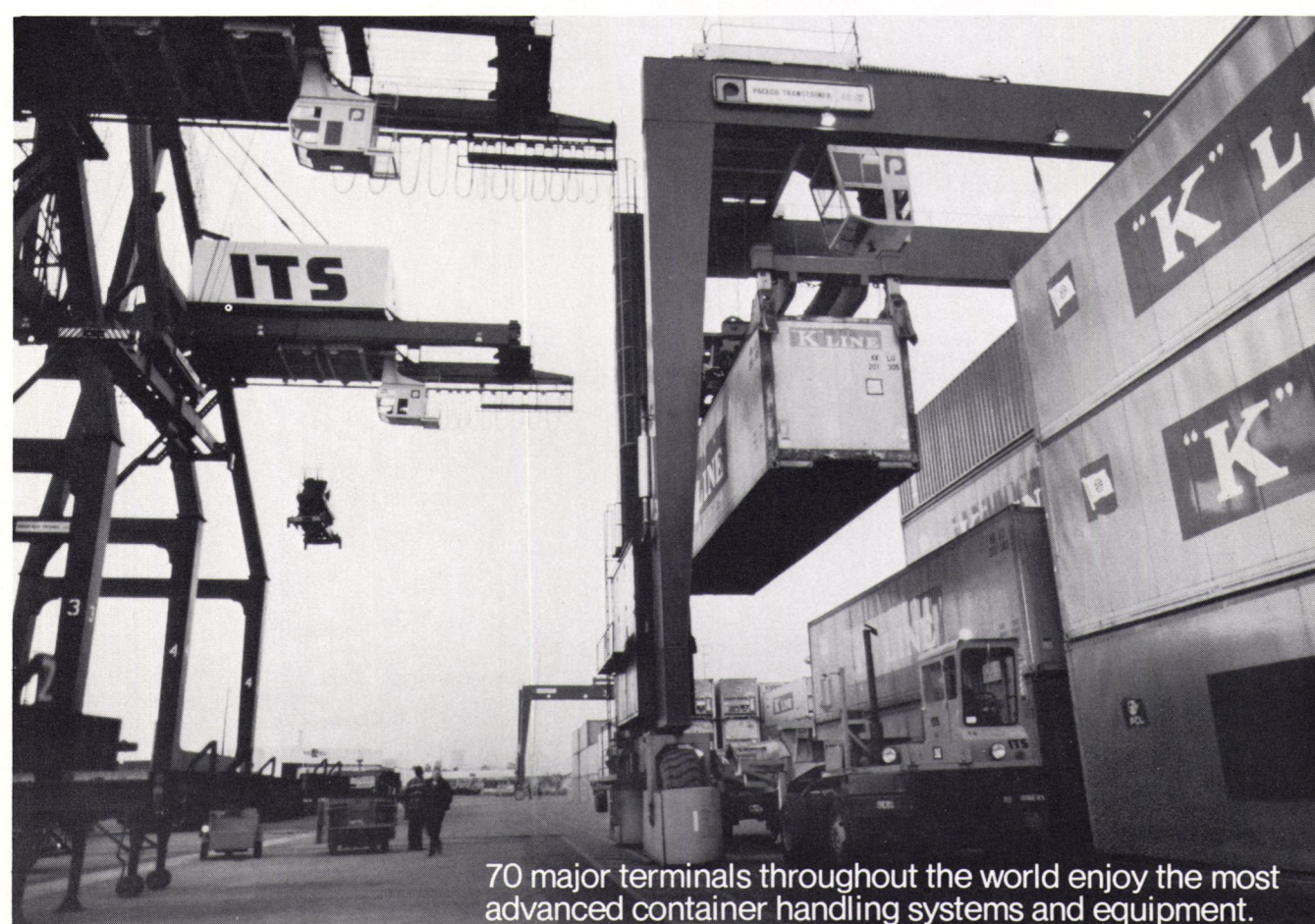
Dr. Kenneth C. Rogers

Maritime industry companies represented at the meeting were Atlantic Container Line Ltd.; Bethlehem Steel Corporation; Designers & Planners, Inc.; EDO Corporation; Emerald Marine Corporation; Exxon International, Inc.; Ferguson Propeller Ltd.; Gibbs & Cox, Inc.; J.J. Henry Co., Inc.; McAllister Brothers, Inc.; Mobil Oil Corporation; N.Y. Towboat & Harbor Carriers Association; M. Rosenblatt & Son; Sea-Land Service, Inc.; George G. Sharp, Inc.; Strachan-MacKoe Corporation; Texaco Inc.; Todd Shipyards Corporation, and Anthony J. Tozzoli.

## Yarrow Shipbuilders Receives \$94.6-Million Contract From Iran

Yarrow (Shipbuilders) Ltd., South Street, Scotstoun, Glasgow, Scotland, recently received an order valued at the equivalent of \$94.6 million for four 2,500-ton support ships for the Iranian Navy.

Yarrow, which was nationalized under British Shipbuilders Ltd. earlier this year, said it is the largest single export order it has ever won.



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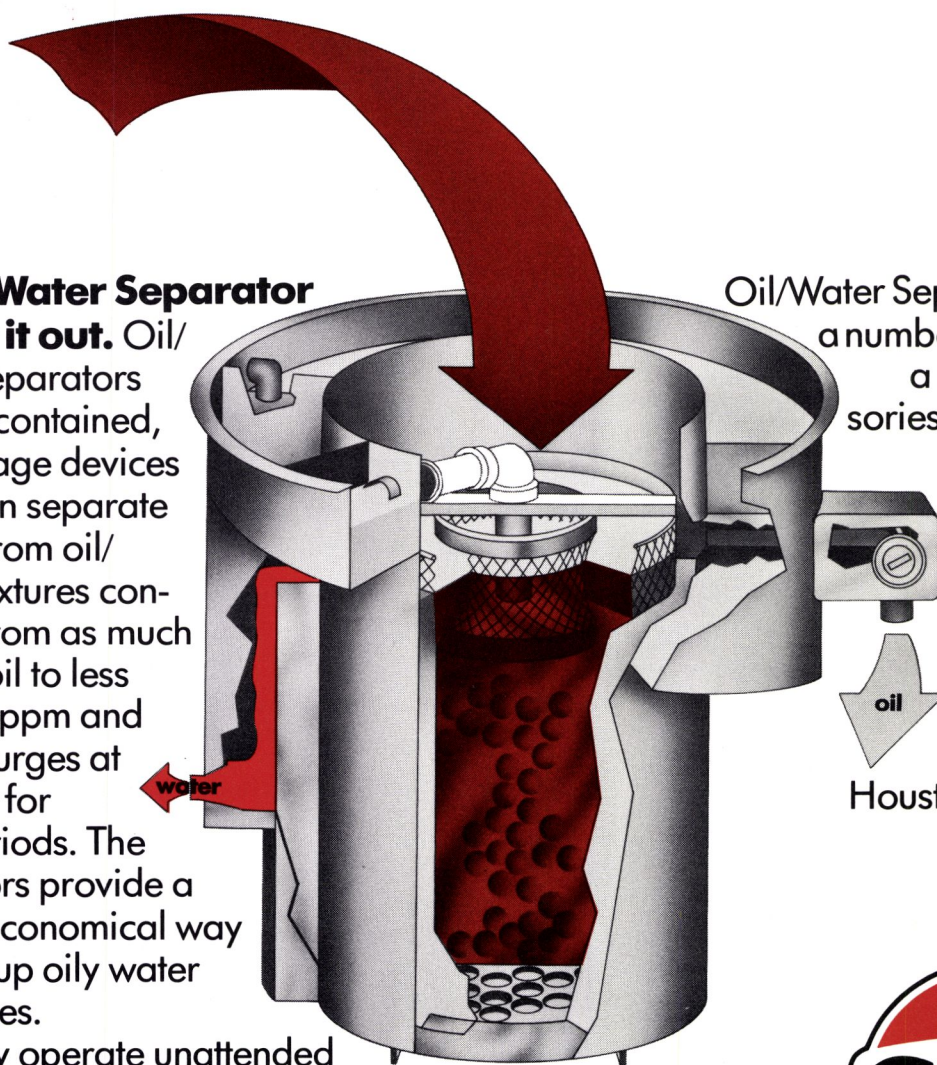


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Gulf Oil Corporation



## A Canadian Invention

# Hydralift Skegs

**Developed By Seaspan Development Co. Ltd.  
Of British Columbia, The New Skeg Design  
Results In A 10 To 15-Percent Higher Speed Or  
20 To 30-Percent Reduction In Power Required  
To Tow Loaded Barges At The Same Speed**

A Canadian invention which reduces the power needed to tow loaded barges by up to 30 percent was used to speed the delivery of the drill rig InterOcean II from Japan to the U.S. Gulf recently. An average speed of 10 knots was achieved under the most adverse towing conditions on a semisubmersible barge which is 400 feet in length and has a 100-foot beam. The barge is owned by Genstar Overseas Limited of Hamilton, Bermuda, and operated by Global Transport Organisation.

Hydralift Skegs, developed by Seaspan Development Co. Ltd. of Vancouver, British Columbia, are a dramatic breakthrough in skeg design, resulting in 10 to 15-percent higher speeds or 20 to 30-percent reduction in the power required to tow at the same speed.

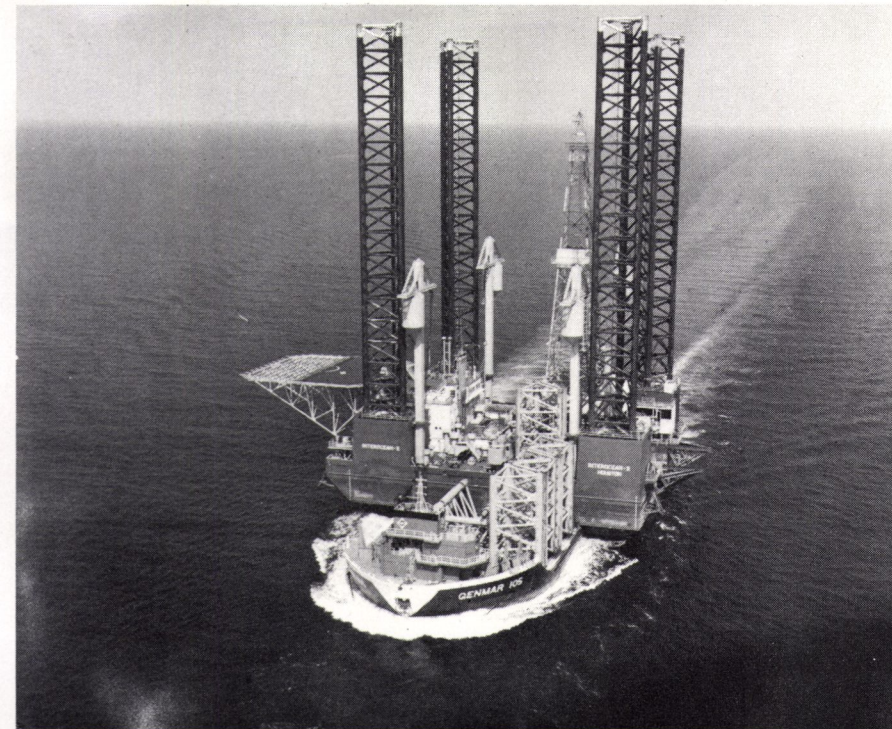
Conventional skegs create a significant drag as they provide the necessary stability. This increases the power required to tow them. This new skeg design applies the principles of aerodynamics to the design of skegs. A lift is induced by the airfoil shape of the skegs to establish stability while at the

same time producing a forward component of lift, thereby reducing drag.

The theory was exhaustively tested over a two-year period by its inventor Josip Gruzling, and Jacques Heyrman, the vice president of the development subsidiary of Genstar Marine Limited. This resulted in a 400-foot by 100-foot barge sliding down the ways in Japan in 1976, equipped with the Hydralift Skegs. The barge, which is owned by Genstar Overseas Limited, was followed by five sister barges.

Mr. Heyrman, speaking in retrospect, described the invention of the Hydralift Skeg as an amazingly simple and obvious concept. "It was simply a matter of transferring known principles from an air medium to a water medium," he said. . . . "No moving parts, yet this skeg system saves fuel and conserves energy—to say the least, it is a timely invention."

Hydralift Skegs are a radical departure from conventional skegs in current use. Conventional skegs increase total barge resistance by 25 percent to 50 per-



The 11,000-ton offshore drilling rig InterOcean II loaded aboard the 400 by 100-foot GTO barge, equipped with Hydralift Skegs, was towed 15,000 miles from Japan to the Gulf of Mexico at an average speed of 10 knots.

cent. Hydralift Skegs not only provide the required directional stability of the towed vessel, but maintain a total barge resistance close to or even in some cases slightly less than the bare hull resistance of the vessel.

Hydralift Skegs consist of a number of vertical, high aspect ratio foils fitted to the barge and positioned at each side of the stern barge rake, and horizontal foils connecting the bottom tips of each set of vertical foils.

The key to the remarkable efficiency of the Hydralift Skegs is the optimization of skeg profile and angle of attack to the flow of water. The invention enables this to be applied specifically to each barge design. The barge is stabilized by lateral lift induced by the foils which counters the drift of the barge stern, and which at the same time generates a forward component of lift which not only cancels out the frictional drag of the skegs but cancels out some of the barge hull resistance as well.

Hydralift Skegs are of benefit to barges over 5,000 tons deadweight, contemporary barges with shallow rake angles compatible with Hydralift Skegs, and particularly to barges used on long distance hauls where the transit portion is a high percentage of the total transport cycle.

Hydralift Skegs enable a reduction in horsepower of 20 percent to 30 percent at constant speed. Another way to translate this is an increase in speed of 10 percent to 15 percent at constant horsepower. The savings in fuel and the increases in operational efficiency are obvious.

Seaspan Development Co. Ltd. (SeaDevCo), based in Vancouver, British Columbia, Canada, is an arm of Genstar Marine Limited established to research and de-

velop technological advances in marine transportation in association with Seaspan International Ltd., Canada's foremost tug and barge company. Genstar Marine, through its operating companies and affiliated organizations, is also involved in marine transportation in the Canadian Arctic and in eastern Canadian waters.

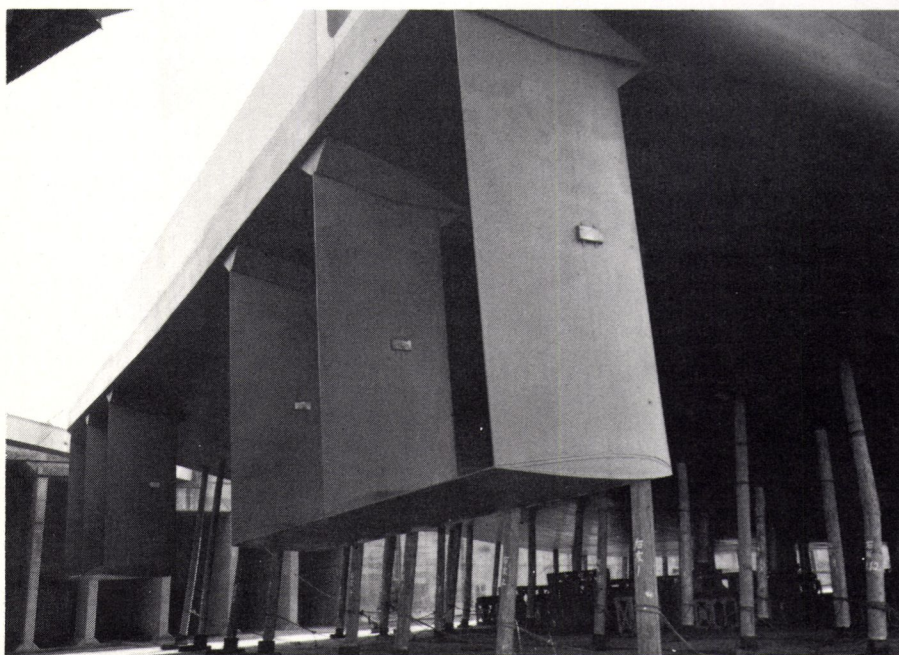
The development of Hydralift Skegs was achieved by this group and Hydralift's exclusive design consultant, Nautican Research & Development Ltd. SeaDevCo makes the device available in three ways:

1. The use of the invention under license arrangement to shipyards, builders, naval architects and owners. SeaDevCo prefers to be involved not only in the design but in the construction stages of the new equipment as well.

2. Design of the skegs by SeaDevCo and fabrication by Vancouver Shipyards Co. Ltd., a sister company located adjacent to SeaDevCo. The skegs would then be made available to owners for installation under SeaDevCo supervision.

3. For vessels which trade in the Pacific Coast Region, design of the Hydralift Skegs by SeaDevCo and fabrication and installation of the skegs by Vancouver Shipyards. This would involve the installation of the new replacement skegs on barges already in operation, as well as new barge construction.

For further information and technical data relating to Hydralift Skegs and how your barge fleet may benefit from the breakthrough in skeg design, contact Jacques Heyrman, Seaspan Development Co. Ltd., 10 Pemberton Avenue, North Vancouver, B.C., Canada V7P 2R1.

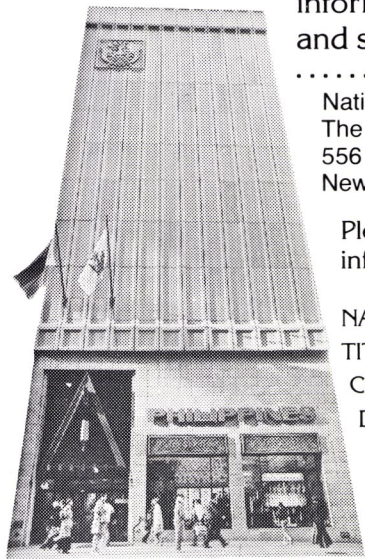


Hydralift Skegs consist of a number of vertical foils fitted to the barge at each side of the stern rake with horizontal foils connecting the bottom tips of each set of vertical foils.



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Shipowners from no less than 28 of the world's maritime nations have already found that Filipino seamen are the answer when tauter, more efficient and more profitable shipboard operations are the question. It's easy to see why. All it takes is a quick trip to the New York Philippine Center, 9 a.m. to 5 p.m. any weekday from August 4th to October 4th. There, the Philippine National Seamen Board has mounted a special exhibit on today's Filipino seaman. There you will see and hear—in terms of his background, training and on the job performance—why the Filipino seaman is already manning 18 per cent of the world's ocean going vessels. There you can get detailed answers to all your questions from ranking officials of the



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**National Seamen Board Exhibit, New York Philippine Center, August 4th to October 4th.**

This material was prepared by The August Group, Inc., 295 Madison Avenue, New York, New York, which is registered under the Foreign Agents Registration Act as an agent of the National Seamen Board, Department of Labor, Republic of the Philippines, Redo Building, Remedios St. corner San Marcelino, Malate, Manila, Philippines. This material is filed with the Department of Justice where the required registration statement is available for public inspection. Registration does not indicate approval of the contents of this material by the United States Government.



Northwest Marine  
Receives Major  
Navy Contract

Portland, Ore.-based Northwest Marine Iron Works has started overhaul of the USS Lang under a \$6.02-million contract. The Lang will be in Portland through May of 1978 undergoing hull repair and a major upgrad-

ing of its electronic and weapons systems. It is the second vessel in the Navy's FF class to undergo a major overhaul by Northwest Marine Iron Works in the past year. The Lang's sistership, the USS Stein, received a sonar dome and sewage installation system under a \$6-million contract to Northwest Marine Iron Works in 1976.

Due to be installed on the Lang are an improved communications system, radar, sonar (excluding the dome) unit and weapons. The Lang, which was built in 1966, is designed for antisubmarine warfare. The vessel is 438 feet long with a beam of 46 feet. It will be in drydock for 40 days. Northwest Marine Iron Works Marine Division specializes in major vessel repairs, ship conversions and new barge construction.

Bergeron Industries  
Name Bernard Larmann  
Technical Director



Bernard H. Larmann

William T. Bergeron, executive vice president of Bergeron Industries, Inc., has announced the appointment of Bernard H. (Benny) Larmann as technical director.

Mr. Larmann, an experienced marine engineer with 24 years in the shipbuilding industry, was involved with offshore oil-field transportation equipment, crewboats, tugs, supply and research vessels. He attended both Louisiana State University and Tulane University, and is an active member of The Society of Naval Architects and Marine Engineers.

Bergeron Industries has offices located in St. Bernard, La., with shipbuilding and repair facilities at Braithwaite, La., on the Mississippi River.

Genstar To Purchase  
Gulf Of Georgia Towing

Genstar Limited, Montreal, Canada, has announced that it has signed an agreement to purchase all of the outstanding shares of Gulf of Georgia Towing Co. Ltd. of Vancouver, subject to obtaining approvals from necessary government or regulatory authorities.

Gulf of Georgia Towing Co. operates tugs and barges along the Pacific Coast and is wholly owned by James S. Byrn of Vancouver. Total purchase price has not been disclosed, but includes cash and Genstar common stock.

Gulf of Georgia's marine equipment, including 15 tugs and 57 barges, will complement Genstar's West Coast Seaspan International fleet by providing a broader range of equipment and greater flexibility in scheduling service to customers of both companies from Mexico to Alaska.

Genstar Limited, headquartered in Montreal, is a diversified operating company which manufactures cement, building materials, chemicals and fertilizers, and is engaged in housing, land development, commercial property development and management, construction, tug and barge transportation, shipbuilding and ship repairs, import-export of industrial minerals, and venture capital investment.

NEW ISSUES

This announcement is neither an offer to sell nor a solicitation of an offer to buy any of these securities. The offer is made only by the Offering Circular.

\$200,000,000

United States Government Guaranteed  
Ship Financing Notes and Bonds, Series B

consisting of

\$ 9,080,000 of 7 % Sinking Fund Notes  
\$ 7,196,000 of 7¼% Sinking Fund Notes  
\$ 8,312,000 of 7½% Sinking Fund Notes  
\$ 9,639,000 of 7¾% Sinking Fund Notes  
\$165,773,000 of 8 % Sinking Fund Bonds

Issuer	Principal Amount of Series B 7% Notes	Principal Amount of Series B 7¼% Notes	Principal Amount of Series B 7½% Notes	Principal Amount of Series B 7¾% Notes	Principal Amount of Series B Bonds
Patriot I Shipping Corp.	\$1,589,000	\$1,259,000	\$1,455,000	\$1,687,000	\$29,010,000
Patriot II Shipping Corp.	\$1,589,000	\$1,259,000	\$1,455,000	\$1,687,000	\$29,010,000
Patriot III Shipping Corp.	\$2,497,000	\$1,979,000	\$2,285,000	\$2,651,000	\$45,588,000
Patriot IV Shipping Corp.	\$1,135,000	\$ 899,000	\$1,039,000	\$1,205,000	\$20,722,000
Patriot V Shipping Corp.	\$2,270,000	\$1,800,000	\$2,078,000	\$2,409,000	\$41,443,000

To be issued to aid in financing the construction of five LNG tankers built for the performance of certain charters referred to in the Offering Circular.

Payment of principal and interest will be guaranteed by the United States of America under Title XI of the Merchant Marine Act, 1936, as amended, which expressly provides that: "The full faith and credit of the United States is pledged to the payment of all guarantees made under this title with respect to both principal and interest, including interest, as may be provided for in the guarantee, accruing between the date of default under a guaranteed obligation and the payment in full of the guarantee."

The Series B 7% Notes, the Series B 7¼% Notes, the Series B 7½% Notes, the Series B 7¾% Notes and the Series B Bonds of each Company will mature 3 years, 5 years, 7 years, 9 years and 25 years, respectively, from the Transition Date for its Vessel.

Price 100%

(Interest accrues from the date of issue)

Copies of the Offering Circular may be obtained in any State in which this announcement is circulated only from such of the underwriters as may legally offer these securities in compliance with the securities laws of such State.

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The First Boston Corporation	Goldman, Sachs & Co.	Merrill Lynch, Pierce, Fenner & Smith Incorporated
Salomon Brothers		Warburg Paribas Becker Incorporated
Bache Halsey Stuart Shields Incorporated	Blyth Eastman Dillon & Co. Incorporated	Dillon, Read & Co. Inc.
Drexel Burnham Lambert Incorporated	Hornblower, Weeks, Noyes & Trask Incorporated	E. F. Hutton & Company Inc.
Kidder, Peabody & Co. Incorporated	Kuhn Loeb & Co. Incorporated	Loeb Rhoades & Co. Inc.
Paine, Webber, Jackson & Curtis Incorporated	Reynolds Securities Inc.	Schroder Trust Company
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Thomson McKinnon Securities Inc.	Wm. E. Pollock & Co., Inc.	R. W. Pressprich & Co. Incorporated
American Securities Corporation	Tucker, Anthony & R. L. Day, Inc.	Stuart Brothers
A. G. Edwards & Sons, Inc.	Arnhold and S. Bleichroeder, Inc.	Wood, Struthers & Winthrop Inc.
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		Underwood, Neuhaus & Co. Incorporated

July 18, 1977

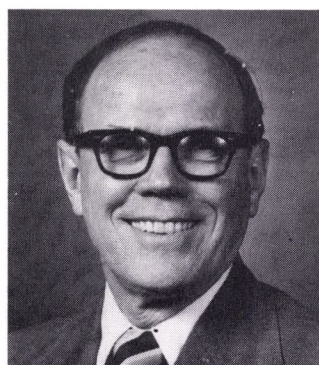


# Raymond Receives Additional \$5-Million Haitian Contract

Raymond Concrete Pile Co. of the Americas, a wholly owned subsidiary of Raymond International Inc., 2801 South Post Oak Road, P.O. Box 22718, Houston, Texas 77027, has received a design and construct contract for about \$5 million from Administration Portuaire de Port-au-Prince for additional work at its ongoing port modernization project at Port-au-Prince, Haiti. **Henry F. LeMieux**, Raymond chairman and president, announced. Raymond International is a leading worldwide engineering and heavy construction firm based in Houston.

Raymond is nearing completion of a new concrete marginal wharf and dockside facilities at the port under a \$14.3-million contract the subsidiary received in September 1975.

## James Dunford Named CDI Vice President



James M. Dunford

**Walter R. Garrison**, president of CDI Corporation, has announced the appointment of **James M. Dunford** as vice president, CDI Marine Company. Mr. Dunford joined CDI management in 1973 as technical director of CDI Marine Company, and in this capacity has directed CDI's marine engineering facilities at Jacksonville, Fla., Portsmouth, Va., Philadelphia, Pa., and San Diego, Calif. He is a 1939 graduate of the United States Naval Academy, and holds a Master of Science degree from Massachusetts Institute of Technology in naval construction and engineering. Additional graduate studies included Nuclear Reactor Theory and Engineering at Oak Ridge, Tenn.

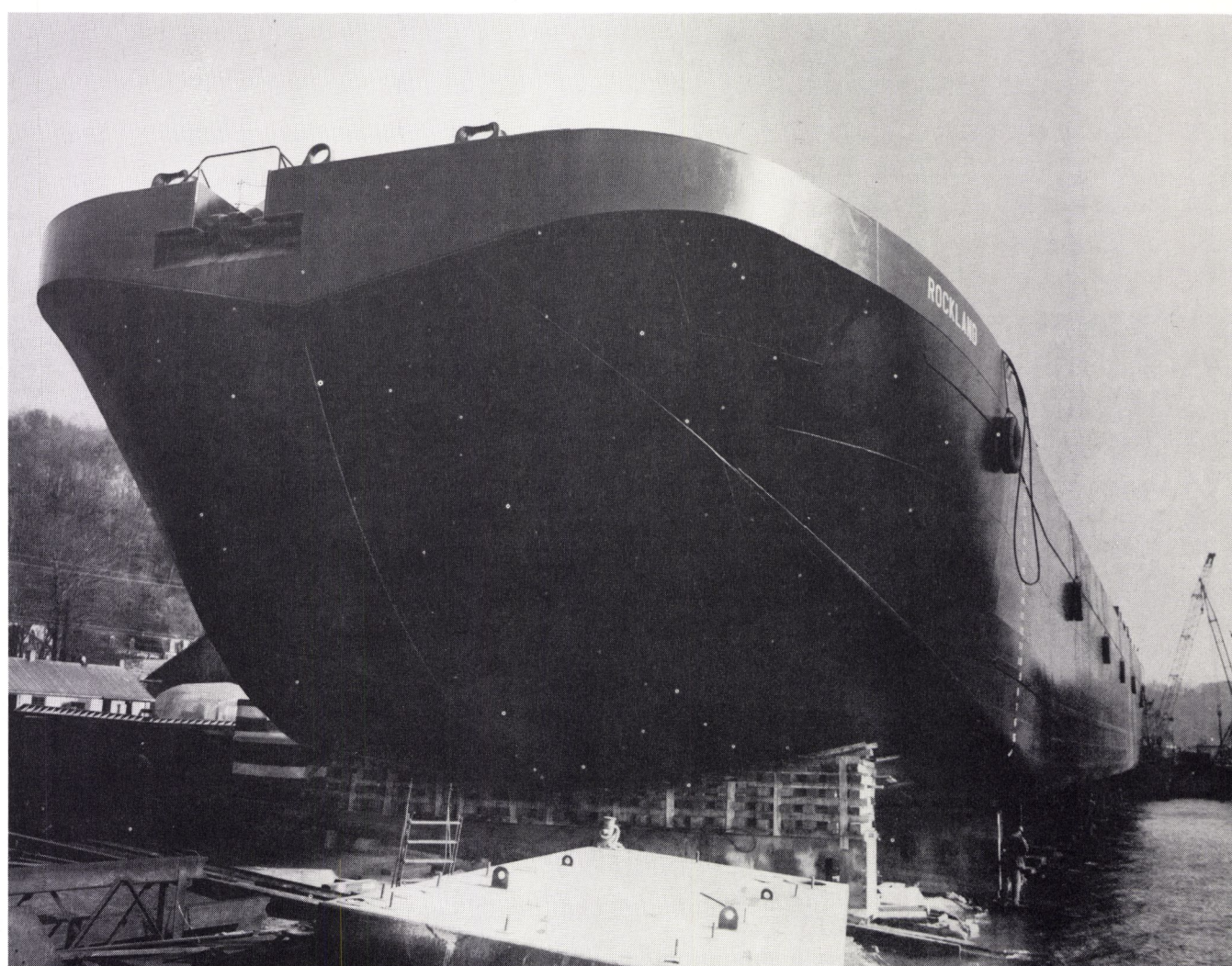
He served more than 22 years in the U.S. Navy, with 14 of those years in the Navy's Nuclear Program. Mr. Dunford was one of the original group assigned to start the Navy on its way to nuclear propulsion, and was directly involved in the design of the USS Nautilus. He retired to become vice president of New York Shipbuilding Corporation, in charge of its Naval Nuclear Shipbuilding. He later served for 6½ years as Technical Director of the Naval Air Engineering Center in Philadelphia.

CDI Marine's experience includes work with a wide variety of commercial and Naval vessels and

offshore drilling rigs/ships. Services include engineering for conversion, alteration and repair; feasibility studies; engineering analysis; conceptual design of ships systems/equipment; definition of configuration; control of costs associated with design and construction, and preparation of marine publications to include manuals and booklets. These services are provided to clients throughout the United States and Europe.

CDI Marine Company facilities are located at 9951 Atlantic Boulevard, Suite 413, Jacksonville, Fla. 32211; 445 Middle Street, Portsmouth, Va. 23704; 2130 Arch Street, Philadelphia, Pa. 19103, and 2602 Transportation Avenue, National City, Calif. 92050. All facilities are permanently staffed in-house with naval architects, marine engineers and design draftsmen.

CDI Marine is a division of CDI Corporation, headquartered at 5 Penn Center Plaza, Philadelphia, Pa. 19103, with the principal line of business of providing engineering/technical services to Government and industry. Southeastern Regional Headquarters of the corporation is located at 5400 Diplomat Circle, Orlando, Fla. 32810, under the direction of **Paul I. Beining**, senior corporate vice president.



## When bigger barges are built, Wiley will build them.

A case in point: Pittston Marine's new tank barge, a floating oil field over 315 feet long was recently built by Wiley. Designed for manned coastwise service or unmanned ocean service, the "Rockland" carries up to 70,000 barrels of Grade A petroleum products and lower, with approximately 3.4 miles of heating coils for hot oil.

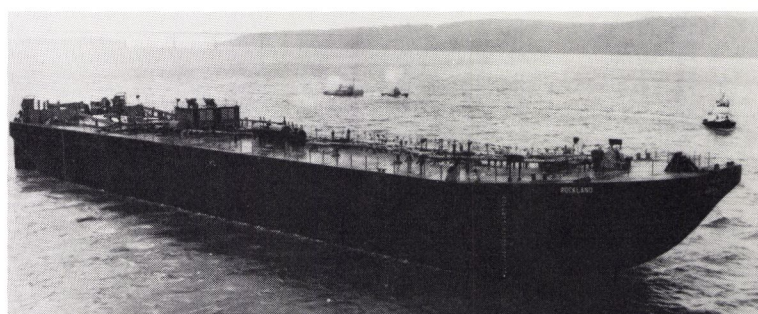
Deep well pumps are on the deck, with drive engines in an all-weather enclosure. A recessed house for quarters and galley is heated and air-conditioned.

The "Rockland" is the latest in the Wiley built deck, tank, dump, crane and coal barges; clamshell dredges; tugs and towboats; tankers, passenger and fishing vessels. With

Wiley's broad marine capabilities, we can custom-build to your specifications.

For more information, contact:

**WILEY** MFG  
A Unit of AMCA International Corporation  
Suite 200/Stockton Building/University Office Plaza  
Newark, Delaware 19702 U.S.A. (302) 738-5100  
Telex No. 83-5370





**Prudential Lines Names  
Karl Eckhardt VP  
And General Manager**

The appointment of Karl B. Eckhardt as vice president and general manager of the Atlantic Division of Prudential Lines was announced by Spyros S. Skouras, president.

Working from Prudential Lines headquarters at One World Trade

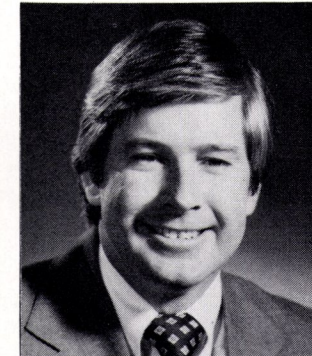
Center, New York, N.Y. 10048, Mr. Eckhardt will be responsible for all company operations and activities in the Atlantic Division.

Mr. Eckhardt, who joined Prudential in July 1972, was general manager for Latin America in the company's Pacific Division. Before that, he served as director of sales, marketing manager, and manager of container services for the Pacific Division.

A graduate of the California Maritime Academy, Mr. Eckhardt sailed as deck officer for a number of years with U.S.-flag ships, and served as operations manager for Columbia Steamship in Portland, Ore.

Prudential Lines Atlantic Division operates six cargo liners—the Santa Barbara, Clara, Cruz, Elena, Isobel and Lucia—that sail from U.S. East Coast ports to

ports on the west coast of South America, and one LASH vessel, the LASH Atlantico, servicing Venezuelan ports.



Karl B. Eckhardt

In addition, Prudential Lines Mediterranean/Mideast Division operates three LASH vessels, plus two cargo liners from U.S. East Coast ports. The Pacific Division operates four cruiseliners and two cargo vessels from U.S. Pacific and Canadian ports to Mexico, Central and South America.

**Louis Cunningham Joins  
Oceaneering International**



Louis J. Cunningham

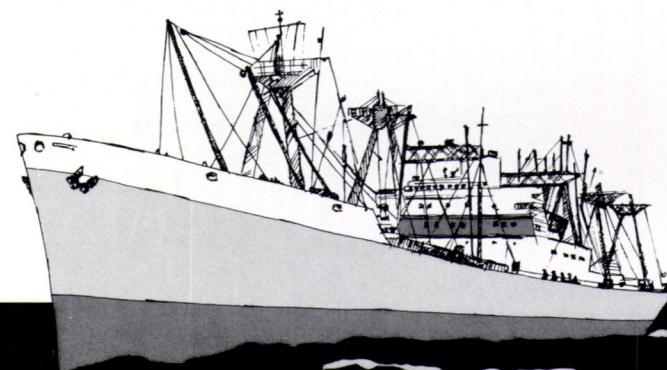
Oceaneering International, Inc., 10575 Katy Freeway, Houston, Texas 77024, has announced that Louis J. Cunningham has joined the company as director of corporate administration. Mr. Cunningham is responsible for employee relations; manpower budgeting, organization and utilization; corporate policy development, and general corporate administrative functions.

Mr. Cunningham spent the last 13 years in Saudi Arabia. The immediate past three years were as vice president of Alghosibi Diving Service in Al Khobar. Prior to that time, he was with Aramco and worked as a consultant for the Ford Foundation, advising the Government of Saudi Arabia.

**Kaiser Shipping  
Elects Jacobsen  
VP Operations**

John J. Jacobsen has been elected vice president-commercial operations of Kaiser Shipping Corp., a wholly owned subsidiary of Kaiser Steel Corp.

Mr. Jacobsen joined Kaiser Steel in 1966 as export traffic manager, in 1968 joining the newly formed United International Shipping Corp., predecessor to Kaiser International Shipping. He was most recently director of commercial operations of the subsidiary.



## How to comply with today's rules on sewage treatment without going overboard.

Selecting the right shipboard sewage treatment system can be risky. You can install an inexpensive USCG Type I system. Spend more for a system that fulfills Type II requirements. Or you can invest a lot more in a no-discharge Type III unit. There are holding tanks to consider. There are also ways to adapt existing piping arrangements.

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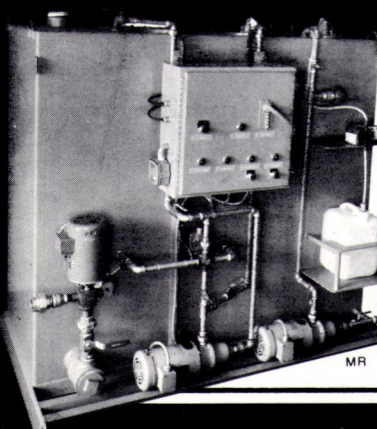
More importantly, SIGMA engineers can put the facts in focus... plan the system that best suits your needs. For example, we may suggest one of our compact USCG Type I units that is delivered on skids,

ready to operate, or multiple modules for flexibility and ease of installation. Of course, we can satisfy more advanced requirements, too. We'll even custom build a system if you and our engineers determine it's the most cost-effective system for you.

All SIGMA sewage treatment systems are easy to install, dependable and virtually maintenance-free. And all the controls are right up front. Our systems are moderately priced and USCG-certified. Compared to biological units which must be operated continuously, SIGMA equipment only has to be activated when a vessel is within territorial limits.

So why go overboard on a sewage treatment system? We're ready to go to work to help you plan the most efficient system for your operations.

Complete and mail the form below, and a SIGMA representative will contact you with a preliminary recommendation, at no charge. In the meantime, we'll send you our new SIGMA brochure.



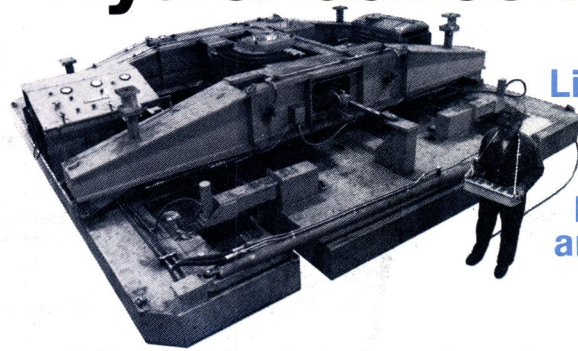
Name _____		Title _____	
Company _____		Tel. no. _____	
Address _____			
City _____		State _____	Zip _____
Type of vessel(s) _____	No. of days in port _____	Total no. of persons _____	
<input type="checkbox"/> New construction or <input type="checkbox"/> Existing vessel		<input type="checkbox"/> Sewage only or <input type="checkbox"/> All wastewater	



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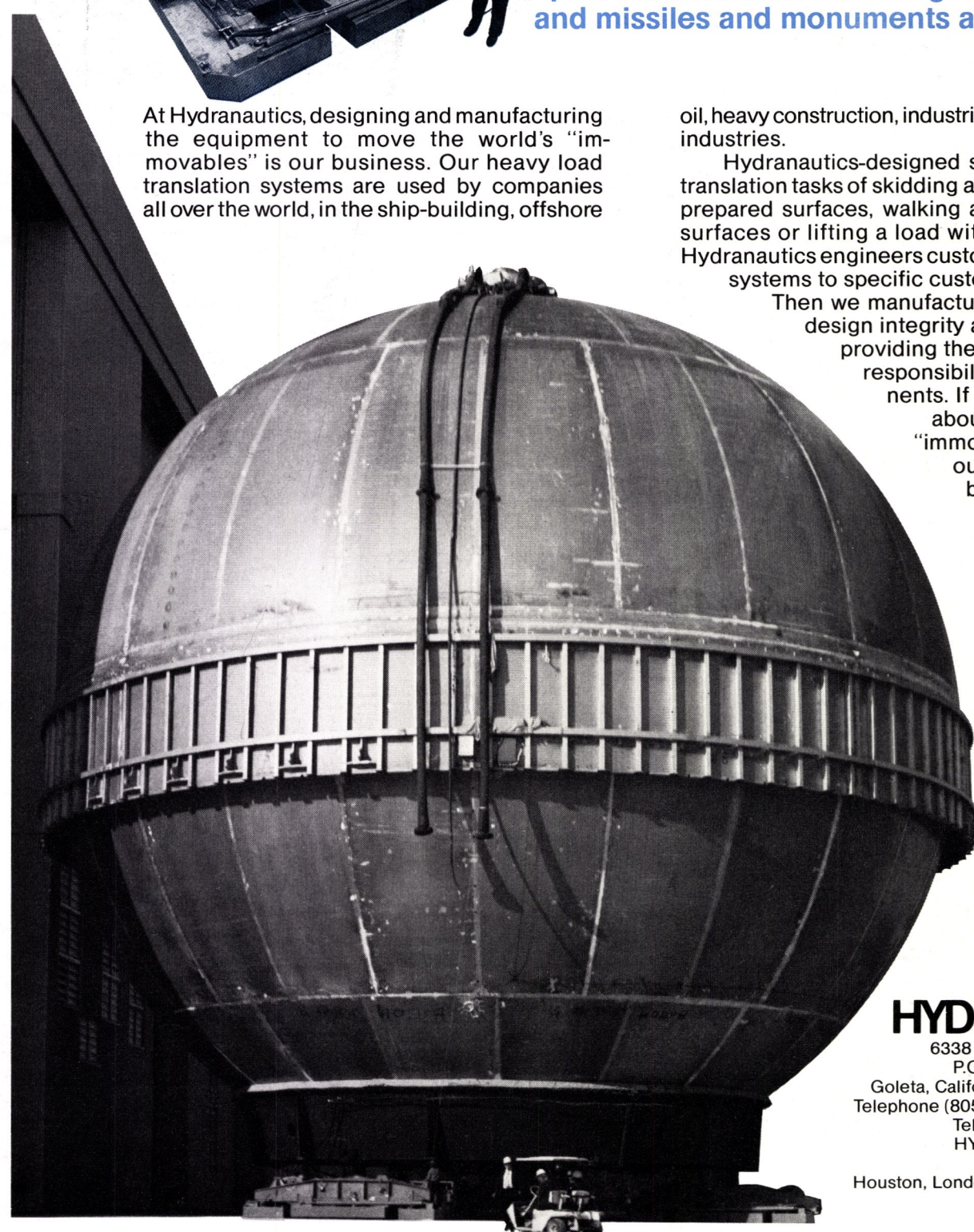
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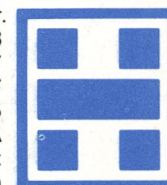
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### Inert Gas Systems Fitted Aboard Tankers Building At NASSCO

Airfilco Engineering, Inc., 1901 Julia Street, New Orleans, La. 70113, have recently commissioned the first of a series of inert gas systems fitted aboard the Shipmor Associate Tankers building at National Steel and Shipbuilding Company, San Diego, Calif.

The decision to fit the inert gas systems was taken during March 1977, and the systems were designed, built, fitted and commissioned before the end of June in order that the first vessel, the Overseas Chicago, could sail for Alaska suitably protected by the inert gas system during its maiden voyage.

**John Riley**, vice president and general manager for Airfilco, stated that the inert gas systems pres-

ently being supplied by Airfilco to the Avondale Shipyards, National Steel and Shipbuilding Company, and Sun Ship would probably be involved in the Alaskan trade, and that particular attention is being concentrated on future servicing and backup, including training facilities for the ship operators.

The inert gas systems have a capacity of 6,200 A.C.F.M. during the capacity tests at National Steel, maintained an overpressure

in the cargo spaces of approximately 25 inches of water. This overpressure will assist the pumping process when discharging the Alaskan crude oil, which has a high vapor pressure.

The systems were built in the United States to satisfy the requirements for the Maritime Administration subsidies.

### Rohr Industries Names Filiciotto And Walsh

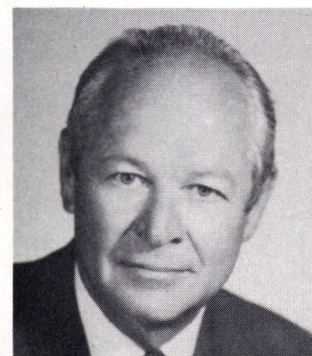
The board of directors of Rohr Industries, Inc., Chula Vista, Calif. 92012, has approved a restructuring of the company's management, resulting in the appointment of **Jerome J. Filiciotto** as executive vice president-operations, reporting to **Fred W. Garry**, chairman, chief executive and president.



Jerome J. Filiciotto

Mr. Filiciotto, formerly senior vice president-aerospace and marine systems, will also assume a new position as president of Rohr Aerospace, and is a member of the board of directors.

Reporting to Mr. Filiciotto as executive vice president will be **Thomas J. Bernard**, president and general manager, The Flexible Company; **Wilfred J. Eggington**, president of Rohr Marine, Inc.; **Ned Marandino**, general manager-Winder Transportation Systems, and **Keith W. Tantlinger**, senior vice president-research and development. As president of Rohr Aerospace, Mr. Filiciotto retains senior management responsibility for all of the company's aerospace activities.



Joseph M. Walsh

In a separate board action, **Joseph M. Walsh**, executive vice president-administration, was elected to membership on Rohr's board of directors. Mr. Walsh, who reports to Mr. Garry, joined the company last month and has senior management responsibility for Rohr's staff functions, which include finance, legal, industrial relations, and public and governmental relations.

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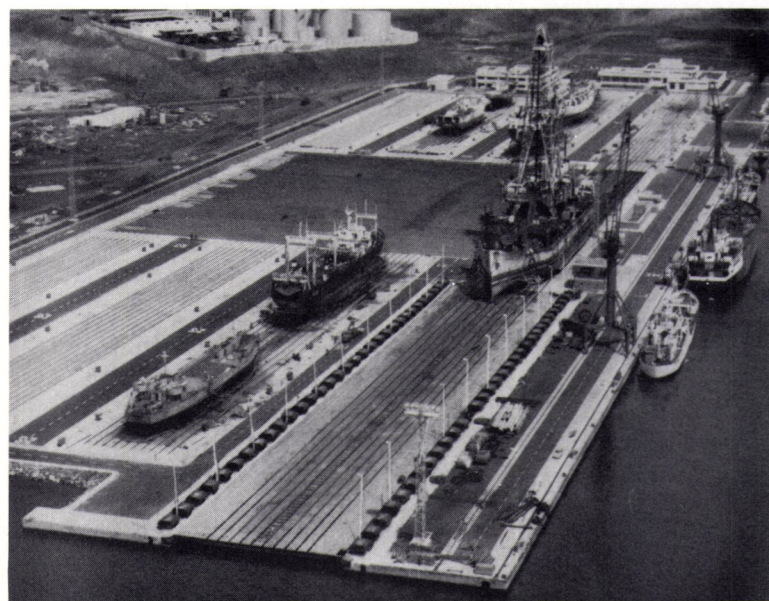
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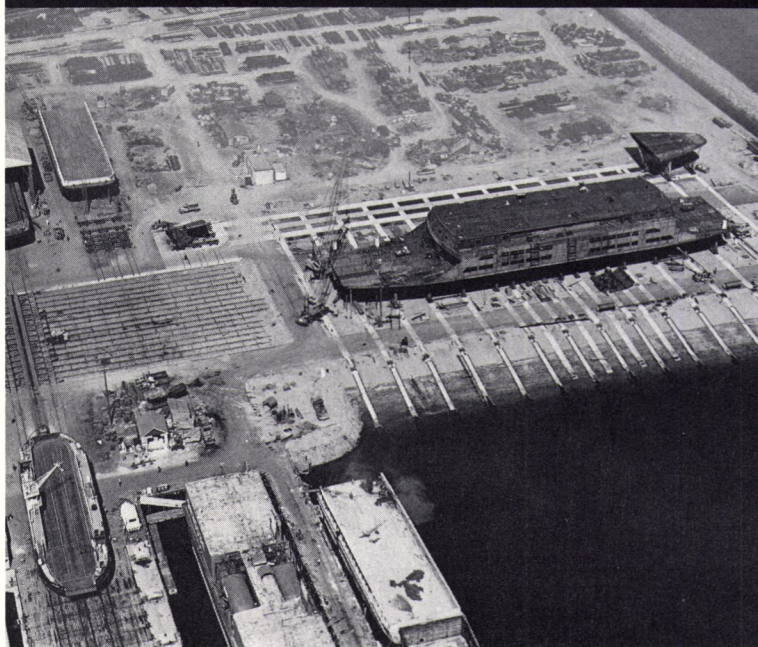
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### Hyundai Mipo Dockyard Converting Two Bulkers Into Ro/Ro Ships

Compagnia Italiana Transoceanica Di Navigazione S.P.A., Genoa, Italy, and Hyundai Mipo Dockyard Co., Ltd., Korea, signed a contract on May 25, 1977, with the approval of the Italian Government authorities early June for the conversion of two bulkers into roll-on/roll-off ships.

The conversion work on both the M/V Transoceanica Silvia and her sistership M/V Transoceanica Francesca will enable each ship to transport about 150 container trailers.

The major part of the work will consist of upper deck hatch cover closing, reinforcement of the upper deck for use as a cardeck, installation of a twin deck after five cargo hold bulkheads have been removed, installation of new elevators, ventilation and mooring systems, replacement of new deck cranes, etc., together with lighting and piping systems.

These conversion projects will be carried out within 60 days each, with five months of preparation before work commencement.

Hyundai Mipo Dockyard also began jumboizing work on two of three German coastal bulkers ordered by Horst Bartels Shipping Co., Hamburg, Germany.

The M/V Neukloster and the M/V Neuwulmstorf were delivered to the yard for jumboizing and subsidiary work to increase their cargo capacity up to 30 percent and container capacity up to 84 percent.

### Biehl & Company Announces Managerial Promotions In Houston

Carl Biehl, chairman of the board of Biehl & Company, steamship agents for numerous shipping lines throughout the world, has announced the following managerial promotions in the Houston, Texas, office.

**T.E. Dugey**, executive vice president, has retired but will remain with the firm as a consultant. Mr. Dugey, who joined the company in 1946, has been one of the key members of the management team.

**John Springer**, who has been with the company since 1966, has been promoted to president of Biehl & Company. Mr. Springer, who has served as vice president, comes from a shipping family background and has held several responsible overseas managerial positions. He will have under his direction a number of major operations and services involving several hundred personnel.

**Don Waheed**, vice president, has been promoted to general manager of Biehl & Company, Houston. Mr.

Waheed, who joined the company in 1960, will also continue to serve in his present capacity of being responsible for the overall sales activities of all Biehl & Company offices.

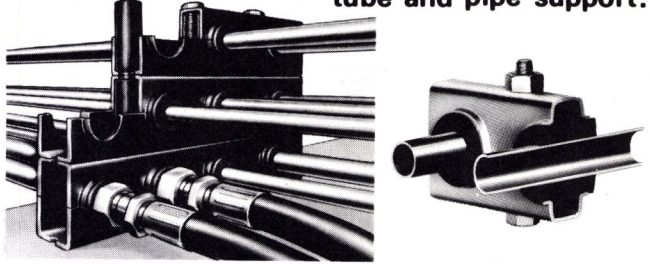
**F. Val Thompson**, manager of several liner services in the Houston office, has been promoted to vice president. After graduating from the California Maritime

Academy in 1937, Mr. Thompson sailed for several years, including three years in the U.S. Navy during World War II. He had over 10 years' experience in the steamship business prior to joining Biehl & Company in 1959.

**Gene Murphree** has been promoted to general sales manager, West Gulf. Mr. Murphree will have the responsibility for coordinating

all sales activities between Lake Charles, La., and Brownsville, Texas, including the Dallas office and its coverage area. He joined the company in 1971. **Noral Schmidt**, a long-time employee of Biehl and Company, and **Charles (Chuck) Reagor** will both assume the positions of district sales manager, reporting directly to Mr. Murphree.

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Multi-Clamp provides a total system of planning, installing and retaining pipes, hoses and tubing on machine tools, in plants, on process machinery, in vehicles—anywhere line runs are required for hydraulic or pneumatic, cooling, lubrication, refrigeration, fuel, etc.

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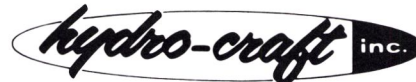
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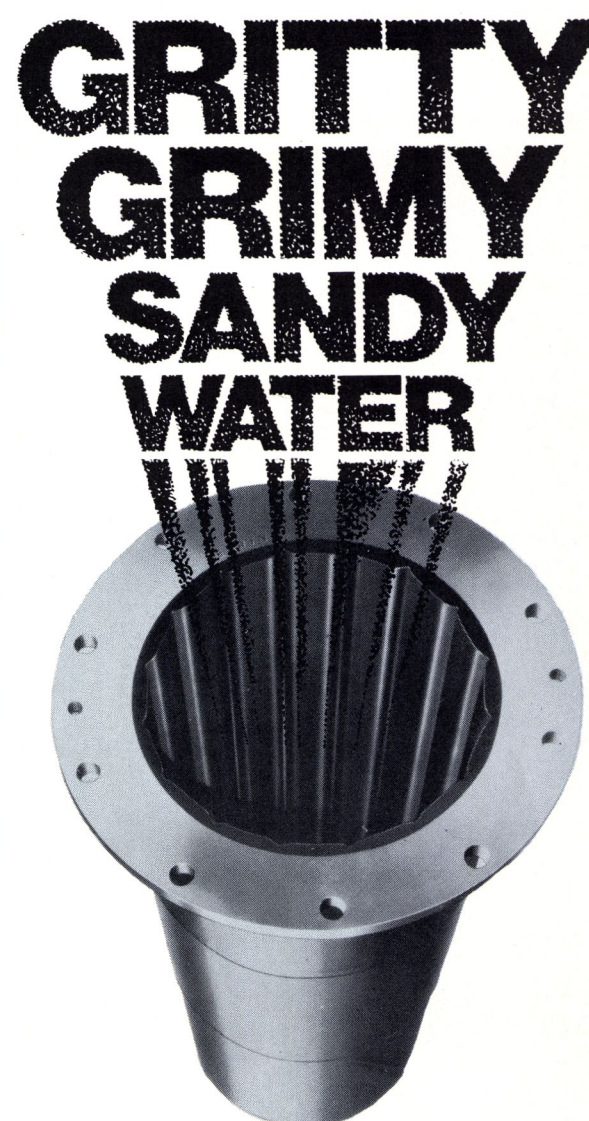
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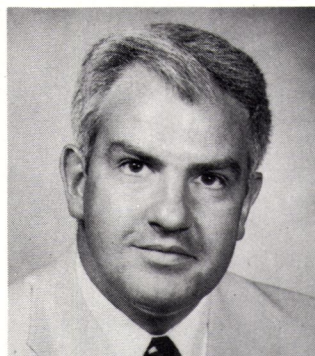
### CUTLESS BEARINGS KEEP ON PERFORMING.

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

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**Airfilco Engineering  
Names John E. Riley  
VP And Gen'l Manager**



**John E. Riley**

**William B. Alexander**, president of Airfilco Engineering, Inc. of New Orleans, La., has announced the appointment of **John E. Riley** as vice president and general manager of the company.

Airfilco Engineering, Inc. is a gas process equipment supplier specializing in the design and installation of inert gas systems, on new and existing tankers.

Until joining Airfilco Engineering, Inc., Mr. Riley was technical

director of Airfilco Marine Systems, Ltd. in the United Kingdom, with responsibility for the Marine Division of Airfilco for the supply of the inert gas systems and packaged generators.

Since 1972, he has been involved in the specialist field of Tanker Safety Equipment, and was formerly a superintendent engineer with the British and Commonwealth Shipping Company based in London.

Airfilco considers Mr. Riley's long Tanker Safety Equipment background, plus his seagoing and ship repair experience, an important asset during the forthcoming program for retrofitting inert gas systems, both on existing ships and for new construction.

Mr. Riley served his apprenticeship in marine engineering and naval architecture in the United Kingdom. He studied marine and mechanical engineering at the University of Surrey, sponsored by the Institute of Marine Engineers, and graduated with honors in 1967. He then returned to sea obtaining his first class license for steam and motor ships in 1969.

**Three-Day Weather Conference And Exhibit**



Members of the committee planning the three-day conference and exhibit "Marine Weather and Ocean Systems—Today and Tomorrow," which will be held at the Downtown Athletic Club, New York City, September 14-16, gather around a world globe, symbolizing the international aspects of the atmosphere and oceans of the world, following one of their meetings in New York City recently.

Sponsored by the Maritime Association of the Port of New York, the first comprehensive three-day conference and exhibit to be held in downtown Manhattan will feature panels of individuals from industry and government agencies expert on weather systems and equipment.

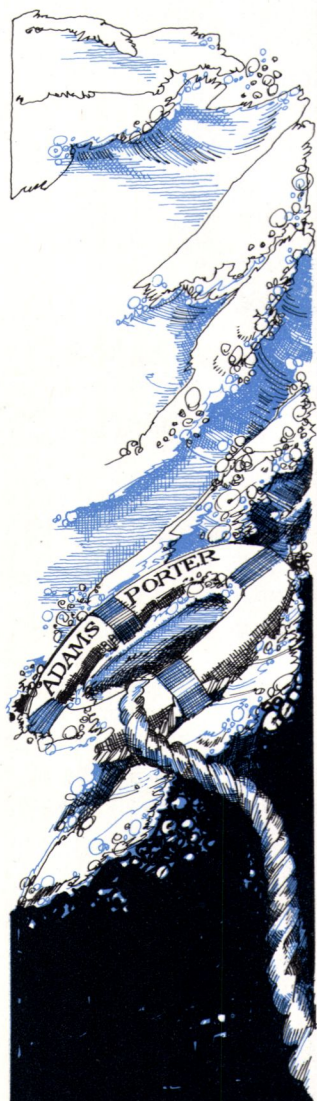
The panels will conduct seminars on such subjects as Ship Routing, Currents, Weather

Equipment, Harbor and Coastal Weather, Ice, Facsimile, Heavy Weather, and Future Plans.

Exhibits will be on display by internationally renowned manufacturers of weather equipment and systems utilized by shipping companies for efficiency of vessel operations and safety of lives and cargo at sea.

Seen above are, left to right: **Robert Ragusso**, Bendix Marine Science Services; **Lawrence W. Moore**, Sea-Land Service, Inc. (conference chairman); **Armand Bouchard**, Alden Electronic & Impulse Recording Co., Inc.; **Winfield Sylvester**, professor, Rutgers University; **Dr. Kirill Chekotillo**, Acting Chief Section for Sea and Ocean Affairs, United Nations, and **Raymond Yturraspe**, Griffith Marine Navigation, Inc. (exhibit chairman).

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**ELEVENTH IN KOCKUMS SERIES**—The eleventh vessel in Kockums Shipyard's series of 355,000-ton tankers has been delivered to a shipping partnership headed by the Lars Krogh & Co. Lines, Koppang, Norway, from the Kockums yard in Malmo, Sweden. The ship has been christened *Wind Eagle*, and is an oil tanker weighing 357,400 dwt. The main dimensions of the vessel are length overall, 1,188 feet; breadth, 197 feet, and draft, 73 feet. *Wind Eagle* is propelled by a Kockums-Stal Laval steam turbine that develops 40,000 hp. Total cargo capacity amounts to 442,000 cubic meters, divided among 29 tanks. *Wind Eagle* has been built for worldwide traffic to the highest class in Det norske Veritas. The vessel is the eleventh in a series of fourteen 355,000-dwt tankers. The next ship in the series is also being built for Lars Krogh & Co., Norway.



### Brochure Describes Floating Concrete Structures For LNG

A new brochure on concrete construction of LNG products, transport and storage facilities has been published.

This brochure describes the complete design and construction capabilities of the Dytam organization, which specializes in the overall engineering of pre-stressed concrete floating structures.

Dytam Marine Inc. is a joint company of the Dyckerhoff & Widmann and Tampimex Groups. The new literature explains the overall engineering and construction capabilities of Dytam through its affiliation with Dyckerhoff & Widmann, A.G. The brochure includes details of the floating liquefaction storage 125,000 cubic meter LNG carrier as well as land storage installations.

For a free copy, write to **Alfred E. Stanford**, Dytam Marine Inc., 1114 Avenue of the Americas, New York, N.Y. 10036.

### GT&T Announces Management Changes

The following management changes within Gulf Trading and Transportation Company (GT&T) have been announced in Pittsburgh, Pa., by **Herbert I. Goodman**, GT&T president.

**Peter E. Luitwieler**, formerly regional vice president-Western Europe, Africa, and Middle East, in London, has been named vice president-planning and strategic studies, in Pittsburgh. Replacing him in London is **Don J. Thomson**, formerly vice president-international petroleum product sales, Pittsburgh. **Arthur R. Larocque**, formerly general manager-international aviation fuel sales, has been named vice president, international petroleum product sales.

Mr. Luitwieler joined Gulf in Pittsburgh in 1965, soon after entering the U.S. Army. He rejoined the company in the Gulf Oil Company-U.S. product supply department, and in 1971 was transferred to Gulf Oil Trading Company (GOTCO)-Latin America, in Coral Gables, Fla. A year and a half later, he returned to Pittsburgh as Far East sales coordinator and in 1973 moved to New York as GOTCO manager, heading the trading operations.

A 1964 graduate of Dartmouth College, Mr. Luitwieler received an MBA degree the following year from the college's Amos Tuck School of Business Administration.

Prior to his 1975 appointment as GT&T vice president-international petroleum product sales, Mr. Thomson advanced through a progression of positions. He spent eight years with Gulf in Canada working on various engineering and marketing assignments before being transferred

to Pittsburgh in 1969. The following year, he was in Tokyo as marketing advisor to Gulf Oil Company-Asia, and then moved to Seoul as executive vice president of Gulf's Korean Marketing and Distribution Company.

In 1973, he was appointed vice president of Gulf Oil Company-Asia, acting as country manager for Taiwan, Hong Kong and the Philippines. His responsibilities also included downstream interests in India, Pakistan and the rest of Asia, excluding Japan and

Korea. In his new position, he will be involved with GT&T's growing number of Eastern Hemisphere activities.

A native of Canada, Mr. Thomson was graduated from the University of British Columbia in 1959 with a B.S. degree in mechanical engineering. He joined Gulf in 1961 as a sales trainee with the marketing department in Canada.

Mr. Larocque joined Gulf in January 1976 as general manager, international aviation sales.

In his new position, he will oversee the operations of four separate worldwide businesses operating within the international petroleum product sales division. Pittsburgh-based general managers will report to him on operations in international marine sales, aviation sales, lubricants sales, and gas liquids sales.

A native of Fall River, Mass., Mr. Larocque received a degree in civil engineering in 1957 from Worcester Polytechnic Institute, Worcester, Mass.

## Georgia bulldogs.



Running a shipyard is a competitive, dog-eat-dog business. To stay on top you need an edge.

The bulldogs are our edge.

Billy "Boss" Foran is V.P., Yard Superintendent at Savannah. Bill Kwitchoff, Jack Harrison, Bill Dealing, and Bob Hadley (not shown) are ship supervisors.

When they sink their teeth into your repair job they don't let loose until it's 100% completed.

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**Pott Industries Inc.  
Becomes HNG Subsidiary**

Houston Natural Gas Corporation (HNG) has acquired Pott Industries Inc. of St. Louis, Mo., through a tax-free exchange of 4,881,046 shares of HNG common stock for all of Pott's common and preferred stock outstanding.

Pott will continue to headquarter in St. Louis and will be oper-

ated under its present management as a wholly owned HNG subsidiary. Pott has approximately 3,000 employees worldwide.

H.T. Pott will remain chairman of the Pott board of directors and Richard P. Conerly will continue as president. Mr. Conerly also will become a director of HNG.

Pott and its subsidiaries are energy-related companies engaged in marine transportation and serv-

ices to the offshore petroleum industry; construction and repair of towboats, barges, dredges, oceangoing tugs and supply boats; and marine transportation on United States inland and intracoastal waterways.

Pott's Offshore Marine Services Division, which headquarters in New Orleans, La., includes Gulf Mississippi Marine Corporation, DeFelice Marine Contractors, Inc., and several foreign subsidiaries.

While the Division operates worldwide, its primary operations are in the Gulf of Mexico, the Middle East and the North Sea. Another subsidiary, Quality Equipment, Inc. of Houma, La., constructs tugs and supply boats for the offshore petroleum services industry.

The St. Louis Ship Division's operations include a major inland shipbuilding and repair facility in St. Louis; Caruthersville Shipyard, Inc., Caruthersville, Mo.; Paducah Marine Ways, Inc., Paducah, Ky.; and Engineering Control, Inc., which designs and sells heat recovery systems. An affiliate, Dixie Dredge Corporation, also manufactures dredges at the St. Louis facility.

Federal Barge Lines, one of the larger barge systems in the United States, its subsidiary, Gulf-Canal Lines, and United Barge Co. operate fleets transporting grain, steel, coal and other commodities, primarily on the Mississippi River and its tributaries and Gulf Intracoastal Waterways.

HNG's principal lines of business are intrastate natural gas transmission, oil and gas exploration and production, coal mining, and production and marketing of carbon dioxide and other industrial gases.

**Raytheon Names Street  
Commercial Sales Mgr.  
For West Coast Region**

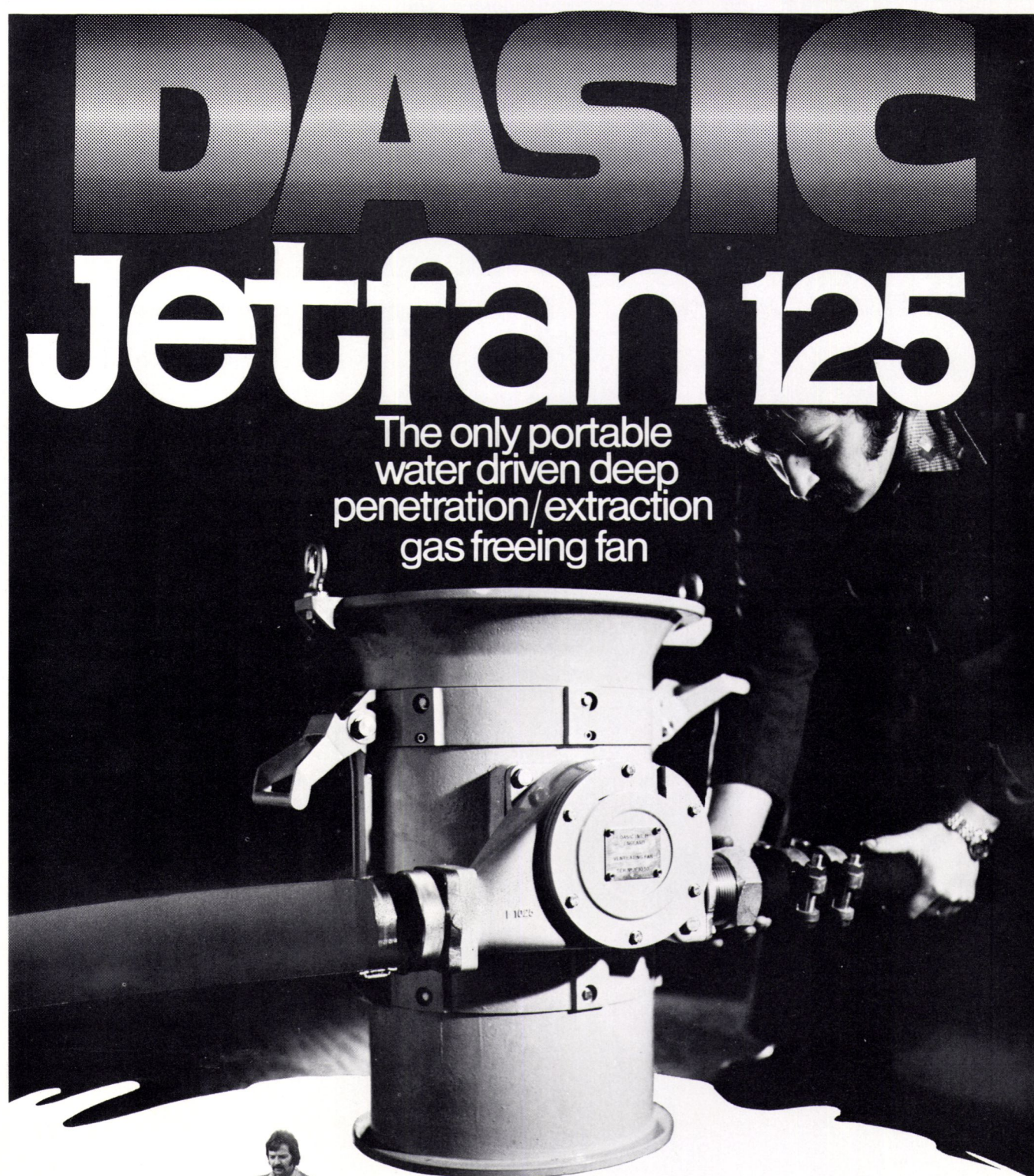


Jack Street

Jack Street has been named commercial sales manager for Raytheon Marine Company's West Coast region. He will be responsible for selling the company's lines of shipboard radar systems, depth sounders, marine radiotelephones, and navigation aids to marine operators in Washington, Oregon, California, Alaska, Hawaii, and British Columbia.

Since joining Raytheon in 1965, Mr. Street has held various technical and service management positions in San Francisco and Miami, as well as at the firm's headquarters in Manchester, N.H. Most recently, he has been based in Seattle, Wash., as Raytheon's West Coast manager. Prior to joining Raytheon, he held various technical positions with Avco and Boeing.

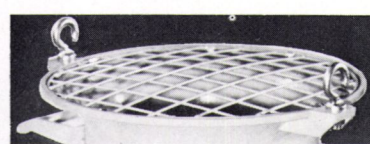
Mr. Street attended Wichita Tech, and is a veteran of the U.S. Navy where he served as an electronics technician.



The Jetfan 125 is truly portable, weighing only 43kg (95lbs) it can be easily installed, converted, and operated by just one man.

With its unique dual purpose design and high performance, of 12,500 cubic metres per hour air throughput, the Jetfan is economic, safe, and super-efficient.

USA: Dasic International Corp., 1035 Southeast Ninth St., Portland, OR 97214  
Phone: 503/238-0399 TWX: 910-464-8085



View of top showing safety mesh

Write, telephone or telex today for details of the Jetfan 125 to:

Dasic International Limited,  
Winchester Road, Romsey,  
Hampshire.

Tel: Romsey 512419. Telex: 47548.





**Pacific Resources Names  
John Paterson To Post  
In Marine Transportation**



John A. Paterson

John A. Paterson has joined Pacific Resources, Limited (PRL) 1060 Bishop Street, Honolulu, Hawaii 96842, as manager of marine transportation operations.

Prior to joining the firm, he was marine administrator for Charter Oil Company, formerly Signal Oil and Gas Company, in Houston, Texas. He was with that company for the past 18 years, serving in various capacities of its marine operations.

PRL is the marine transportation subsidiary of Pacific Resources, Inc. (PRI), a Honolulu-based diversified energy company involved in manufacturing, importing and distributing energy products throughout the Pacific Basin. PRI's two other principal subsidiaries are Gasco, Inc., Hawaii's statewide gas utility and propane distribution firm, and Hawaiian Independent Refinery, Inc. (HIRI), a 59,000-barrel-per-day refinery in operation at Barbers Point on Leeward Oahu.

**Steamco II, Inc. Opens  
Office In Jacksonville  
—Whitney Appointed**

In keeping with their efforts to provide a total coastwide service concept on marine rotating equipment, Steamco II, Inc. recently announced the opening of a new division office in Jacksonville, Fla.

The new office will be headed by Douglas Whitney. Mr. Whitney is a Maine Maritime graduate and prior to joining Steamco II, spent the last seven years as a field engineer and Jacksonville area manager for the General Electric Co.

In his capacity as division manager, Jacksonville, Mr. Whitney will be responsible for providing labor and consulting services on marine rotating equipment to Jacksonville area marine customers.

Steamco II, a Beaumont, Texas-based company, was founded to provide competent technical and labor force assistance to shipowners and repairers during inspections of their rotating equipment, be it main engines, turbo-generators, or auxiliaries.

The Steamco II, Inc., address is 2105 Park Avenue, Orange Park, Fla. 32073.

**August 15, 1977**

**Coppus Engineering  
Bulletin Describes  
Portable Blowers**

A new four-page Coppus Bulletin describing the streamlined family of Vano® portable blowers and blower/exhausters is now available.

Application photos show vari-

ous designs being used to ventilate confined spaces, purge vessels of fumes, exhaust welding fumes and to cool overheated equipment.

Flow diagrams illustrate different methods to ventilate tanks.

Performance tables show high static pressure capabilities of basic models and capacities of various designs through different lengths of noncollapsible tubing.

Dimensional tables highlight their compact size which make Vano ventilators ideal for use in restricted and confined areas. Dimensions of tripod-mounted units are shown in a separate chart.

For a copy of the bulletin, write to **Anthony Pandiscio**, Coppus Engineering Corp., 344 Park Avenue, Worcester, Mass. 01613.

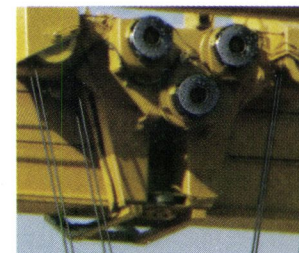
## THE LeTOURNEAU DIFFERENCE: Capability to hoist, trolley, steer, travel ...all at once or singly.



One of three LeTourneau SHU 100's working the 120,000 square meter container yard at LeHavre, France.

## And without load sway.

Such capability and features result in significant savings to owners of LeTourneau SHU 100's. Other advance features: Rotation of wheels 90° (as pictured) for unmatched maneuverability. Optional adjustable spreaders that handle twenty-through forty-foot container, or twin twenties, and that can be skewed and tilted. Oscillation joints and low pressure tires for smooth travel. And an Anti-Sway device that works for precise load control with a fingertip switch. For all the facts, send for brochure. Call or write Marathon LeTourneau Company, Longview Division, P.O. Box 2307, Longview, Texas 75601. (214) 753-4411. Subsidiary of Marathon Manufacturing Company.



Fingertip-controlled Anti-Sway device. No more waiting for oscillations to slowly stop.





How Shell's Tornus<sup>®</sup>  
keep thousands of work boats

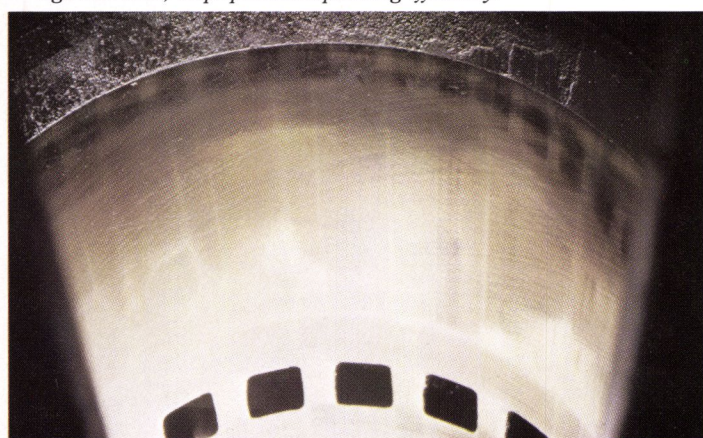




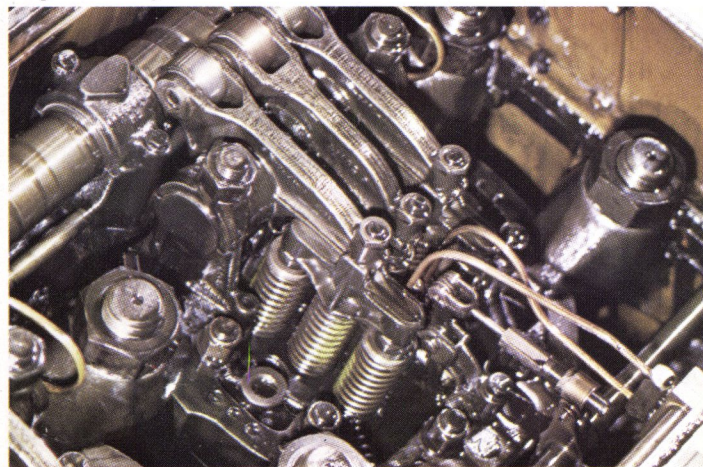
# Oil has helped churning ahead for over ten years.



Engines in hard-working inland waterways towboats, (above), and ocean-going tugs (left) have their work cut out for them. So does the engine oil. High-dispersancy Tornus Oil protects main engines against wear, helps promote operating efficiency.



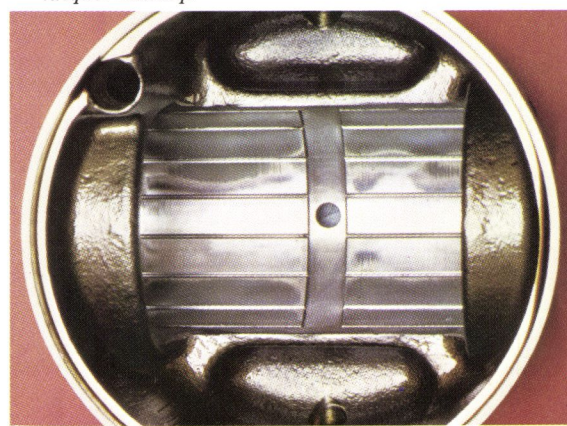
After 18,864 hours this cylinder liner from an EMD-12 645 E5 still shows original crosshatch marks. A tribute to the excellent wear protection of Shell Tornus Oil.



In this top deck of an EMD 645's port engine, note the highly polished appearance of cams and followers, the clearly visible green paint on the spring. Yet this engine has never received an oil changeout in 18,852 hours.



After over 23,000 hours, piston #1 of the starboard engine of an EMD 16-645 E7 shows light lacquer on skirt; rings in good condition, none stuck; only normal drag lines. Tornus Oil fights wear and lacquer buildup.



Much of the lead overlay is still intact on this wrist pin bushing from an EMD-12 645 E5 after 18,864 engine hours. No feathering of silver into the grooves. Tornus Oil has provided excellent lubrication.

Since 1965, Tornus Oil has been helping tugs and towboats stay on the job in oceans, harbors, the Gulf and inland waterways. There's good reason why.

Look at the critical engine parts below, photographed after extended periods of service. All were on Tornus Oil for 18,000 to 23,000 hours. All showed normal wear and were exceptionally clean and free of power-robbing deposits.

With Tornus, the oil gets dirty, the engine stays clean. And cleanliness is extremely important in keeping power up and fuel consumption down.

## Caprinus® R Oil

may help your fleet even more.

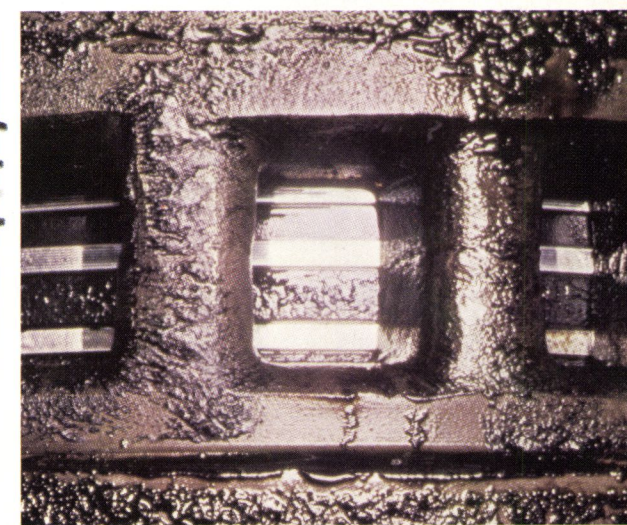
Shell's Caprinus R Oil can help extend oil drain intervals *indefinitely* in EMD power, and stretch the service life of oil filters. It offers excellent alkalinity retention to combat corrosive combustion products and help reduce frequency of overhauls. Caprinus R is Shell's answer to the need for extra high performance in modern high-output, medium-speed diesels.

*Get all the facts.* Write for our brochures on Tornus Oil and Caprinus R Oil. There's information in them that could help you trim operating costs.

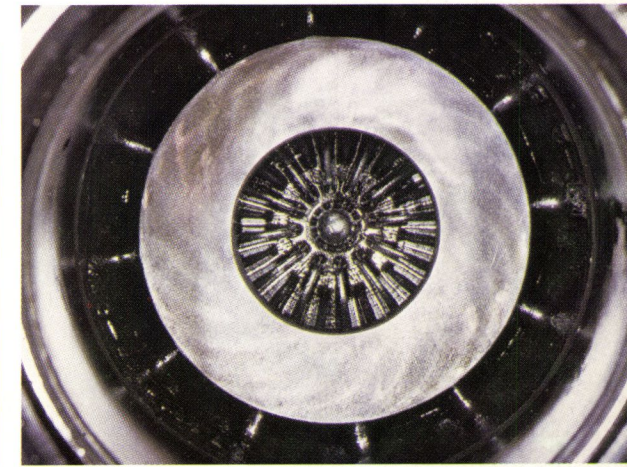
Write Shell Oil Company,  
Mgr. Commercial Communi-  
cations, One Shell Plaza,  
Houston, Texas  
77002.



**Come to  
Shell for answers**



Ports are wide open from EMD 645 E with 20,000 engine hours on Tornus Oil. No deposits. Rings in good condition without need for replacement.



From the same engine as the wrist pin bushing, this piston undercrown is clean, free of deposits. Tornus Oil resists sludge, lacquer and carbon deposition. This promotes cooler running pistons.



# take a closer look...



...recent additions to our yard capabilities, more production power working for you.

210' span, 15 ton, magnetic, plate storage crane  
1000' x 176' building basin  
panel line for assembly of panels up to 40' x 65'

numerical control mold loft development system  
new 1090' finger pier  
tape controlled plasma arc burning machine



## NATIONAL STEEL AND SHIPBUILDING COMPANY

Owned by Kaiser Industries Corporation and Morrison-Knudsen Company, Inc. San Diego, Ca 92138 Phone (714) 232-4011



## Underwater Acoustic Explorations At The University Of Rhode Island

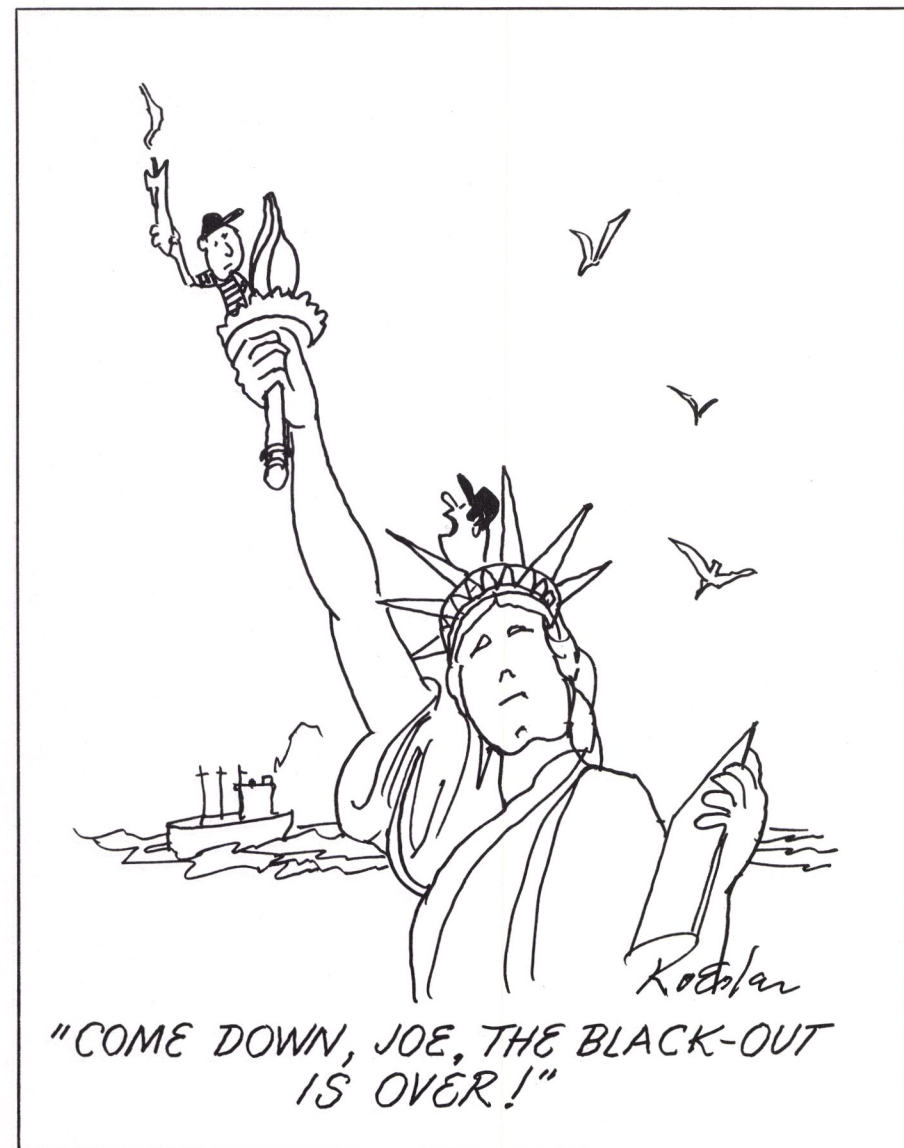


Officers and guest shown at the ASNE Southern New England Section meeting are, left to right: **Robert E. Bradley**, treasurer; Comdr. **Gerald Sedor**, USN, secretary; Dr. **Foster H. Middleton**, featured speaker; **David L. Motherway**, chairman, and **Harry T. Loeser**, vice chairman.

The Southern New England Section of the American Society of Naval Engineers held its quarterly meeting recently in Groton, Conn. Dr. **Foster H. Middleton**, professor of ocean engineering at the University of Rhode Island (URI), presented an enjoyable program on recent experiences with underwater acoustic systems.

He described with slides how the interest and investigations of URI students, aided by such systems as side scan sonar, led to the

discovery of British Revolutionary warship remains in Narragansett Bay. Other efforts mentioned by Dr. Middleton included inspecting trans-Atlantic cables, measuring wave heights on the Brent Reef Tower, assessing oil recovery effectiveness, and experimenting with side scan sonar patterns. A question and discussion period followed for the 25 members and guests in attendance. Section chairman **David Motherway** acted as moderator.



August 15, 1977

## N.C.S. Of Cairo, Egypt Appoints Pouch Terminal

A.T. **Pouch Jr.**, president of Pouch Terminal, Inc., has announced its appointment as sales representative in the United States and Europe for the International Office for Navigation, Commerce, and Supply of Cairo, Egypt (N.C.S.).

N.C.S., as the Egyptian firm is known, operates in all Egyptian seaports. It is owned and operated by **Esmat El Sadat** and his sons, with offices in Cairo and Port of Alexandria. Its services include steamship "owners representatives," expediting of dock assignments, providing for ship repairs, and chandlery services.

N.C.S. is also interested in assisting American businesses in developing trade relations with Egypt.

Anyone interested in the services offered by N.C.S. can contact Mr. **Pouch** at the main office of

Pouch Terminal, Inc., Edgewater Street, Clifton, Staten Island, N.Y. 10305, or at the company's sales office at One World Trade Center, New York City.

## Rainbow Marine Formed For General Ship Repairs

The formation of Rainbow Marine Organization Co., with headquarters at 31-92 30th Street, Long Island City, N.Y. 11106, has been announced.

Specializing in general ship repairs, the company does all types of mechanical repairs on steam and diesel engines, engine room and deck machinery, hydraulic repairs, tank cleaning, and servicing of all types of boilers . . . retubing and cleaning.

The company also employs repair crews on call for emergency service overseas.

Further details regarding Rainbow Marine's services can be obtained by contacting **Petros Themelis** at the above address.

## New! The SGC Single Sideband Automatic Antenna Coupler...

With servo tracking and infinite channel capability.

The Model ASU represents a remarkable advancement in antenna coupler technology. Existing couplers are cumbersome to adjust and must be mounted in a location accessible to the technician. The ASU solves this problem by making all adjustments remotely from a control box located at the SSB radiotelephone.

### FEATURES

**Automatic Tracking:** coupler readjusts instantly to any detuning of the antenna such as any changes in the rigging.

**Virtually Infinite Channel Capability:** coupler retunes whenever channels are changed.

**Can Be Used With Any MF/HF SSB:** easily substituted for conventional couplers.

**Can Be Mounted Anywhere:** fully adjustable from radiotelephone.

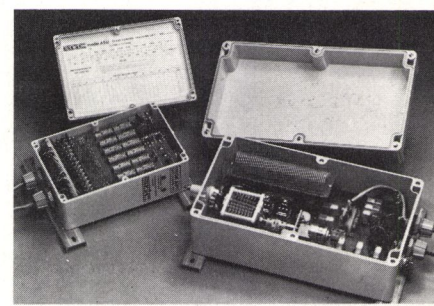
**Loads Any Antenna** (5 meters or longer): ideally suited for whip, backstay or longwire antennas.

**Fully Waterproof:** sealed enclosure provides environmental protection.

The ASU System Concept consists of two assemblies. The coupler contains all the impedance matching and resonating circuitry necessary to efficiently couple the antenna to the radiotelephone. All adjustments in the coupler are made through high reliability relays, some of which are designed to withstand 5000 volts at several amperes.

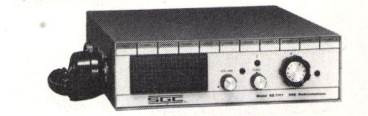
The ASU control box also samples the standing waves on the transmission line to the coupler. If a tuning error occurs, the servo system activates a variable element in the coupler to correct the tuning and maintain an efficient transfer of energy to the antenna.

Unique circuitry in the control box also permits the coupler to optimize tuning between receive and transmit frequencies. This is particularly useful on the 2-3 MHz marine band where duplex frequencies are widely separated.



SGC Model ASU coupler: 1.6 to 22 MHz, 250 watts.

The ASU solves "difficult" antenna installation problems on vessels, base stations, vehicles and aircraft. The "routine" installations become even simpler and make possible a degree of efficiency and cost savings never before realized!



SG-711: 100 watts, 1.6 to 9 MHz, 11 channels.



Intercontinental One: 150 watts, 1.6 to 18 MHz, 36 channels.

The ASU antenna coupler is brought to you by the manufacturers of the world's finest SSB radiotelephones.

Write or call for FREE BROCHURE

**SGC** Inc.  
15737 S.E. 26th Street  
Dept. MTT  
Bellevue, Wash. 98005, U.S.A.  
(206) 746-6310/CABLE:SGCINC  
Telex 32-8834

Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ Zip \_\_\_\_\_  
State \_\_\_\_\_  
Size of boat \_\_\_\_\_



**McMullen Assoc. Opens  
Hampton Roads Office  
—Joseph Bunting Named**

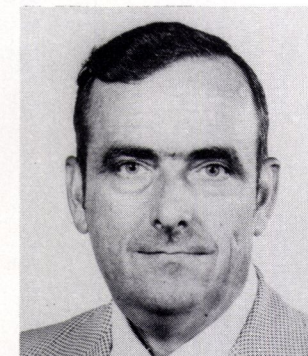
John J. McMullen Associates, Inc., naval architects, marine engineers and transportation consultants of One World Trade Center, New York, N.Y. 10048, have announced the opening of a new office located at 2101 Executive Drive, Hampton Roads, Va. 23666.

Designated as the Hampton Roads Operation, this office will provide U.S. shipyards and government agencies with the full range of detailed design and engineering services required for new construction, ship conversions and modifications of commercial and naval vessels. With the establishment of its Hampton Roads Operation, McMullen Associates can now offer clients a complete range of technical and consulting services, rang-

ing from preliminary economic analysis and concept formulation through every phase of design up to and including testing and operational support.

**Joseph K. Bunting** has been designated as manager of the Hampton Roads Operation. Mr. Bunting comes to McMullen Associates from Newport News Shipbuilding & Dry Dock Company, where he was design section manager of the Piping Design Depart-

ment. Mr. Bunting has attended Virginia Polytechnic Institute and completed various industrial training courses and seminars. During his more than 25 years of experience with Newport News Shipbuilding & Dry Dock, Mr. Bunting has participated in the detailed design of many of the largest commercial and military ships built in the United States.



**Joseph K. Bunting**

McMullen Associates is an engineering consulting company which serves the marine transportation industry in areas of naval architecture, marine engineering, transportation economics, and project management.

**Charles Hurd Joins  
Southwest Marine, Inc.**



**Charles A. Hurd**

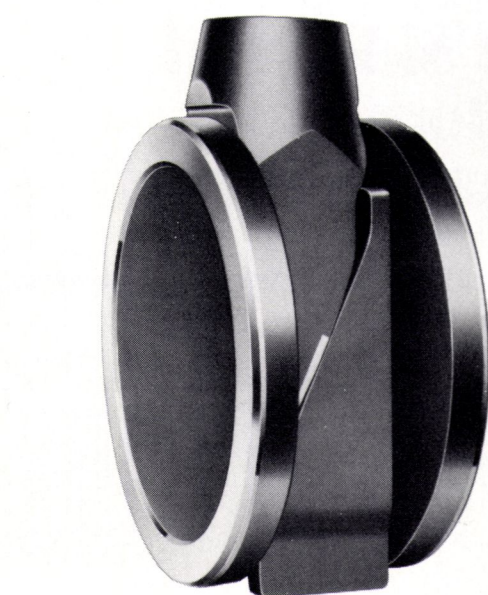
**Charles A. Hurd** has joined Southwest Marine, Inc. as vice president, sales and marketing. Southwest Marine is a multifaceted marine repair and construction facility located on seven acres in Chula Vista, Calif., on San Diego Bay.

Mr. Hurd has responsibility for ship repair and construction sales in both the commercial and government markets.

A native of Berkeley, Calif., Mr. Hurd brings nine years of sales experience to Southwest Marine, having held the positions of sales engineer for the E.L. Essley Machinery Co., Oakbrook, Ill., and assistant to the vice president, sales, for National Steel and Shipbuilding Company, San Diego.

Mr. Hurd holds a B.A. degree from the University of North Carolina at Chapel Hill, and an MBA degree from National University, San Diego. He is an affiliate of The Society of Naval Architects and Marine Engineers and a member of The Propeller Club, Port of San Diego, and the Navy League of San Diego. Southwest Marine, Inc.'s address is: Foot of "G" Street (P.O. Box 1070), Chula Vista, Calif. 92012.

## Revolving discs vs. solid wedge gate in marine service

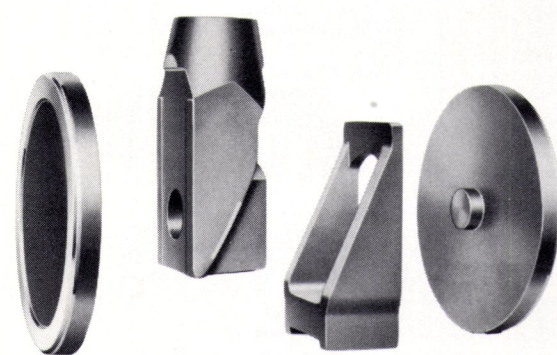


**American-Darling Revolving  
Discs features:**


1. No pockets on discs to collect deposits.
2. Discs contact seats during travel to remove deposits.
3. Discs revolve with a self-cleaning action to prevent fouling on body guides.
4. Wedging action is independent of seating action for easier operation.
5. Internal parts are interchangeable and reversible for easy maintenance.

**Consider these possible  
disadvantages of the  
solid wedge gate design:**

1. Wedge guides in body are subject to fouling and wear due to line content deposits.
2. Buildup on seat surfaces are trapped at seating position causing leakage.
3. Since wedging and seating occur simultaneously, approximately 50% more operating force is required than for Revolving Discs design.
4. Wedge is not usually interchangeable from valve to valve. Reseating requires fitting of wedge to body seats.



On your next installation, get all the advantages. Specify American-Darling Revolving Discs gate valves. For more information, write for our bulletin.

  
**American-Darling Valve**  
A Division of American Cast Iron Pipe Company  
P.O. Box 2727, Birmingham, Alabama 35202



# Seaworthy Appoints Patrick J. McAllister



Patrick J. McAllister

The appointment of Patrick J. McAllister as manager, marine projects, has been announced by David A. O'Neil, president of Seaworthy Engine Systems, Inc. Seaworthy is engaged in engineering consulting for marine propulsion, fuel optimization and control systems for marine gas turbine, diesel and steam powerplants.

In his new capacity, Mr. McAllister will be responsible for engineering and project management for marine powerplant applications, installation and slow steaming retrofit programs to improve vessel operating economy.

Prior to joining Seaworthy, Mr. McAllister was resident engineering manager for Turbo Power and Marine Systems in Seattle, Wash., where he was responsible for the combined diesel and gas turbine powerplant, transmission system and control system installation aboard the USCG Polar-Class Icebreakers.

Seaworthy Engine Systems, Inc. provides unique engineering and technical services to the marine industry in the steam, diesel and gas turbine propulsion systems, fuel systems management and vessel operation areas. Seaworthy's customers include shipowners and operators, most large engine manufacturers, as well as the U.S. Government.

Seaworthy's offices are located at 73 Main Street in Essex, Conn. 06426.

## Prudential Agrees To Sell South American Shipping Operations

A tentative agreement to sell all of its South American shipping operations for about \$75 million was announced by Prudential Lines, Inc., a U.S.-flag ocean carrier. The purchaser would be Delta Steamship Lines, Inc., a subsidiary of Holiday Inns, Inc.

"The proposed sale of the South American portion of our business would substantially improve our working capital," said Prudential Lines chairman and chief executive officer Spyros S. Skouras.

Completion of the sale requires review and approval by various regulatory authorities and successful negotiation of a contract.

The two Prudential divisions covered by the tentative agree-

ment, the Atlantic and Pacific, operate from both U.S. coasts. One route, with six vessels, connects the U.S. East Coast to the Caribbean, Central America, and ports on the west coast of South America. From U.S. West Coast ports, another fleet of six vessels sails around South America and to the west coast of South America. The last trade route, from Eastern U.S. ports to Venezuela,

now operates with a single LASH (lighter aboard ship) vessel that would not be sold by Prudential. Prudential's revenues from the South American Services are about \$125 million annually.

Delta serves the east coast of South America, the west coast of Africa, and certain ports in the Caribbean and Gulf of Mexico. Delta's annual revenues are approximately \$80 million.

Prudential Lines will continue to administer its Mediterranean and Mideast LASH service from its present offices at One World Trade Center.

Vessels covered by the tentative agreement are the Santa Fleet of six L-Class vessels, two Jet-Class vessels, four M-Class vessels, and two chartered liners, the Santa Ana and the Santa Rita.



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

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

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

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

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



### International Marine Coatings International Paint Company, Inc.

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



## T-2 EQUIPMENT

Selected Items Listed

### UNUSED G.E. MAIN PROPULSION STATOR

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

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

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

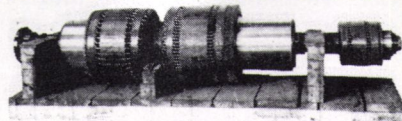
### WESTINGHOUSE MAIN PROPULSION STEAM TURBINES

1 unit shrouded  
WILL SELL ROTORS SEPARATELY

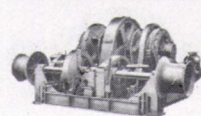
### WESTINGHOUSE MAIN PROPULSION GENERATOR STATOR

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

### WESTINGHOUSE 538 KW AUX. GENERATOR EXCITER ARMATURE



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



### T-2 WINDLASSES (Located West Coast)

AH&D Model S-505 — for  
2 1/2" chain. Engine 12 x 14  
— operating weight 42,700 lbs.  
1 HESSE-ERSTED — LOCATED EAST COAST

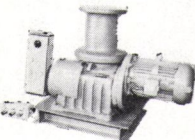
### COMPLETE WESTINGHOUSE 538 KW TURBO GENERATORS

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

### WESTINGHOUSE 538 KW TURBINE ROTORS

### NEW DOCKSIDE OR SHIPBOARD MOORING CAPSTANS — REVERSING

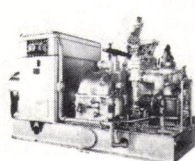
Duty 10,000 lbs @ 60 FPM



MOTOR: 10 HP—totally enclosed  
—fan cooled—continuous duty—  
horiz. flange mounted—special  
shaft & oil seal fitted—440/3/60  
—1760 RPM. CONTROL: Marine  
type watertight pushbutton —  
forward/reverse/stop—watertight  
starter box. DIMENSIONS: Barrel 10" diam.—top flange  
14 1/2" diam.—bottom flange 16 1/2" diam.—ht. of spool  
16"—approx. 26" wide & 36" long.

IMMEDIATE DELIVERY FROM STOCK

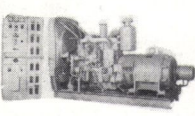
### G.E. 600 KW GEARED TURBO GENs.



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

### 75 KW CUMMINS EMERGENCY DIESEL GENERATOR SET

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



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

### C4-S-A1 KAISER VESSEL MACHINERY

Formerly Operated By Bethlehem Steel Co.

- 1 H.P. Westinghouse turbine — S.H.P. 4500 — 5358 RPM — 440# — 740° T.T. — instruction book 6535.
- 1 L.P. Turbine Rotor
- 3 Worthington-Moore 400 KW aux turbine rotors — seven stage—6097 RPM—form S6
- 1 Set reduction gears—type 14x10—single reduction double helical—6097/1200—for aux turbo generator sets
- Also quantity of boiler safety valves 1 1/2" & 2" Consolidated
- 1 Set HP & LP couplings for Westinghouse HP & LP turbines — 9000 SHP normal — 9900 SHP maximum
- Two main stop valves — boiler — 600 series — 5" Crane
- Pumps

### 9 x 12 2-SPEED ALL-STEEL STEAM WINCHES

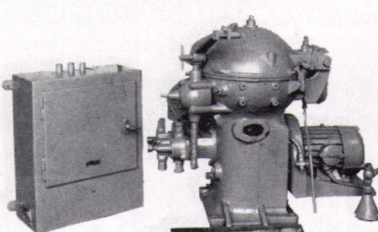
for use as

### MOORING WINCHES OR GENERAL USE

20,000 LBS @ 110 FPM — 7450 LBS @ 250 FPM  
DRUM CAPACITY: 1250' of 1"  
wire in 9 layers or 2200' of 3/4"  
in 12 layers. Weight 11,300 lbs.  
DRUM DIMENSIONS: 22" diam-  
eter—20" between flanges; flange  
diameter 40"; two 16" gypsies.

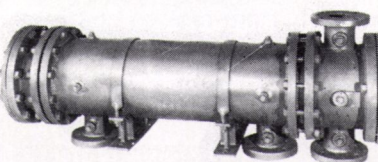
Drum brake—contracting band type—asbestos lining—  
foot operated. WINCH DIMENSIONS: 12' long—8' wide  
—5' 10" high. Reconditioned by U.S. Navy. Equal to new.

### FUEL OIL OR LUBE OIL PURIFIER



De Laval — 600 GPM — type B-1529C-60 — with 3 HP  
440/3/60 motor. Mfg by German De Laval. Has new  
stainless steel bowl. Spare parts available.

### LUBE OIL AND FRESH WATER COOLERS



### LUBE OIL COOLER

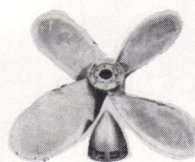
42.5 Square feet—weight 660 lbs—87 tubes 5/8" 0.049.

### FRESH WATER COOLER

75.2 Square feet—weight 800 lbs—102 tubes 5/8" 0.049.  
SUITABLE FOR ENGINES UP TO 900 BHP

## FOR LST VESSELS

### • PROPELLERS — Port & Starboard

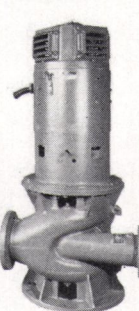


Also for tugs & motor vessels  
having LST propellers. 7.0' Di-  
ameter — 4.583' pitch. Weight  
1820 lbs. Available: 2 Starboard  
(reconditioned) 2 port (recondi-  
tioned) 1 port (new). Bronze.

### • FIRE & BILGE PUMPS

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

### • BALLAST PUMPS



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

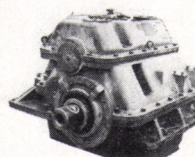
### • ANCHOR WINDLASS MOTORS

Vertical — 20 HP — 230 volts D.C.

### • RAMP WINCH MOTOR

20 H.P. gearhead deck ramp winch motor.

### • PORT & STARBOARD REVERSE AND REDUCTION GEARS



1 Set — with Airflex clutch. Ra-  
tios — 2.48:1 forward — 2.52:1  
astern. Suitable for use with  
12-567A & 12-278A engines.  
Port & starboard units.

### MATCHED PAIR 12-278A G.M. ENGINES

900 HP @ 744 RPM — 8 3/4" x 10 1/2" — 12 cylinders —  
VEE type on common base with reduction gear —  
2.48:1—Falk—port & starboard. Will sell separately.

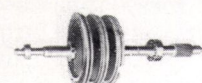
### • MISCELLANEOUS

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

## SPECIAL OFFER T-2 AUXILIARY GENERATOR ROTORS

### G.E. AUX. TURBINE ROTORS DORV-325M — 5645 RPM

For G.E. 525 KW TURBO GENERATOR SETS



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

STATIONARY BLADING AVAILABLE



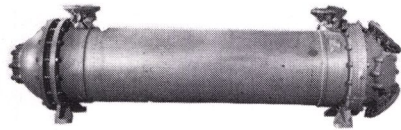
THE BOSTON  
313 E. BALTIMORE

Main Office: (301) 531



## ROSS COOLERS

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



TYPE 1596—317 SQ. FT.

12-567A use — water-to-water — flanged — 2-pass.  
196 Cupro nickel tubes — 5/8" diam. — 18 BWG.  
Copper shell — cupro-nickel heads. 5" seawater inlet  
— 4" freshwater inlet. Centers of fresh water inlets  
84" — overall cooler length 9' 7-3/8".

TYPE 1566—252 SQ. FT.

12-567A use. Oil to water — flanged — Shell OD 16".  
2-Pass — 196 Cupro-nickel tubes — 5/8" diameter —  
18 BWG. 5" Seawater inlet — 3" oil inlet. Centers of  
oil inlets 55".

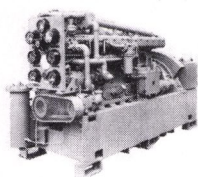
TYPE 1460—160 SQ. FT.

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

TYPE 848—75 SQ. FT.

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

## 100 KW GBD-8 DIESEL GENS.



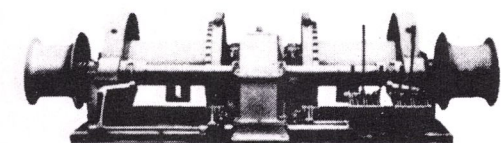
From LST vessels. 120/240 VDC —  
417 amps — stab shunt — 1200 RPM  
— Delco gen — self-excited. ENGINE:  
Superior GBD-8 — 8 cyl — 5 1/2 x 7 —  
150 HP — 30 volt electric starting.  
Reconditioned to ABS. Dry wt  
10,000 lbs — DAL 124" — 65-11 1/2"  
high — 42" wide. Ht necessary to  
pull piston 68". Fuel consumption  
0.620 lbs/hr.

## DOUBLE-DRUM TOWING-MOORING-UTILITY WINCHES

### DUTY:

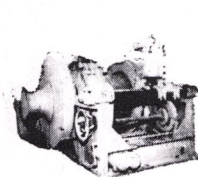
30,000 LBS @ 50 FPM  
15,000 LBS EACH DRUM

USING BOTH DRUMS SIMULTANEOUSLY



DRUM: 22" diameter — 36" face — 2500 feet of 1 1/4" wire.  
— under-deck mounted — 262 amps — 1140 RPM. Complete  
with all controls — mfg by Commercial Iron Works. Winch  
heads detachable. OAH 16'9" — OAH 57" OA Depth 7'7".

## 100,000 lb. Almon Johnson Constant Tension Mooring Winches

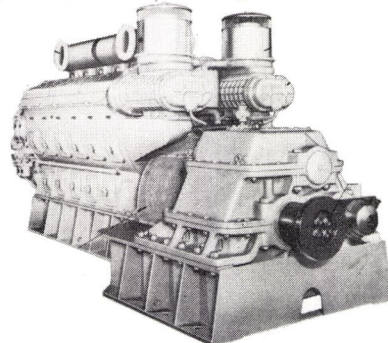


1 Available. In very good condition. Series 232 mooring &  
anchoring winches — automatic  
self-tensioning. Wide range from  
100,000 lb line pull at 10 FPM  
to 26,000 lbs at 400 FPM. Gypsy  
line pull 12,000 lbs at 125 FPM.  
Drum detachable through spiral  
jaw clutch for free spooling.

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

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

with Falk reverse and  
reduction gears

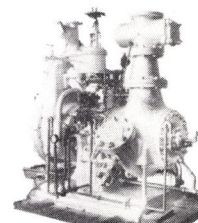


ENGINE: 12-567A — 8 1/2 x 10 — VEE type — 2-cycle — 747  
RPM — electric starting — serial Nos. 1041 & 1060. GEAR:  
Falk Air Flex — reverse and reduction — 2.48:1 forward —  
2.52:1 reverse.

## COFFIN FEED PUMPS

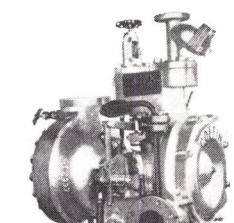
— ALL SIZES —

### TYPE DE



3 TYPE DE-2  
540 GPM 1870' NET HEAD  
8450 RPM — 585 PSIG — 0°-200° superheat — exhaust  
pressure 15 lbs — NSPH 30 — typical serial 4683DE

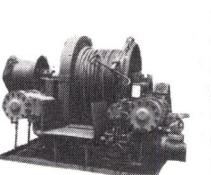
2 TYPE DE-B 214 GPM 2070' NET HEAD  
7040 RPM — 241 HP. Steam pressure 597 PSI — super-  
heat 100°-300°F. Typical serial No. DEB 1-25-37



### TYPE CG

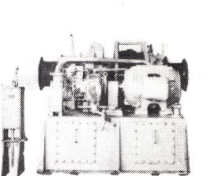
2 TYPE CG 350 GPM 1880' NET HEAD  
7220 RPM — 311 HP. Steam pressure 580 PSIG — 0°-100°  
superheat. Exhaust 15 lbs — typical serial #5437-CG-8-  
8-33

## 12 x 14 AUTOMATIC STEAM TENSIONING MOORING WINCHES



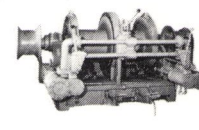
CAPACITY: First layer 20,000 lbs.  
@ 100 FPM. 16,000 lbs. @ 150  
FPM. Drum will stow 1500 ft. of  
1 1/2" wire rope in 9 layers. Over-  
all width 8' 4 1/2" — overall length  
8 1/2". 3" Steam connection — 4"  
exhaust. Drum 2' diameter — drum  
width 2' 6 1/2". Manufactured by  
American Engineering Co.

## 50 H.P. ELECTRO-HYDRAULIC SINGLE DRUM SINGLE GYPSY MOORING OR CARGO WINCHES



7400 LBS at 220 F.P.M. — up  
to 700 feet of 1" wire. With  
hydraulic brake assembly. 50  
HP — 440/3/60 squirrel cage  
Reliance motor — 1180 R.P.M. —  
66 amps — Frame CC445N.  
Water Bug hydraulic pumps  
and motor. "A" end size 5 —  
"B" end size 5. Complete with deck mounted control.

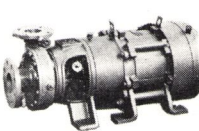
## 7 x 10 CLYDE DOUBLE DRUM WINCH



Drum 8500 lbs. @ not less  
than 120 FPM; 13,000 lbs. at  
no specified speed. Gypsy  
head 22,500 lbs. static pull.  
Foot brake to hold 17,000 lb.  
pull. Steam cylinders with  
standard 250 P.S.I. DIMENSIONS: 9' 5 1/4" wide over  
winch heads — 5' 10 1/2" wide over bedplate — 4' 1" deep  
over bedplate — 6' 5" overall (brake pedal, etc.) — 2"  
steam — 2 1/2" exhaust. Drums 16" diameter — 20" wide —  
33 1/8" over flanges. Rebuilt by U.S.N. equal to new.

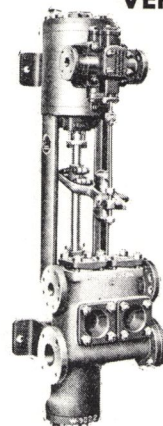
## PUMPS

### INGERSOLL-RAND FIRE & FLUSHING PUMPS



Reconditioned — with A.B.S. — 200  
G.P.M. — 100 P.S.I. discharge.  
Suction 3 1/2" — discharge 3" —  
3500 RPM — bronze construction  
— flanged. MOTOR: 20 H.P. —  
440/3/60/3600 RPM — G.E. type  
KF — Frame 326 — full load amps  
28.

### UNUSED WORTHINGTON VERTICAL SIMPLEX PUMPS



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

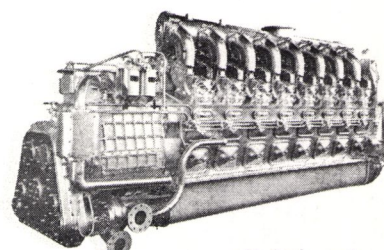
\$795

### TURBINE-DRIVEN CIRCULATOR



6300 GPM at 25' or 4000 GPM  
at 35'. Pump — 12 x 14 — 75  
HP turbine — 600 lbs — 5 lbs  
back pressure — 1200 RPM. Tur-  
bine manufactured by Whiten  
— type B.K.S. Pump manufactured by Lawrence

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



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

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Naval architects, engineers and  
chief draftsmen

BUYING  
POWER

5,896

VESSEL OPERATING COMPANIES, OCEAN, INLAND,  
HARBORS, OFFSHORE OIL DRILLING,  
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Companies, directors, owners, agents,  
presidents, vice-presidents, managers,  
secretaries and treasurers  
Port engineers, superintendents, purchasing  
agents, port captains, port stewards,  
naval architects and engineers shoreside

9,282

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consultants shoreside

2,312

WORLD WIDE BUYING POWER TOTAL **17,490**

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MARITIME REPORTER has a worldwide circulation to 17,490 marine buyers...TWICE each month. This means over 34,000 copies of MARITIME REPORTER are mailed to buyers every month.

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# **ABS Forms 18-Member Hong Kong Technical Committee**

An 18-member Hong Kong Technical Committee has been formed by the American Bureau of Shipping (ABS). The committee, composed of prominent individuals in maritime affairs, will enable ABS to maintain closer

contact with scientific and technical matters relating to shipbuilding and engineering in Hong Kong, said ABS chairman and president Robert T. Young.

Chairman of the new committee is Y.K. Pao, chairman of World-Wide Shipping Agency, Ltd.; vice chairman is K.M. Koo, managing director of Valles Steamship Co., Ltd.

The inaugural meeting of the

committee was held on July 19 in Hong Kong, and was attended by Mr. Young. Also in attendance were Edwin S. Wenzel Jr., chief surveyor, from the New York office, and Warren L. Anderson, ABS principal surveyor for the Orient. On July 21, Mr. Young spoke to the Hong Kong Ship-owners' Association on the future of nuclear power in merchant shipping.

The formation of the Hong Kong Technical Committee brings to 14 the number of overseas technical committees maintained by ABS. In addition to Messrs. Pao and Koo, the members of the new committee are:

Frank S.B. Chao, president, Wah Kwong & Company (H.K.) Ltd.; Edward S.C. Cheng, executive director, Unique Shipping Agencies Ltd.; Dr. Peter J.S. Cheng, Peter Cheng, Naval Architect and Marine Consultant Limited; Quincy Chuang, director, Hong Kong Shipping Agencies Limited; T.C. Hsin, director, Fortuna Navigation Company, Ltd.; Frank G. Hsu, director, Oak Steamship Company Limited; Ca-Fee Hu, managing director, Patt Manfield & Company, Ltd.; A.G. Hutchinson, chairman, Mollers' Limited; Denis F.P. Li, director, P.S. Li & Company, Ltd.; David T.V. Lieu, managing director, Van Shipping Company, Ltd.; Kenneth K.W. Lo, deputy managing director, Teh-Hu Cargocean Management Company, Ltd.; C.L. Pao, president, Regent Shipping Limited; Frank W.K. Tsao, chairman, International Maritime Carriers Ltd.; C.H. Tung, general manager, Island Navigation Corporation, Ltd.; William S.S. Wong, executive director, Ocean Shipping and Enterprises Ltd.; and Deh-Ling Wu, chairman, Tai-ship Company, Limited.

ABS is a nongovernmental, worldwide ship classification society which is primarily concerned with the establishment of internationally accepted standards, called Rules, for the design, construction, and periodic survey of merchant vessels and marine structures. It is represented in approximately 90 countries. In Hong Kong, ABS offices are located at 1209 New Sincere Building, 173 Des Voeux Road Central.

## **Its performance isn't promised.**

Since many SSB systems work better on the data sheet than on the vessel, news of proven equipment travels fast. In less than three years hundreds of ships, from wooden trawlers to super-tankers, have installed CAI systems.

Our new CA-35MS/Mk II uses the same reliable synthesizer, programming unit, and power supply. The difference is in the transceiver. Broadband tuned circuits permit each of its 10 bands to cover a full 10% bandwidth. It can be programmed to accommodate any 40 standard marine frequencies, or virtually any marine frequency from 2 to 23 MHz. It can also be programmed for any mode: simplex or half duplex, USB, compatible AM, RTTY, or CW.

The control console puts channel and mode selection at your fingertips. Turn a thumbwheel selector and you're instantly on frequency with 1/2 part per million stability. No crystals, no warm-up, no retuning, no problems. Frequency changes within a given band can be made in minutes—even at sea—simply by plugging a different program card into the console's programming drum.

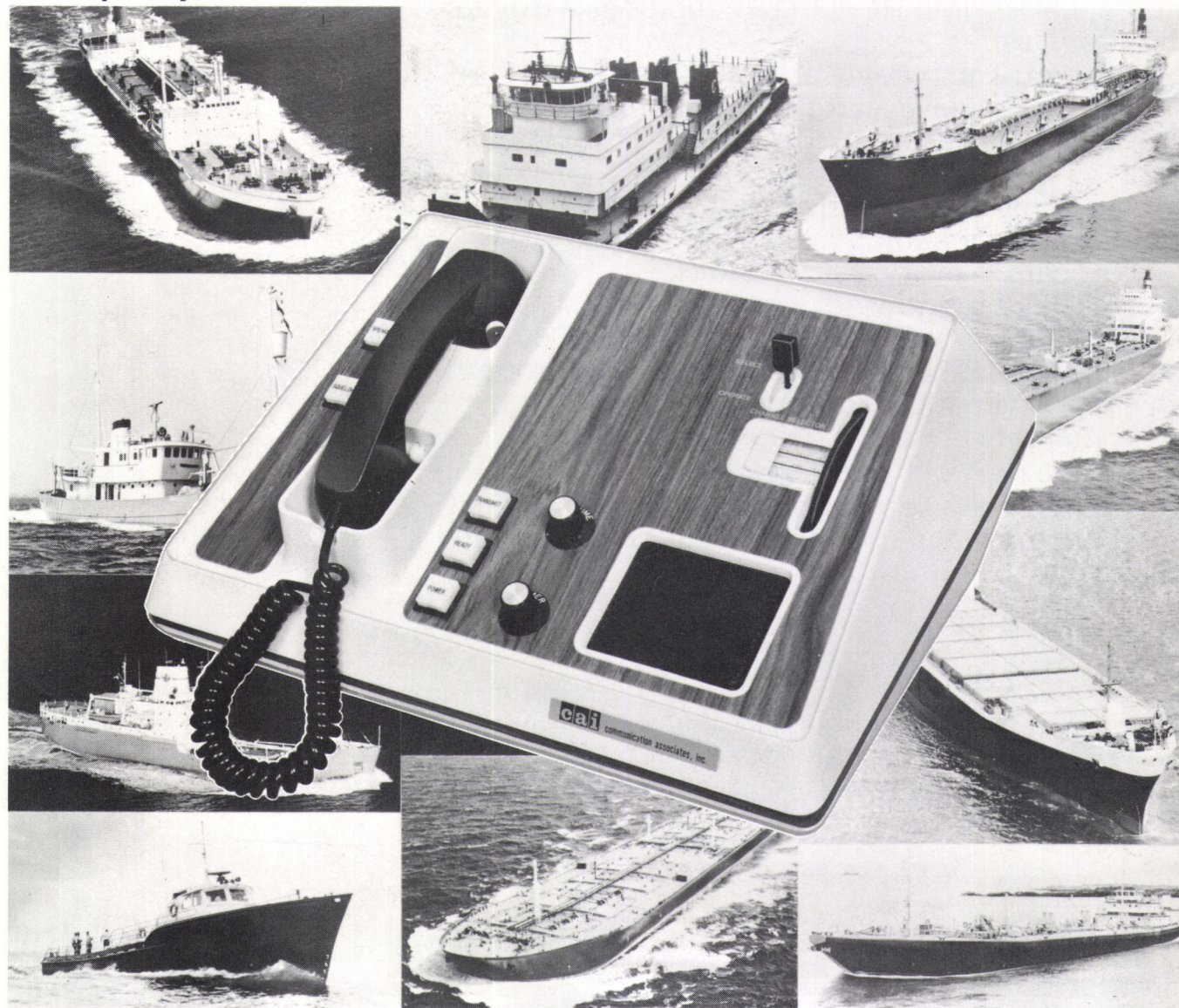
Hundreds of skippers can vouch for it. The Mk II system, with its fully compatible 1,000 watt servo tuned linear amplifier, 150 and 1,000 watt antenna couplers and complete accessories, is described in a new folder. Phone or write for it today.

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## **It's proven.**

Every day several hundred ships depend on the CA-35MS for flexible, on frequency SSB communications.



## **Norton Lilly Appoints**

**Thomas Hennessy Jr.**

Thomas E. Hennessy Jr. has been appointed general manager of the Lloyd Brasileiro services, according to an announcement made by Norton, Lilly & Co., Inc. 90 West Street, New York, N.Y. 10006.

Mr. Hennessy, who will be resident in their New York office, has had an extensive background of shipping experience in both marketing and liner management, his last position being with Seatrain Lines in the capacity of vice president national accounts.

Lloyd Brasileiro maintain fortnightly container and breakbulk services from both the U.S. Atlantic and Gulf ports to the East Coast of South America.

Norton Lilly, a shipping agency founded in 1841, staffs 26 offices throughout the country including the Panama Canal, with the major office located in New York City.





Red Star Towing Company, Port of New York, runs a fleet of 25 tugs up and down the East Coast.

A Mobil EM/PA program—Engine Maintenance through Progressive Analysis—helps keep these vessels running. And saves Red Star considerable amounts in operating costs.

Reports Red Star's Port Engineer, Jim Patterson, on Mobil's EM/PA with its systematic oil analysis: "EM/PA not only permits us to schedule required maintenance at convenient times, it actually saved the day on several occasions by alerting us to impending engine damage. The evidence showed up in the oil, thanks to laboratory analysis."

In the case of the Red Star tug *Huntington*, EM/PA helped spot leaky fuel injectors, a broken cylinder liner and leaky water seals. An estimated \$75,000 saved in downtime and repairs.

In the case of the Red Star tug *Port Jefferson*, EM/PA helped show up a leaky fuel return line and faulty injectors. An estimated \$78,000 saved in overhaul and downtime costs.

These are examples of results that have been obtained with EM/PA, Mobil's program that continuously monitors both oil and engine conditions.

There's big money to be saved when you cut down on engine problems by spotting them early. Money saved on man-hours. On repairs. On oil.

**Mobil's EM/PA<sup>®</sup> saved Red Star's fleet operations \$153,000 on two vessels alone.**

That's why Mobil is Number One in marine lubrication. **Mobil<sup>®</sup>**

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**Great Lakes Steamship  
Division Of Bethlehem  
Appoints Roy Dobson**

The appointment of Roy F. Dobson as manager of Bethlehem Steel Corporation's Great Lakes Steamship Division was announced by Capt. Steven M. Moodie, vice president of the division. At the same time, Captain Moodie announced that Calvin G.

Durham will succeed Mr. Dobson as assistant manager of the Great Lakes Steamship Division. Mr. Dobson and Mr. Durham have their headquarters in Cleveland, Ohio.

Mr. Dobson is succeeding Capt. Robert E. Moran, whose retirement has been announced.

Mr. Dobson, a native of Cleveland, has spent his entire career with Bethlehem Steel's Great

Lakes Steamship Division. He joined it in 1947 and served until 1960 in various operational phases of the division. He became chief dispatcher that year, and a year later was promoted to assistant manager, operations, the position he held until this promotion.

He is a member of the Lake Carriers Association and is active in DeMolay and the YMCA.

Mr. Durham, a native of Twin

Falls, Idaho, joined Bethlehem Steel's Calmar Steamship Corporation in 1964 after serving as a deck officer for various steamship lines. While with Calmar, he held various positions, including chief officer, senior transportation assistant and assistant district agent.

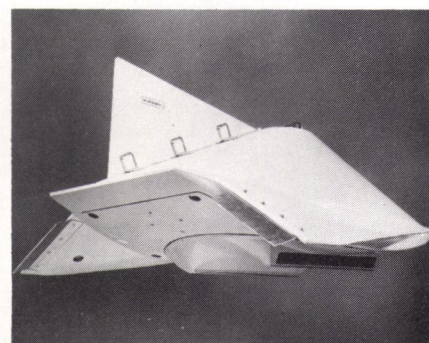
In 1974, he was transferred to the Great Lakes Steamship Division as assistant manager, personnel, the position he held until this promotion.

Mr. Durham spent two years in the U.S. Navy, from November 1957 to November 1959.

**Edo Western Corp.  
New Deep Tow  
Survey System**

The new Edo Western 515A-604 Deep Tow Survey System uses a new hydrodynamically designed tow vehicle to provide efficient operation for deepwater side scan surveys in ocean depths up to 2,000 feet.

The highly successful 515A-604 tow vehicle combines an extremely stable tow characteristic with a very efficient depressor to achieve maximum tow depth without the aid of additional depressor equipment. The new tow vehicle is designed to operate with Edo Western standard 606 side scan sonar transducers or the complete series of Edo Western 515A Hi-PACT bottom penetration transducers. The side scan and bottom penetration transducers can be used separately or simultaneously.



Edo Western Corporation 515A-604 Deep Tow Survey System.

The unique capabilities of the 515A-604 system are also made possible by a multiplexed data transmission system. This method of data handling eliminates cross-talk between data channels, plus it permits use of simple cable designs.

The 515A-604 specifications are as follows:

**515A TOW VEHICLE:** maximum towing speed—12.5 knots; depth rating—500 to 2,000 feet, and weight (including transducer)—450 pounds nominal.

**TOW CABLE:** construction—double armored; diameter—0.46 inches; standard length—100 feet, and fairing—recommended for towing above 6 knots.

For complete information, write to Robert Lapetina, Edo Western Corporation, 2645 South 300 West, Salt Lake City, Utah 84115.

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from Halter is the very best  
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**The thermal  
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Siltemp is *absolutely* fireproof, and resists molten steel spills and most corrosive liquids.

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HS 77-1



### James Moseley Heads Port Of Jacksonville Propeller Club

James F. Moseley, a leading admiralty attorney and past president of the Jacksonville Bar Association is the new president of The Propeller Club of the United States Port of Jacksonville (Fla.), an organization that has more

than 400 members engaged in maritime business in the South Atlantic's number one port.

Mr. Moseley succeeds Paul E. Hoffert, president of Hoffert Marine Inc., and takes over as the head of one of the country's largest Propeller Clubs.

Other officers will include: 1st vice president, Michael C. Kenney of Ships Supply, Inc.; 2nd vice

president, W. Anthony Watt of Florida Towing Company; secretary, John W. Connolly Jr. of Eastern Seaboard Petroleum Co., and treasurer, Harold C. McCarthy Jr. of Southeastern Maritime Corporation. Mr. McCarthy is also the current president of Jacksonville Maritime Association (JMA) which represents management of steamship agency, stevedore,

freight forwarding and custom house brokerage firms.



James F. Moseley

In addition to the officers, members of The Propeller Club board of governors will be: Warren K. Anderson, Trailer Marine Transport Corp.; Robert H. Aprile, Jacksonville Shipyards, Inc.; Ronald A. Burroughs, Parkhill-Goodloe Company, Inc.; Floyd C. Cagle, Ring Power Corporation; Capt. Philip J. Danahy, incoming U.S. Coast Guard Officer-in-Charge of Marine Inspection and Captain of the Port; George A. Dubois, Ships Supply, Inc.; Gerard B. Fox, Strachan Shipping Company; Comdr. Harry P. Hart, Harry P. Hart Associates; George B. Herbert, Joyserv Company; Paul E. Hoffert, Hoffert Marine, Inc.; David A. Howard, Seafarer Magazine; Raymond L. King, Sea-Land Service, Inc.; William H. Newburn, Jacksonville Shipyards, Inc.; Capt. James F. Randolph, St. Johns Bar Pilots Assn.; James J. Scott, Jacksonville Port Authority; Thomas J. Sween, Industrial Services; Capt. Bryan W. Thornton, Fernandina School System and master of R/V Sea Explorer, and Col. Donald A. Wisdom, U.S. Army District Engineer.

Four members of the board are former presidents of The Propeller Club. They are immediate past presidents Hoffert, Anderson, Burroughs, and Cagle.

### Lykes Corp. To Sell Insurance Holding

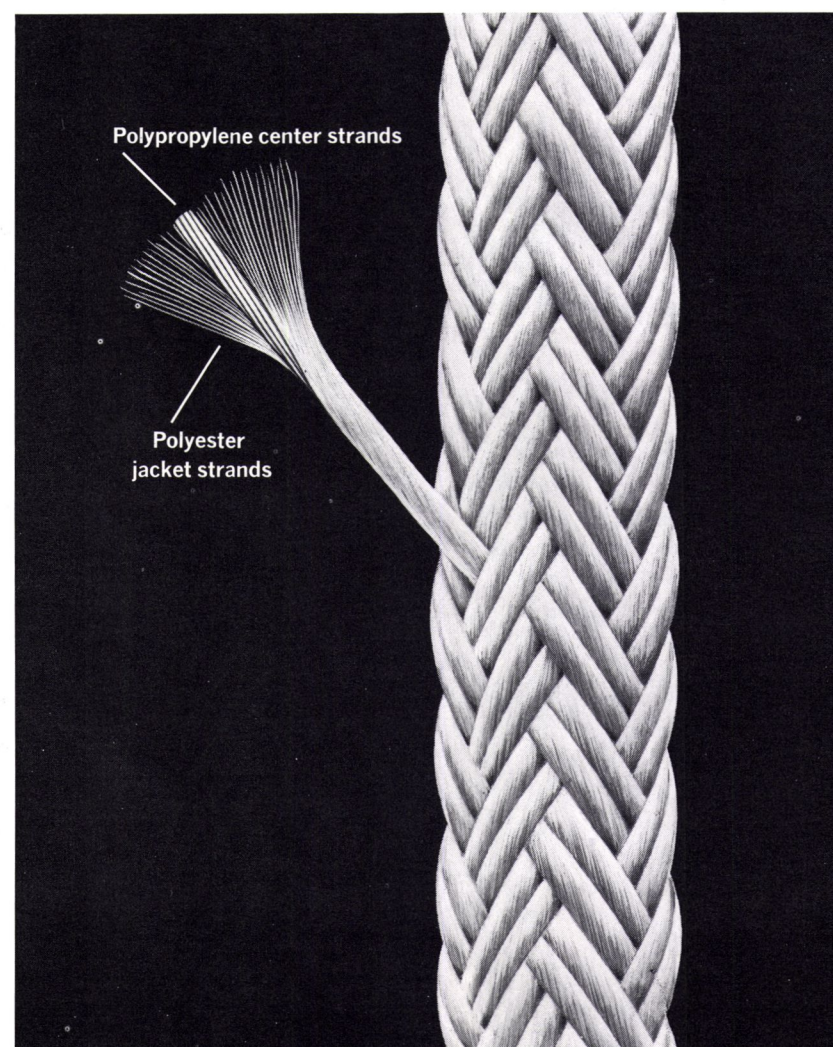
In what one company official termed part of its effort to concentrate on shipping and steel-making, Lykes Corp. has reached an agreement in principle to sell more than 700,000 shares of an insurance company holding for some \$35 million.

Under the proposed agreement, Lykes Corp., which is the parent company of Lykes Bros. Steamship Co., would sell 705,664 shares of United Fidelity Life Insurance Co. common stock to Liberty Life Insurance Co. for \$50 per share, for a cash total of \$35,283,000.

A Lykes Corp. financial officer said the money is not earmarked for any specific corporate activity and that if the agreement is consummated, the sum would become part of the general corporate funds.

Lykes Corp. this year expects to have total revenues of about \$1.6 billion, he noted.

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



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

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

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

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

Torque-free and non-kinking

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

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

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

 **SAMSON OCEAN SYSTEMS, INC.**



# **Twin City Barge Names R.W. Hougland To Coal Subsidiary**

Twin City Barge & Towing Co., St. Paul, Minn., has announced that **Robert W. Hougland Jr.**, director of corporate development, has assumed the additional duties of vice president-operations of United Coal Sales Co., a wholly owned subsidiary recently acquired by Twin City Barge & Towing Co., and **Carl J. Matson Jr.** has been appointed general manager-tank barge operations. As such, he will be responsible for all sales, operations and maintenance of the Twin City Barge & Towing Co. tank barge fleet.

Mr. Hougland has been employed by Twin City Barge & Towing Co. since 1973, and has held a variety of positions prior to his appointment as director of corporate development.

Mr. Matson has been with the company since November 1970, and has performed various duties related to the tank barge fleet.

# **Carter Group Sees Zapata Rig At Work**

President **Jimmy Carter**, several members of the Cabinet and Congress recently took a close look at the search for oil being conducted by the drilling rig Zapata Yorktown offshore Louisiana.

The President and his party toured the semisubmersible rig as the unit continued drilling its first exploratory well, located in 500 feet of water 88 miles southeast of the New Orleans airport.

The rig and the well were explained to the President by **William H. Flynn**, Zapata Corporation chairman and president, and by crew members and officials of the company's offshore drilling and petroleum exploration subsidiaries.

Roughnecks operated the rig's equipment, currently drilling at a depth of approximately 7,200 feet, while the President's group watched from the drill floor. Additional points on the tour showed Zapata Yorktown's extensive safety gear, underwater systems layout and controls, marine equipment, and other major features. The President had an opportunity to operate an underwater television camera which monitors the drill pipe as well as surrounding marine life.

Zapata Yorktown was completed in December 1976 at a cost of about \$38 million, and features the latest available technology. The massive "semi" can operate in 2,000 feet of water and is designed to work on the U.S. outer continental shelf offshore the Atlantic and Gulf Coasts. It is one of 19 rigs owned by Zapata Off-Shore Company.

The new rig is working in a federal offshore lease area, South

Pass Block 51, for a group of oil companies. Zapata Exploration Company is operator for the well, and other partners are Monsanto Company, Pacific Petroleum Corporation, and Texaco Inc.

Zapata owns three other similar rigs completed over the past 18 months, which to date have drilled a total of 20 wells in water as deep as 1,600 feet. Two of these semis, Zapata Concord and Zapata Saratoga, are drilling in

the Gulf of Mexico, while the third, Zapata Lexington, currently is operating offshore Ireland pending the beginning of drilling on the U.S. Atlantic Coast.

Hosts for the President's tour of the 260-foot-long rig included **Thomas S. McIntosh**, president of Zapata Off-Shore Company, and **J.B. Harrison**, president of Zapata Exploration Company. Supporting the Zapata Yorktown

was the Zapata marine service tug/supply vessel Independence Service. All three of these companies are wholly owned subsidiaries of Zapata Corporation.

Houston, Texas-based Zapata Corporation, a diversified natural resources firm with worldwide operations, has fishing, dredging and marine construction businesses in Louisiana, in addition to its offshore exploration-related activities there.

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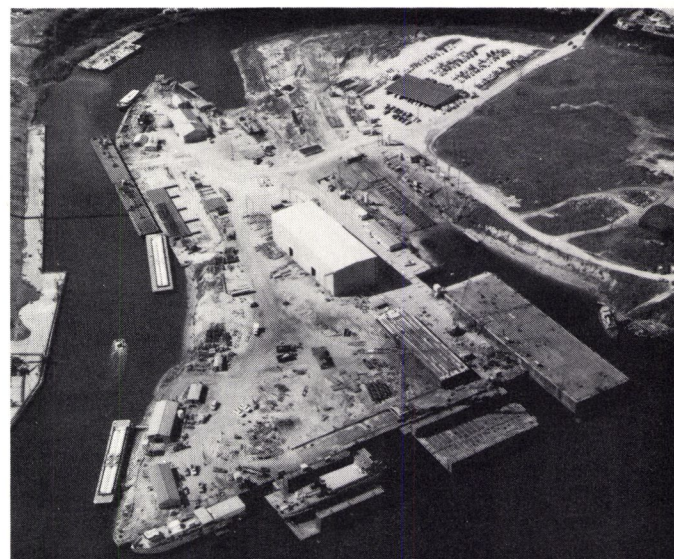
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## First International Symposium On Computer Aided Hull-Surface Definition

The First International Symposium on Computer Aided Hull-Surface Definition (SCAHD '77) will be held in Annapolis, Md., on September 26-27, 1977. The symposium will be presented by Technical & Research Panel 0-34 (Computers), and hosted by the Chesapeake Section of The Society of Naval Architects and Marine Engineers.

The proliferation of computers as design aids over the last several years has resulted in extensive software development in the area of hull-surface definition.

SCAHD '77 brings together internationally known authors in this field, who will present papers on the most recent work undertaken toward solving the many problems associated with the definition of a hull form using computer aids.

The following papers will be presented during the technical sessions:

**Paper 1**—"Ship Lines Creation by Computer—Objectives, Methods and Results," by **H. Nowacki, G. Crentz and F.C. Munchmeyer**, University of Berlin, Berlin, West Germany.

**SYNOPSIS**—A review of state-of-the-art ship lines creation methods in general and B-Spline technique developments in particular. The survey will address the standard series approach, lines distortion from parent lines, free-form design methods and other miscellaneous methods. The summary will lead up to a perspective of current status and promising future avenues in ship lines creation.

**Paper 2**—"Lines Fairing and/or Lines Design," by **H.F. Soding**, University of Hanover, Hanover, West Germany.

**SYNOPSIS**—A description of some special solutions to the lines creation problem.

**Paper 3**—"Design Experience with Hull Form Definition," by **M.P. Lasky**, Washington, D.C., and **J. Daidola, M. Rosenblatt & Son**, New York, N.Y.

**SYNOPSIS**—This paper discusses design office experience in lines creation and fairing used in the concept and preliminary design stages. The difficulties of integrating such computer aides effectively into the design process are emphasized. Results of a questionnaire survey are reported. Desirable future improvements from the naval architect's point of view are presented.

**Paper 4**—"Ship Hull Form Generation Using Regular Polynomials," by **A. Fuller**, U.S. Naval Ship Engineering Center, Washington, D.C.

**SYNOPSIS**—This paper describes an interactive graphics computer problem which is used to generate early stage design hull forms. Starting with the minimum initial input of length, beam, draft, prismatic and mid-ship section coefficients and a main deck at each profile, a designer can create a body plan at the graphics scope.

**Paper 5**—"Some Problems in Practical Improvement of Mathematical Fairing," by **Yukihiko Hattori and Yukio Matida**, Nippon Kokan Kabushiki Kaisha, Japan.

**SYNOPSIS**—A description of the mathematical techniques for a lines fairing program developed and used for several years by Nippon Kokan K.K., examples of applications of the fairing process and future supplements.

**Paper 6**—"B-Spline Techniques for Surface Definition," by **F. Theilheimer and J.M. McKee**, David Taylor Naval Ship Research and Development Center, Bethesda, Md.

**SYNOPSIS**—Advances in B-Spline techniques for surface definition are described in detail. Examples are provided to demonstrate the smoothness, local control and computational efficiency of B-Spline functions.

**Paper 7**—"B-Spline Curves and Surfaces for Ship Hull Definition," by **D.F. Rogers**, U.S. Naval Academy, Annapolis, Md.

**SYNOPSIS**—A discussion of B-Spline curves and surfaces and their suitability for hull surface definition, with a comparison with several other surface definition methods.

**Paper 8**—"Surface Representation," by **R.E. Barnhill and R.F. Riesenfeld**, University of Utah, Salt Lake City, Utah.

**SYNOPSIS**—The paper discusses advances in the mathematical definition of basic geometric elements—rectangles, triangles and point data. Examples are the elimination of "twists" for rectangular patches, "triangular Coons' patches" and improvements in Shepard's formula for arbitrarily spaced data. Industry problems and solutions developed over the past several years will be discussed.

**Paper 9**—"Approximation Theory Techniques for Curve and Surface Description," by **G. Nielson**, Arizona State University, Tempe, Ariz., and **J. Wixon**, General Motors, Warren, Mich.

**SYNOPSIS**—The paper will discuss curve or lines creation followed by surface descriptions which contain the desired characteristics of the designed curves or lines. Techniques for curve fitting

and design are reviewed and their attributes are described. The blending function methods due to Gordon are discussed and new techniques based on extension of the blending function which provide a greater degree of flexibility for incorporating networks of curves into surface models are described.

**Paper 10**—"Geometry and Function Definition for Discrete Analysis and Its Relationship to the Design Data Base," by **H.A. Kamel and M.W. McCabe**, University of Arizona, Tucson, Ariz.

**SYNOPSIS**—The paper discusses surface definition algorithms as used for structural analysis. The GIFTS 4 structural analysis system is described, with emphasis on definition of various curves, surface "patches," solid "chunks" and specification of loading.

**Paper 11**—"The Use of Conformal Mapping Techniques for Hull-Surface Definition," by **D. Hoffman and T.E. Zielinski**, Webb Institute of Naval Architecture, Glen Cove, Long Island, N.Y.

**SYNOPSIS**—The paper will elaborate on conformal mapping techniques and define the limits of its practical use at the various stages of ship design and production. Mathematical principles of conformal mapping will be illustrated for various cases. Application to ship design will be discussed and recommendations for use of the technique and ideas for future application will be presented.

**Paper 12**—"Interactive Fairing of Ship Lines—A Procedure Developed for the Model Manufacture at the Hamburg Model Basin," by **G. Collatz and E. Seiffert**, Hamburg Model Basin, Hamburg, West Germany.

**SYNOPSIS**—A description of lines fairing and model construction from preliminary lines drawings submitted by clients. Details of procedures and hardware are provided, plus the role of the draftsman in fairing and in modifications based on results of model tests.

**Paper 13**—"New Lines System—Its Concept and Application," by **E. Tokumaru**, Mitsubishi Heavy Industries, Ltd. Nagasaki Shipyard, Japan.

**SYNOPSIS**—A report on several years' experience in ship design and construction with the New Lines System. The paper will discuss fairing logic and a systematic analysis of total man-and-machine lines works.

**Paper 14**—"Mathematical Ship Lines: What Do They Mean?" by **P. Rawat**, Hydronautics, Laurel, Md.

**SYNOPSIS**—A reformulation of the ship surface definition problem is proposed, based on relevant mathematical theory, experience in developing ship surface definition computer programs and experience in using these programs. Mathematical techniques for reformulation will be discussed.

The registration fee for the symposium will be \$50 after August 15, 1977, and late registrants may also register at the Registration Desk.

Make checks payable to SCAHD '77, and mail to **Nathan R. Fuller Jr.**, SCAHD '77, Box 2435, Falls Church, Va. 22042, USA.

### Diving And Insurance Symposium Scheduled Nov. 14-15 In New York

The first two-day Diving and Insurance Symposium to be held in New York City, sponsored by three internationally recognized organizations in the marine industry, will be held at the Statler Hilton Hotel, November 14-15, 1977.

The purpose of the Symposium is to provide a common forum for the mutual interchange of information on technical developments affecting diving safety standards and insurance rates within the American diving industry.

The Symposium is being sponsored by the Association of Diving Contractors, The Marine Technology Society, and The Maritime Association of the Port of New York.

The Symposium will be addressed by prominent authorities in the diving and marine insurance industries.

Luncheon speakers at the two-day event will be government personalities whose work is concerned with passage of legislation and formulation of rules and regulations governing marine operations.

Among the many subjects scheduled for discussion by speakers and the various panels are: The Law As It Relates To Divers, Diving Contracts and Insurance Problems, Safety For The Diver Now and in The Future, Medical Development in the Diving Industry, Diving Insurance From An American and A London Insurance Broker's View, and Diving Insurance From An Underwriters Point of View.

Tickets for the Symposium cost \$200 a person, and include registration fee, attendance at all conference sessions, coffee and danish breaks, cocktail receptions, two luncheons, and a printed copy of all Symposium proceedings.

Tickets may be obtained by writing to The Maritime Association of the Port of New York, 80 Broad Street, New York, N.Y. 10004.



# Electro-Nav's Fifth Annual Navigation And Communications Exhibit Held In New York

More than 350 industry visitors, ship-owners, shipyard managers, port captains and other top marine people came to take a look at the equipment on display at Electro-Nav's Fifth Annual Navigation and Communications Exhibit held recently at the Whitehall Club in New York City.



Capt. **James R. Kelly**, Head, Nautical Science and Law Department, USCG Academy; Electro-Nav president **Bob Negron**; Lt. Comdr. **David Carter**, USCG, and **Gil Nelson**, Simrad national sales manager, discussing proposed new Coast Guard Loran C regulations at Electro-Nav show.

**Mario Vespa** of Home Lines was there, as well as Captain **Hope** of Orion-Global. **Jerry Burkhardt** of General Dynamics Quincy Division was there, fresh from launching the LNG Aquarius. Capt. **James R. Kelly**, Head of the Nautical Science and Law Department of the USCG Academy was there. So were **Joe Janssen**, director of purchasing at American Export, **Irv Fisher** of the Army Corps of Engineers, **Julian McLean** and **Lou Minett** of the ABS. And a lot more.



Krupp-Atlas's **Manfred Reimann** (center) analyzing radar economics for Electro-Nav's **Jack Wall** (right) and **Tom Bode** (left).

They saw **Ed Hecht** and **John Hoerber** put the new Magnavox MX-111 Shipboard Satellite Communications Terminal, and the MX-1102 Sat/Nav Receiver through their paces. They saw **Manfred Reimann** of Krupp-Atlas demonstrate a full range of radar and echograph systems. **Ivar Opgaard** of North American Philips showed off the new STB 750 "Telex at Sea" system with an anti-garble feature that automatically requests repeat of any questionable word or character; that should make life a lot easier for shipowners and ships' captains. **Jack Herther** demonstrated Iotron's Diginav and Digipilot collision avoidance radar systems. **Karl Johnson** explained the operation of CAI's Free Running Synthesized SSB. And **Gil Nelson** of Simrad was smiling in anticipation of the new proposed Coast Guard Loran C regulations.

Electro-Nav president **Bob Negron** introduced the Com/Nav Seminar, initiated two years ago to help keep the industry abreast

of ongoing legal and technical developments. Lt. Comdr. **David Carter**, USCG, spoke of proposed regulations to assign Loran C as the mandatory navigational system for U.S. coastal and inland waters. Krupp-Atlas Capt. **Joe Pfeiffer** analyzed the results of a recent survey of European shipowner preferences in relation to collision avoidance radar features. **Ingo Harre**, also of Krupp, gave a theoretical discussion on the use of Doppler Effect techniques to measure small distances for safer, more accurate navigation. **John Hoerber** of Magnavox discussed cost and operation factors relating to satellite communications, with specific reference to the new MX-111 terminal.

One interesting aspect of the show was the attention attracted by marine equipment not directly related to navigation and communications. **Bill Hough** of Wagner Steering, and **Dan Gideon** of Mather Controls were kept busy demonstrating their systems. **Frank Guerin**, area manager for Oil Mop, used his equipment to extract oil from the bilge, leaving a very clear effluent and winning approval from Captain **Kelly** for his antipollution performance. **Wayland Edwards** of Varo showed off his 25 and 80-million-candlepower searchlights; once he was overheard saying, "If only the show were held at night."

## Shipyard In Gdynia, Poland Launches LPG For U.S. Owner

The Northern Arrow, a 75,000-cubic-meter LPG carrier was recently launched at the Gdynia Yard of the United Polish Shipyards. The Northern Arrow is the first vessel ever built for a United States owner by Gdynia, and will be followed by a sistership.



**FIRST FLOODING:** The Northern Arrow also accounted for another first—she was launched from the first flooding of the Gdynia Yard's new 400,000-dwt-capacity drydock.

Representing the owner, Northern Natural Gas Co., were Mr. and Mrs. **Robert E. Hynds**, chief resident supervisor, and **Lawrence P. Mooney**, manager of new construction, both from Marine Transport Lines. Presiding over the ceremonies was **Roman Bogacz**, general director of the yard. The guests of honor were U.S. Ambassador and Mrs. **Richard P. Davies**. Another first for the yard was the first flooding of its new 400,000-dwt-capacity drydock.

The main features of the Northern Arrow are length overall, 752 feet; molded breadth, 106 feet, and molded depth, 74 feet.

The vessel, built and equipped to Det norske Veritas class +1A-1 tanker for liquefied gas, is powered by a Sulzer/Cegielski type 8RND90 main engine with turbo charging and a maximum continuous output of 23,000 hp.

## Equitable Shipyards, Inc. Ships Last Two In Series Of Five 95-Foot Tugs To Indonesia

Equitable Shipyards, Inc., P.O. Box 8001, New Orleans, La. 70182, has shipped the last two new, 95-foot tugs in a series of five vessels to the Indonesian Government. The vessels were loaded onboard the Letitia Lykes Clipper Ship which departed the port of New Orleans en route to Singapore via Philadelphia, Pa., and will be offloaded in Singapore.



Powered by Caterpillar diesels, the twin 95-foot tugs are shown leaving New Orleans on the deck of the Letitia Lykes.

The Selat Bali and Selat Bangka have overall dimensions of 95 feet by 29 feet with 13-foot depth. The tugs were built to American Bureau of Shipping Class Maltese Cross A-1 Towing Service, Maltese Cross AMS, with full ocean service, and have American Bureau of Shipping Load Line Assignments. Each tug is powered by two Caterpillar D-398 Series B turbocharged after-cooled marine diesel engines with Caterpillar 7261 MG reverse reduction gears. Each engine has a continuous duty rating of 850 bhp at 1,225 revolutions per minute.

Equitable Shipyards, a wholly owned subsidiary of Trinity Industries, Inc., Dallas, Texas, a manufacturer of industrial, marine and structural products, operates two large shipbuilding facilities in the Greater New Orleans area. One of these is at Madisonville, La., where the five tugs for Indonesia were built, and the other is in New Orleans on the Industrial Canal.





### Butterworth Systems Relocates Headquarters

Butterworth Systems Inc., a world leader in providing marine and food processing industries with specialized equipment for tank cleaning, underwater hull cleaning and oil/water separation, has relocated its corporate and sales offices to a modern three-story office building at 224 Park Avenue, Florham Park, N.J. 07932.

A.J. Kelly, president, announced that the move will allow the company to expand and strengthen its worldwide operations, thereby providing more efficient services to customers in over 60 countries.

Butterworth Systems Inc. officially occupied its new offices on June 6, following a move from Bayonne, N.J., where it had been located since its founding in 1930.

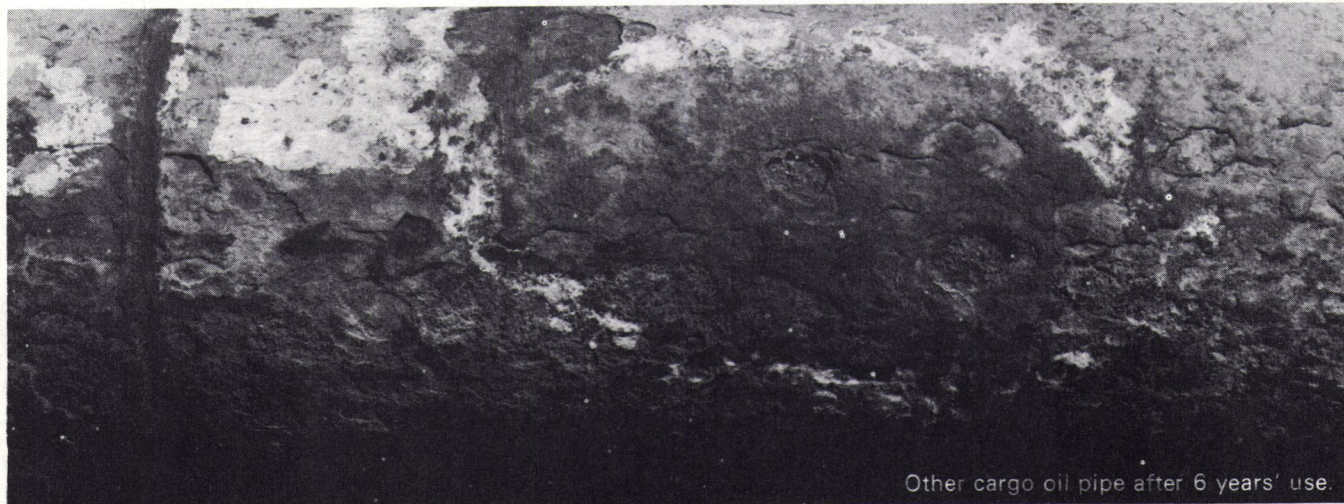
The specialized tank cleaning equipment manufactured by But-

terworth Systems has been used widely in the tanker fleets of oil companies and independent owners for nearly half a century. The trademark BUTTERWORTH® is generally synonymous with ship-board tank cleaning procedures to seamen of just about every major maritime nation. In recent years BUTTERWORTH tank cleaning machines have been installed in many of the major breweries and wineries in the USA and abroad.

Over-the-road truckers also employ BUTTERWORTH machines for cleaning tanks between loaded trips with edible food products and other liquid products that move on the highways of America.

In 1970, Butterworth Systems introduced SCAMP® underwater hull cleaning equipment to shipowners to provide a faster, more efficient and lower cost way to remove hull fouling than drydocking a vessel for cleaning only. The SCAMP system for underwater cleaning of a vessel's hull is also enabling shipowners to save operating costs by using less marine fuel when maintaining tight schedules on worldwide trades. The franchise operators of SCAMP hull cleaning equipment are servicing tanker and dry cargo vessels in many of the world's major ports, including both East and West Coasts of the USA, Rotterdam, Singapore, Panama Canal and others. Butterworth Systems also sells a full range of oil/water separators which are used both in marine and shore industries for pollution abatement purposes.

## The same age! So what's the difference?



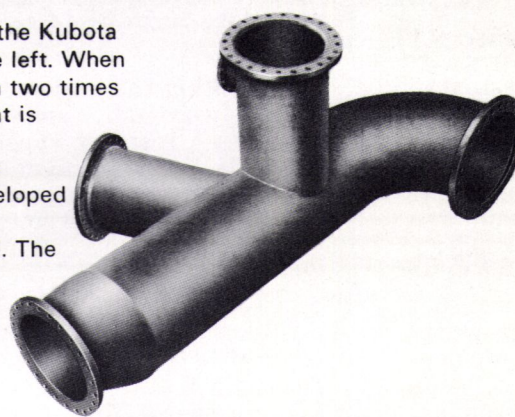
Other cargo oil pipe after 6 years' use.



Kubota cargo oil pipe after 6 years' use.

The pipe above obviously needs replacement, soonest possible, while the Kubota cargo oil pipe, shown below it, still has several years of good service life left. When replacing the pipe in your vessels, consider that Kubota's give more than two times longer service than most others. Fifteen years of use without replacement is ample proof of their superiority. Why?

Kubota materials and methods cannot be found anywhere else in the world. The material is KCP-3L, a chrome manganese steel especially developed by this company. It is made by Kubota's exclusive centrifugal casting techniques, widely acknowledged to be of the highest technological level. The highest degree of weldability gives it the greatest facility of use. That is why fully 95% of all Japanese tankers use Kubota cargo oil pipe. And why shipbuilders and repair docks around the world keep it on hand for installation and replacement. Write today for full information on how to raise the efficiency of your tanker operations.



### KUBOTA CARGO OIL PIPE

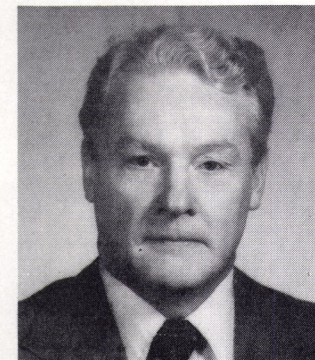


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### Lorain Electronics Names William Taylor



William A. Taylor

Lorain Electronics Corporation, a subsidiary of Dallas, Texas-based Oakmont Marine Corporation, has announced the promotion of William A. Taylor to vice president in charge of sales.

As vice president, Mr. Taylor will head sales of marine and navigational equipment manufactured by Lorain Electronics and Specialized Electronics, another Oakmont subsidiary, throughout the Great Lakes and inland waterways.

Mr. Taylor has been with Lorain Electronics since 1967. Prior to joining the company, he saw 23 years of active service with three branches of the armed forces. During that time, Mr. Taylor held various supervisory positions, including Senior Communications Administrator, NATO, and Communications Supervisor at the Department of the Army, Communications Center, the Pentagon.

The 46-year-old Lorain Electronics Corporation, located in Lorain, Ohio, has been a subsidiary of Oakmont Marine since August 1976.



**International Paint  
Names D.W. Crawford**



D.W. Crawford

The International Paint Company, Inc. has announced that D. W. Crawford has assumed the additional duties of general manager of the Protective Coatings Division.

Mr. Crawford joined International's New Orleans, La., office in April of 1977, as group manager multinational energy accounts. Previous experience includes 18 years as a regional and offshore manager of a major protective coatings manufacturer with extensive travel in Europe, the North Sea, the Middle East, and Southeast Asia.

Mr. Crawford is a graduate of Texas A & M University, has served as chairman and trustee of the South Central Region New Orleans Section of the National Association of Corrosion Engineers, and is a past director of the Louisiana Coating Society.

The Protective Coatings Division's U.S.A. headquarters will be in New Orleans. Other territorial offices are located in South San Francisco, Calif., New York, N.Y., and Houston, Texas.

**Memo Of Understanding  
On Sale Of Four Ships  
Signed By PFEL**

John I. Alioto, president of Pacific Far East Line, Inc., the San Francisco, Calif.-based steamship company, announced the signing of a memorandum of understanding with Sea-Land Service, Inc. of Menlo Park, N.J., concerning the sale of three PFEL LASH vessels and one PFEL containership.

The purchase price is \$82 million and in addition, Sea-Land assumes the remaining portion of PFEL's \$24-million conversion contract with Bethlehem Steel's San Francisco shipyard. The transaction is subject to the approvals of the boards of directors of the respective steamship companies, their affiliates, the United States Maritime Administration and/or Maritime Subsidy Board, and normal closing procedures.

If the transaction is consummated, PFEL will realize a capital gain of approximately \$35 million or \$33 per share. This transaction will have no effect upon PFEL's East Coast/Middle East Gulf ro/ro service or its passengership service.

August 15, 1977

**New Barge Stripper  
Brochure Available**

A new product brochure, offered by Johnston Pump Co., Glendora, Calif., describes the capabilities of its Model JS Barge Stripper. Utilized for single pump unloading and close stripping of bulk petroleum and other products from cargo barges, tankers and similar carriers, the Model JS is normally

installed as a permanent, central unit designed to service all storage compartments.

The brochure schematically illustrates and presents in detail Barge Stripper standard constructions, as well as options available in specifying discharge heads, mechanical seals, spacer type couplings, impeller design, castable alloys, bearing material, etc. Operational information, parts list and assemblies data is also included.

Johnston, an Aerojet-General Co., has specialized in the design and manufacture of vertical pumps for 70 years.

The brochure may be obtained by writing to Paul Chapman, Johnston Pump Co., 1775 East Al-len Avenue, Glendora, Calif. 91740.

**E.P.A. ACCEPTED**

**SEA MASTER, NS-555**

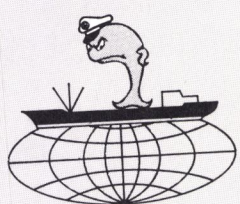
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**SEA MASTER, NS-555** is a Biodegradable and Non-Toxic Oil Spill Dispersant, which conforms to Annex X of the "National Oil and Hazardous Substances Pollution Contingency Plan", which complies with the "Federal Water Pollution Act".

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

Mr. Andrew A. Argiriadi  
Whale Chemical Company, Inc.  
58 Winant Street  
Staten Island, New York 10303

Date Issued: 6 JUN 1977

Dear Mr. Argiriadi:

You are hereby notified that the technical product data submission on **Sea Master, NS-555**, has been accepted by the Environmental Protection Agency. The furnished product data were reviewed and satisfy the requirements of Annex X of the National Oil and Hazardous Substances Pollution Contingency Plan. In accordance with Annex X, the technical product data will be maintained on file by the Oil and Special Materials Control Division, and the on-scene coordinator can authorize use of the dispersing agent for spills of oil and hazardous substances on a case-by-case basis. Acceptance of technical product data by the Environmental Protection Agency does not constitute approval of the dispersing agent or imply compliance with any criteria or minimum standards for such agents.

As stated in Paragraph 2003.1, authorization for use of dispersing agents, these agents may be used only when their use will: (1) prevent or substantially reduce hazard to human life or limb; or substantially reduce explosion or fire hazard to property, (2) prevent or reduce substantial hazard to vulnerable species of water-fowl, and (3) result in the least overall environmental damage, or interference with designated water uses.

To avoid any possible misinterpretation or misrepresentation, this letter of acceptance may be reproduced only in its entirety in any advertisement or technical literature on the dispersing agent. Failure to comply with restrictions in Annex X or an improper reference to EPA in an attempt to demonstrate approval of the dispersing agent will constitute grounds for withdrawal of the letter of acceptance. Any changes in the composition or formulation of the dispersing agent, affecting data submitted under Paragraph 2003.3-4, will require retesting of such agent before acceptance is reissued.

Sincerely yours,

*Kenneth E. Bigland*

Kenneth E. Bigland  
Director, Oil and Special  
Materials Control Division (WH-548)

For further information contact:  
Andrew Argiriadi  
Captain Jim Mardikos  
Jerry Arger



### New Engine Room Simulator To Improve Supertanker Training

A computer-based simulator for training engine room officers of supertankers will go into operation early in 1978 under a development contract signed between the Organization for Industrial Research TNO, a Dutch corporation, and Esso Tankvaart Maatschappij B.V., an affiliate of Esso Nederland B.V.

The unique engine room simulator will be located at the TNO Institute for Mechanical Constructions in Delft, Netherlands. It will be the first of its kind in Europe and will have extensive training exercises for both normal and emergency operations. The European locations will be convenient for the training of officers joining or leaving their ships. The facility will accurately simulate the appearance and behavior of the main consoles and electrical power panels with which marine engineers work in the en-

gine control room of a typical very large crude carrier (VLCC). In an adjoining room, graphic displays of key systems will allow trainees to gather information and respond to events as they would in the machinery space outside the engine control room of a VLCC.

The engine room simulator will complement the TNO Ship Bridge Simulator activities in Delft at which Exxon, of which Esso Nederland is an affiliate, has trained nearly 500 tanker deck officers and pilots over the last six years. Between 80 and 100 junior and senior engine officers a year from Exxon's worldwide fleets are scheduled to be trained in the simulated engine room when it becomes operational.

The facility will be offered by TNO to engine officers from other companies on a space-available basis, in a similar manner to the Bridge Simulator. The engine room simulator will also be available for research and development purposes.

The courses for engine room officers will last five days and will involve classroom instruction and hands-on use of the simulator. Simultaneous translation of instruction will be available in English, Italian, Dutch, Spanish, French, German, Korean, and other languages to reflect the international makeup of VLCC crews.

The simulator will be used to expose the officers to a large number of normal and emergency circumstances, providing the equivalent of years of experience in a short period of time. It will train the officers to recognize and react quickly and correctly in crisis situations.

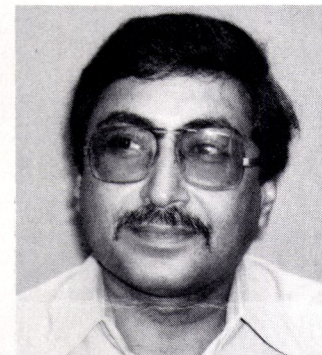
The computer allows the facility to simulate a large number of exercises including: Emergency situations during startup, maneuvering and normal steaming; Complex operations such as starting up the powerplant from a cold condition; Practice on specific tasks such as paralleling generators and testing main engine controls.

In addition, the simulator will be used to instruct officers in the various techniques of saving fuel, a matter of increasing importance in proper engine room control.

The purpose of the Netherlands TNO Organization for Industrial Research is to coordinate and to further the development and application of technological improvements for practical use.

The computer program and specialized hardware for the simulator were developed over the last two years by Exxon International and Exxon Research and Engineering at a cost of over a half million dollars. The site, computer and interfaces, and the necessary operations expertise are TNO's contribution to the facility.

### Timmons & Charles Open Singapore Office



Ash Kapoor

Timmons & Charles, Inc., 991 East Linden Avenue, Linden, N.J. 07036, has announced the opening of their new branch office in Singapore. Heading up the sales and service operation is **Ash Kapoor**. Mr. Kapoor holds a marine engineering degree, and has sailed for 13 years as a ship's engineer. T&C Singapore is located at Asia Insurance Building, Finlayson Green, Singapore 1.

Timmons & Charles, Inc. is a worldwide water treatment and specialty chemical consulting firm with headquarters in Linden, N.J.

### Tidewater Marine To Relocate Headquarters

Tidewater Marine Service, Inc., announced it has acquired a one-half interest in the Canal LaSalle office building on Canal Street in the central business district of New Orleans, La., and will move its corporate headquarters there.

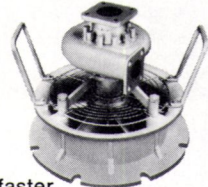
Effective April 1, 1978, the 24-story building will be renamed Tidewater Place. Completed in 1972, the modern office building is currently about 85 percent occupied. Tidewater will initially occupy about 34,000 square feet of office space.

Tidewater owns and operates the world's largest fleet of offshore service vessels, has diversified interests in natural gas and air compression and insurance, and is engaged in the exploration for and development of oil and gas. The company changed its name to Tidewater Inc., effective August 12, 1977.

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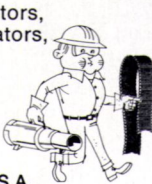
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# Ohio River Company Towboat M/V Queen City Receives Nation's Highest Safety Award



Presenting the prestigious safety awards to The Ohio River Company is National Safety chairman **David Walker**, shown at far left. Receiving the plaques and pennant for The Ohio River Company are, from left to right: safety director **Arthur Gelwicks**; **Robert N. Stout**, executive vice president; **Jack Geary**, president; **Capt. Charles Wolf**, and vice president, operations, **David Martenson**.

On June 30, at the Banker's Club in Cincinnati, Ohio, the captain and 12 crew members of The Ohio River Company towboat M/V Queen City were awarded the nation's highest safety award for their heroism in rescuing four capsized fishermen from the swirling currents of the Ohio River. The awards were presented by the National Safety Council, Marine Section, and the American Institute of Merchant Shipping. The award marks the first time in its history that AIMS has offered its top annual award to an inland vessel.

On the late afternoon of October 11, 1976, the M/V Queen City was pushing 12 barges of coal up the Ohio River at a point near Dashfield's Locks, 13 miles from Pittsburgh, Pa. At 5:40 p.m., pilot **Billy Nolan** spotted a capsized 18-foot motorboat. Nearby, four people were floundering helplessly in the treacherous river currents, being swept toward the oncoming barges.

Pilot **Nolan** immediately radioed the locks to request a rescue boat to pick up the victims. The dispatcher at the locks radioed back that there was no boat available, and urged that the crew of the M/V Queen City attempt to rescue themselves.

Armed with life preservers, the crew of the tow moved along the 12 loaded barges, which were now bearing down on the four victims in the water. Reaching the bow of the point barge, the crew was able to reach the men in the water with the preservers and pull them safely aboard.

In addition, **Capt. Charles Wolf** instructed his crew to right the capsized boat, pump the water out, and tie it up at the locks while the survivors were taken into a waiting ambulance. The rescue operation was complete, with none of the party suffering any ill effects, with the exception of one man who was in a state of shock. Surviving the ordeal were the boat's owner **Louis M. Krofchick**

of Ambridge, Pa., his father **Louis Krofchick Sr.**, and two guests of the Krofchicks, **Harry Dunn** and **Robert Dunn**.

The National Safety Council, represented by general chairman **David Walker**, presented the award pennant to The Ohio River Company president **Jack Geary**, and vice president, operations **David Martenson**. **James Reynolds**, president of the American Institute of Merchant Shipping, presented The Ohio River Company with a permanent plaque for the M/V Queen City, plus certificates of commendation to Captain **Wolf** and each of the crew members.

## E.R. Remkes Named President Of C-E Crest, Tulsa Engineering Firm

**Elmer R. Remkes** has been named president of C-E Crest, a Tulsa, Okla.-based subsidiary of Combustion Engineering, Inc., which serves the international gas and oil industries.

Before joining C-E Crest, Mr. **Remkes** was vice president and general manager of Santa Fe Engineering Services Co., Orange, Calif., for five years. Previously, he had been associated with Brown & Root, Inc., Houston, Texas, for more than 20 years.

Mr. **Remkes** has a B.S. degree in mechanical engineering from the University of Houston. He is a member of the American Society of Mechanical Engineers, the American Petroleum Institute and the Marine Technical Society.

C-E Crest provides worldwide engineering services in exploration, drilling, production, processing, pollution control, marine structures, and transportation to the oil and gas production and development industries.

C-E Crest is headquartered in Tulsa, with offices in Houston, New Orleans, La., Calgary, London and Tehran.

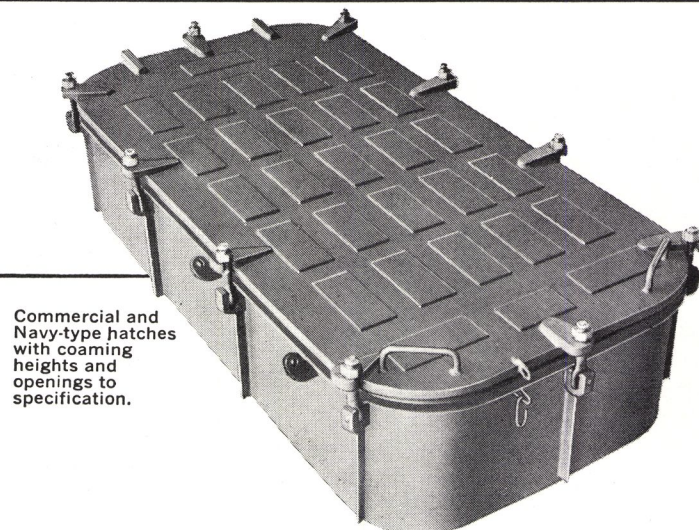
## Det Norske Veritas Issues Rules For Floating Docks

In order to meet an increasing interest in the building and classification of floating docks, Det norske Veritas has now developed and issued rules also in this field.

The rules cover structural strength, requirements to machin-

ery with pumping and piping arrangements, freeboard and stability, as well as precautions against fires. Requirements to periodical surveys for maintenance of class are also given.

The rule requirements are based on the Society's Rules for Ships and experience from advisory service on strength analysis and safety considerations for floating docks.

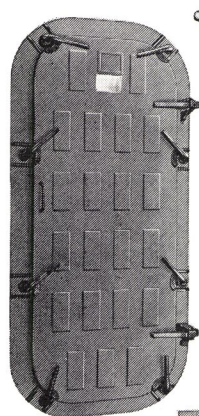


Commercial and Navy-type hatches with coaming heights and openings to specification.

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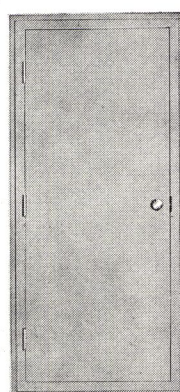


Manholes: shown, raised, hinged 4-dog bolted water-tight style. Also available are raised, flush, and flush recessed bolted types.



WEAT and WT Raised Doors with optional 4, 6, or 8-dog.

Joiner Doors preassembled in frame. Optional lifts, lock styles, and louvers, including choice of insert or stamped.



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# **Proceedings Of First N.Y. Port Com-Nav Conference Now On Sale**

The printed proceedings of the first Port of New York Navigational Aids and Communications Conference are now available, it has been announced by the Maritime Association of the Port of New York, the organization that sponsored the three-day event

held in New York City recently. The printed record comprises 105 bound pages. It includes a program listing every panel and panelist and the principal speakers, and costs \$25.

The proceedings, which were transcribed from tape recordings, include every word spoken during the 11 panels that were conducted by experts in the fields of navigational aids and communications,

and the principal addresses at luncheons by Adm. **Sidney Wallace** (USCG), Marine Transportation Advisor to Transportation Secretary **Brock Adams**, and **Charles Fisher**, Chief, Rules and Legal Branch, Federal Communications Commission.

Admiral **Wallace** spoke of the plans by his department to implement present and near-future rules and regulations governing

operational procedures by vessels of 1,500 tons or over of all flags in USA navigable waters.

Mr. **Fisher** revealed intimate details of his department's work on revamping rules and regulations now in effect, and its progress on formulating new ones in the field of communications to promote safety at sea.

The panels covered the following subjects: Omega Navigation; Satellite Navigation; Collision Avoidance; Loran-C System; Shipping Fairways; Single Sideband Communications; Marisat; Sittor Communications; RTCM (Radio Technical Commission for Marine Service); Marine Facsimile for Marine Services, National Vessel Traffic System. Spontaneous questions from the floor were frankly answered by panelists and principal speakers, and resulting give-and-take discussions covered every facet of navigational aids and communications at sea.

Exhibitors at the event (the personnel of which provided many of the authorities to staff the 11 panels) were: Alden Electronic & Impulse Recording Co., Inc.; Automated Marine International, Inc.; Communications Associates Inc.; COMSAT General Corporation; Digital Marine Electronics Corp.; IBM General Systems Division; ITT Decca Marine Inc.; Iotron Corporation; Kelvin Hughes, Smiths Industries, Inc.; Konel Corporation; Magnavox; Navidyne Corporation; Raytheon Company; RCA; Simrad Inc.; Sperry Marine Systems; Tracor Inc., and the United States Coast Guard.

The proceedings are a rare compilation of important up-to-the-minute developments in navigational aids and communication equipment and rules and regulations governing their use, and implications for the future.

The 105-page printed record of the proceedings may be obtained by writing to the Maritime Association of the Port of New York, 80 Broad Street, New York, N.Y. 10004 (enclose check in amount of \$25. N.Y. residents add 8 percent tax).



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## **Governor's Cup Race Set For September 10 In New York Harbor**

The Fourth Annual Battery Park City Governor's Cup Race will be held in the Hudson River off Battery Park City on September 10. The race is open to sailing vessels of at least 24 feet overall length. Last year, 87 boats competed.

Battery Park City is the \$1-billion plus new-town-in-town now under construction on 100 acres of landfill in the Hudson River off lower Manhattan. The race is sponsored by the Battery Park City Authority to promote water-related activities in the area surrounding its development.





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### Barges

Oil Barge, 2000 bbl., 100' x 26' x 7' w/current CG certificate, Feb. 1977. A Frame Derrick Barge, 50 ton capacity w/2 drum hoist powered by GMC/71. A Frame Derrick Barge, 15 ton w/3 drum winch powered by GM 4-71.

### 966 C Cat

Front End Loader, w/bucket, blade, and hydraulic pipe handling attachment. S/N 76 J3309

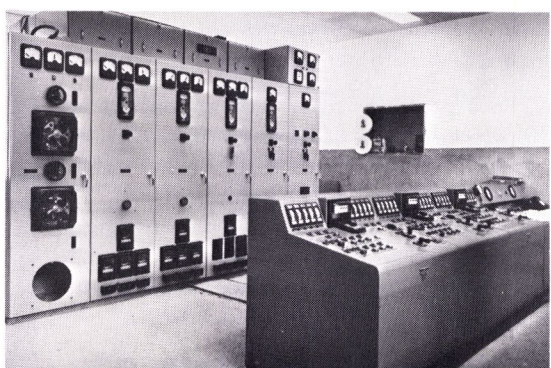
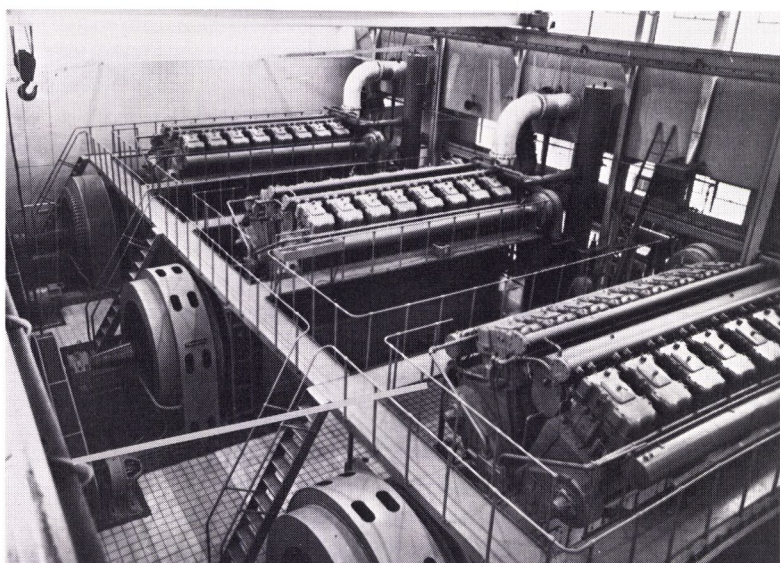
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Ingersoll-Rand Gyro-Flo, 900 CFM, w/GM 6-110 diesel engine w/35 sack sand blasting unit.

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Three each Cooper Bessemer LSV-16 Engines, 3750 KVA Westinghouse Generator Plants including switchgear and auxiliary equipment.

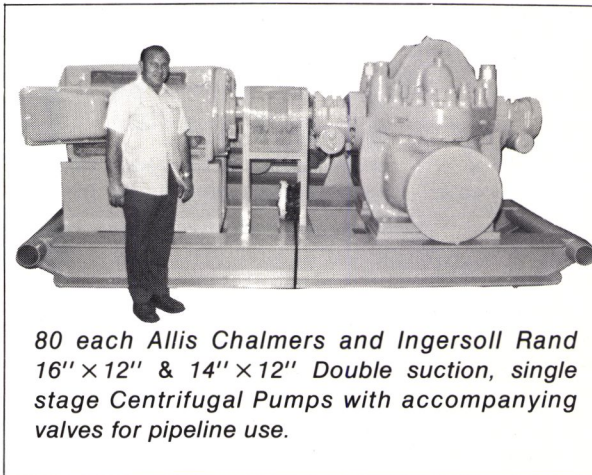
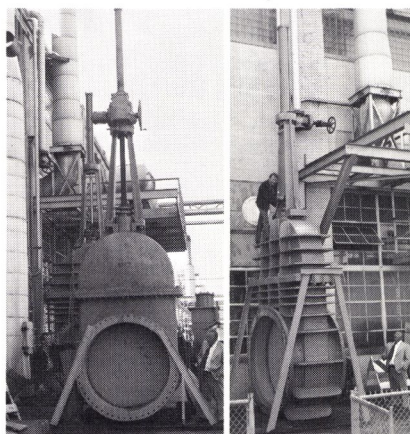
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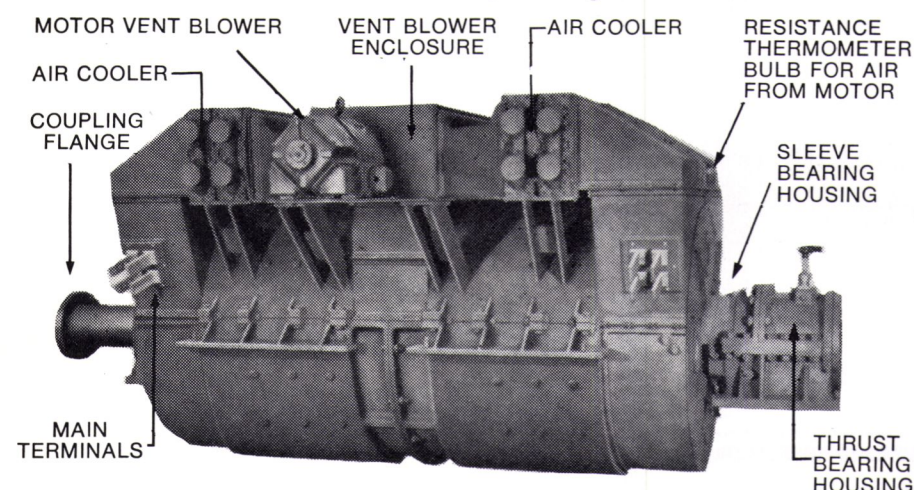
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- 2 — Motors have been A-1 Reconditioned by a manufacturers shop and carry A.B.S. Certification.
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## 1 only—3 Drum CLYDE HOIST

Model 10 with Swinger

### ADDED FEATURES

POWER: G.M. 8V-71 Diesel with 3 Stage Torque Converter 11,500 series and Air Compressor.

OP. CONTROLS: All Air, Air Paul and Air Friction Brakes with Controls console mounted at operators stand.

CLUTCH: Internal expanding band friction, two shoes, 50" dia. and 6" wide.

BRAKES: External contacting, single band, two piece construction, 57" dia. and 7" wide.

BEARINGS: Drums are taper roller bearing mounted. All shafts turn in Anti-friction bearings.

SWINGER: Two drum attached type with slack take up.

Less than 1,000 Hours operating time on Unit—Ready to work NOW!

### HOIST SPECIFICATION

MODEL: Frame 10—3 drum with 2 drum swinger.

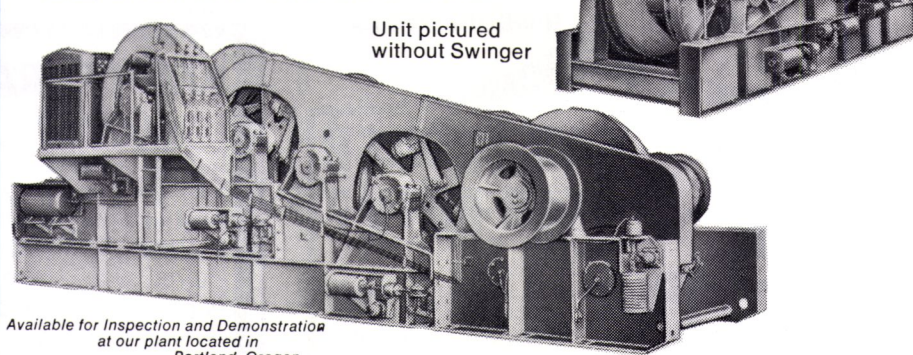
LINE PULL: 30,000 Lbs.

DRUM SIZE: Dia. 25"—lgh. 36"—Figs. 57"

DRUM CAP.: 4170 Ft. of 1 1/4" 3500 Ft. of 1 1/2"

RATING: 37,500 lbs. S.L.P. at 150 FPM—Sec. on larger wire rope.

This Unit is in EXCELLENT CONDITION—Ready to work NOW—THE PRICE IS RIGHT!



Unit pictured without Swinger

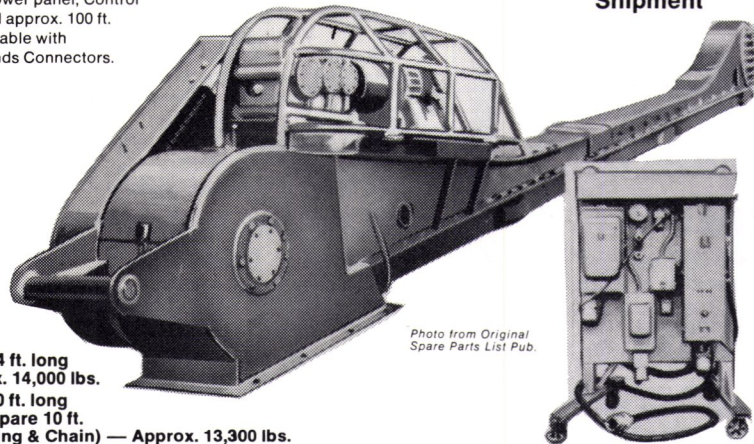
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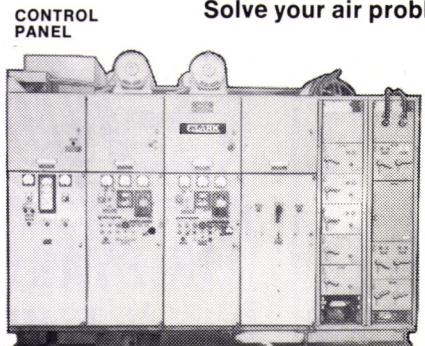
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Solve your air problems with these units and save!



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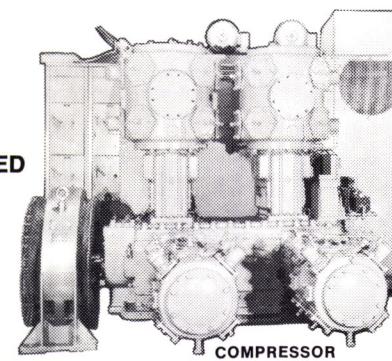
1 — UNIT, USED — AS IS

2 — UNITS ARE INSTALLED IN A RAILWAY CAR.

2 — Railway Cars are available for these units, if so desired.

Manufactured by Clark—Model CMA, Horizontal Opposed Cylinder Design. Powered by 500 H.P. Synch. Motor, 2400/4160 volts, 3 Phase, 60 Cycle, 600 RPM, and includes Starter.

Equipped with Self Contained, Closed Water System, Radiator Cooled.



These Compressors are skid mounted, packaged units. They were originally installed in railway cars as Emergency Air Supply on the West Coast by the Navy Bureau of Yards and Docks.

Ideal for Shipyard or other large volume air consumers.

For additional information and Quotation, Please Contact:

**Hugh Sturdivant**

Sales Manager, Marine & Industrial Sales Div.

Phone: 503/228-8691

Telex: 36-0503 • Cable: "ZIDELL"

Marine and Industrial Sales Division of

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

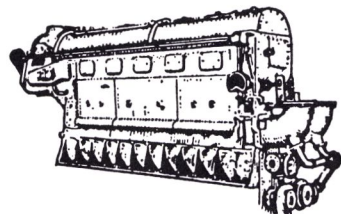


# SHIPBOARD EQUIPMENT

From  
**ZIDELL** EXPLORATIONS  
INC.

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

## MARINE DIESEL ENGINES



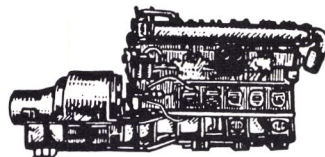
**MATCHED PAIR . . . FAIRBANKS-MORSE Model 38D8-1/4** — 1 Port; 1 Starboard. Used condition, 1800 HP, 800 RPM, 2 cycle, 8 1/2" bore, 10" stroke, Air Start.. Complete with Westinghouse Reduction Gears, 2.216:1 ratio —with Hydraulic Coupling.

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4—COOPER - BESSEMER, Marine . . . Model FSN 6, 6 cylinders, 375 HP, 900 RPM with General Electric generators, 250 KW 440/3/60.

2—SUPERIOR Diesel Engines . . . Model GBD8 Marine, 150 HP, 1200 RPM, 8 cylinder, with Delco Generators, 100 KW, 120/240 DC.

4—GENERAL MOTORS, Model 3-268A, marine, 150 BHP, 1200 RPM, 3 cylinders, with 100 KW Generators, 450/3/60.



3—GENERAL MOTORS, Model 3-268A, Marine, 150 HP, 1200 RPM, 3 cylinders, with Allis-Chalmers Generators, 100 KW, 120/240 DC.

Many other units in stock

## TURBINE GENERATORS—AC and DC Voltage

### A. C.

4 — 1250 KW, GENERAL ELECTRIC Turbines: Type FSN, 525 PSI, 7938 RPM. Generators: 1250 KW, 450/3/60, 3600 RPM, Type ABT2.

7 — 750 KW, GENERAL ELECTRIC Turbines: Type FN3-FN24, 525 PSI, 10,033 RPM. Generators: 750 KW, 450/3/60, 1200 RPM, Type ATI.

2 — 500 KW, GENERAL ELECTRIC Turbines: Type FN3-FN20, steam 375/425 PSI, 6 Stage, 9987 RPM. Generators: 500 KW, 450/3/60, 1200 RPM, Type ATI.

### D. C.

1 — 400 KW, WORTHINGTON Turbine, 200 PSI with Crocker-Wheeler Generator, 400 KW, 120/240 Volts DC, Type CDC, 1200 RPM.

7 — 300 KW, ALLIS-CHALMERS Turbines, 440 PSI, 5645 RPM, with Westinghouse Generators, 300 KW, 120/240 Volts DC, 1200 RPM.

2 — 300 KW, WESTINGHOUSE Turbines, 440 PSI, 5920 RPM, with Westinghouse Generators, 300 KW, 120/240 Volts DC, 1200 RPM.

2 — 300 KW, TERRY Turbines, 440 PSI, Type TM-5, 5965 RPM, with Crocker-Wheeler Generators, 300 KW, 120/240 Volts DC, 1200 RPM.

1 — 300 KW, ALLIS-CHALMERS Turbine, 440 PSI, 470 HP, 8000 RPM, with Allis-Chalmers Generator, 300 KW, 240/240 Volts DC, Type HO, 1200 RPM.

1 — 250 KW, DE LAVAL Turbine, 440 PSI, 360 HP, 10,000 RPM, with Crocker-Wheeler Generator, 250 KW, 240/120 Volts DC, Type CCD, 1200 RPM.

12 — 60 KW, WESTINGHOUSE Turbines, 89.4 HP, 200 PSI, 7283 RPM, Type M-20-EH, with Westinghouse Generators, 60 KW, 120 Volts DC, 1800 RPM.

DELAVAL, 450 PSI, 750°F, 300 KW, 120/240 DC.



**FAST REPLIES  
ON YOUR  
INQUIRIES!**

A partial  
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stock from  
**EX-NAVY and  
MARITIME VESSELS**

Certifications to A.B.S.  
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SPREAD IN  
ALTERNATE  
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M.R.**



Rebuilt  
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**AXIAL FLOW FANS**  
LaDel, Sturtevant, etc.

In 440 AC, in 115 DC, and in 230 DC, and  
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reconditioned.

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Size A1/2	Size A4	Size A10
Size A1	Size A5	Size A12
Size A2	Size A6	Size A16

## Electro-Mechanical STEERING GEAR

1—SPERRY No. 2, 5 HP, 230 Volts DC, complete with Steering Winch, Controller Panel, Ballast Resistor, Electro-Mechanical Steering Stand—with Steering Wheel (with Pull-out Knob).



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3—INGERSOLL - RAND, Size 5x5x4x4, 50 CFM, 150 PSI, with G.E. Motor, 20 HP, 440/3/60.

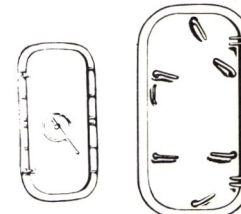
1—INGERSOLL - RAND, Model 40B, 155 CFM, 110 PSI, 870 RPM, with 40 HP Motor, 230 DC.

2—WORTHINGTON, 20 CFH, 3000 PSI, 4 stage, 585 RPM, with Worthington Steam Turbine, 47 HP, 5502 RPM.

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FOR ELECTRICAL EQUIPMENT: A/C 503,  
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## STEEL WATERTIGHT DOORS

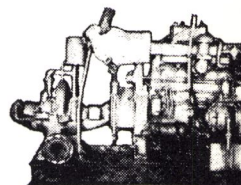
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Frames.



Many sizes available, priced reasonably.  
Some Typical Prices shown below. Please  
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26"x48"-4 Dogs—\$60.00 ea.  
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26"x66"-6 Dogs, 8 Dogs—\$100.00 ea.  
26"x66"-Q.A. Type—\$175.00 ea.

## FIRE PUMPS



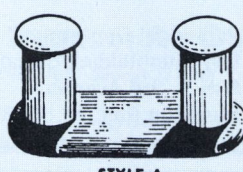
2—BUDA, Model 6-LD-468, Diesel Engine, 6 cylinders, 100 BHP, Marine, Gardner Denver, centrifugal Pumps, Bronze, horizontally split case, 1000 GPM, 280' head, suction and 5" discharge.

## HYDRAULIC CYLINDERS

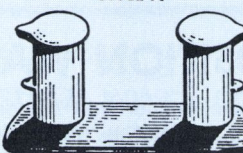


Bore	Overall Stroke	Rod Diameter	Retracted Length	Action
10"	12"	3.75"	45 1/2"	double
10"	26"	3.75"	58 1/2"	double
2"	8"	1 1/2"	20"	double
2.5"	15"	1.12"	25 1/2"	double
3"	8"	1.37"	15 1/2"	double
6"	8"	4"	144"	double

## DOUBLE BITS



STYLE A



STYLE B

Used, clean, good  
suitable for reuse  
Predominantly 12  
and 14" sizes.  
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sizes in stock  
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Specify quantity,  
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Calt Industries, Water & Waste Management Operation,  
Beloit, Wisc. 53511  
Demco, Inc., P.O. Box 94700, Oklahoma City, OK 73109  
Eureka Chemical Co., P.O. Box 2205, So. San Francisco, CA 94080  
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N.J. 07083  
LaMere Industries, Inc., (Marland Environmental Services and  
Clean Water, Inc.) 227 N. Main Street, Walworth, WI 53184  
Masco, 1437 So. Boulder Ave., Tulsa, Okla. 74119  
Marine Moisture Control Co., Inc., 449 Sheridan Blvd., Inwood,  
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Coolidge Propellers, 1601 Fairview Ave. East, Seattle, Wash. 98102  
Escher Wyss GmbH, P.O. Box 798, Ravensburg, Germany  
Federal Propellers, 1501 Buchanan Ave. S.W., Grand Rapids, Mich.  
49502  
Propulsion Systems Inc., 21213 76th Ave. South, Kent,  
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Valth. Schneider—U.S. Agent: Krupp International, Inc., 550  
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Maritime Industries Ltd., 6307 Laurel St., Burnaby, B.C., Canada  
V-38 383  
Port Electric Turbine Div., 155-157 Perry St., New York, N.Y. 10014  
Schottel of America, Inc., 21 N.W. South River Dr., Miami,  
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Stal-Laval, Inc., 400 Executive Blvd., Elmsford, N.Y. 10523

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FMC Corporation, Pump Division, 326 So. Dean Street, Englewood,  
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Hydro-Craft, Inc., 4223 Edgeland, Royal Oak, Mich. 48073  
Jim's Pump Repair Co., 22-09 126 Street, College Point, N.Y. 11356  
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National Metal & Steel Corp., 691 New Dock St., Terminal Island,  
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Bethlehem Steel Corp., Shipbuilding, 25 Broadway, N.Y., N.Y. 10004  
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Carrington Slipways Pty. Ltd., Old Punt Road, Tomago, N.S.W.,  
Australia 2322  
Conrad Industries, P.O. Box 790, Morgan City, La. 70380  
Curacao Drydock Co., Inc., P.O. Box 153, Willemstad, Curacao,  
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Dravo Corporation, One Oliver Plaza, Pittsburgh, Pa. 15222  
Dravo Steelship Corp., P.O. Box 167, Pine Bluff, Ark. 71602  
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Ave., Portland, Oregon 97208  
General Dynamics, Quincy Division, Quincy, Mass. 02169  
Gladfing-Hearn Shipbuilding Corporation, 1 Riverside Avenue,  
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Halter Marine Services, Inc., Route 6, Box 287H, New Orleans,  
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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  
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rang Post Office, Singapore 22, Singapore  
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ku, Tokyo, Japan  
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Sembawang Shipyards (Pte) Ltd., P.O. Box 3, Sembawang, P.O.  
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Sumitomo Heavy Industries Ltd., 2-1 Ohtemachi 2-chome,  
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Terra Shipyards, Societe Provencale des Ateliers Terra, 287,  
Chemin De La Madrague, 13345 Marseille—Cedex 3, France  
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Gulf Mississippi Marine Corp., 225 Baronne St., New Orleans,  
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James Hughes, Inc., 17 Battery Pl., New York, N.Y. 10004  
McAllister Bros., Inc., 17 Battery Pl., New York, N.Y. 10004  
McDonough Marine Service, P.O. Box 26206, New Orleans, La.  
Moran Towing & Transportation Co., Inc., One World Trade Center,  
Suite 5335, New York, N.Y. 10048  
Smit International (Americas) Inc., 17 Battery Place, New York,  
N.Y. 10004  
Suderman & Young Towing Co., Inc., 918 World Trade Building,  
Houston, Texas 77002  
Turecoma Coastal & Harbor Towing Corp., One Edgewater St.,  
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B.V. Bureau Wijsmuller, Postbus 510, IJmuiden, Holland

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Nicolai Joffe Corp., P.O. Box 2445, South San Francisco, CA 94080  
Terry Corporation, P.O. Box 1200, Windsor, CT 06101

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Undersea Systems, 112 W. Main St., Bay Shore, N.Y. 11706

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Streator, Illinois 61364  
Dr. Way Corp., 3822 West Elm Street, Milwaukee, Wisc. 53209

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Marine Moisture Control Co., 449 Sheridan Blvd., Inwood, N.Y. 11696  
Mechanical Marine Co., 900 Fairmount Ave., Elizabeth, N.J. 07027  
Stow Manufacturing Co., 86 Bump Road, Binghamton, N.Y. 13902  
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Waukesha Bearings Corp., P.O. Box 798, Waukesha, WI 53186

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Geomatic Co., Ltd., 7400 132nd St., Surrey, B.C., Canada  
Morley Machinery Co., 79 South Horton St., Seattle, Washington  
98134  
Skagit Corporation, a subsidiary of The Bendix Corporation,  
Sedro-Woolley, Washington 98284

**WINDOWS**  
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Mt. Vernon, N.Y. 10550

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Elkan Electric Cable Co., 248 Third St., Elizabeth, N.J. 07206

**WIRE ROPE—Slings**  
Armco Steel Corp., 703 Curtis St., Middletown, Ohio 45042  
Bethlehem Steel Corp., Bethlehem, Pa. 18016

**WORK PLATFORMS—Self-Propelled**  
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Smith & McCracken, 153 Franklin St., New York, N.Y. 10013

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**NEW WATERTIGHT DOORS**



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

**SIZE**

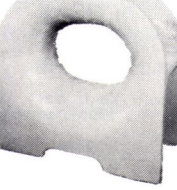
26"x48"      26"x66"  
26"x60"      30"x60"

**EACH DOOR**

**IMMEDIATE DELIVERY**


**NEW 7" RADIUS PANAMA CHOCKS**  
(MEET PANAMA REGULATIONS)

With extended legs for welding to deck. IMMEDIATE DELIVERY FROM STOCK.



**700 HP CARGO PUMP TURBINE AND GEARS**

with oil operated hydraulic governor



**TURBINE:** Mfg by GE-type DP—700 HP—5000 RPM—inlet pressure 560 PSIG—exhaust pressure 2 PSIG—temp. 490°—steam inlet 6"—outlet 10". Pump rotation is clockwise when standing at pump end and facing turbine & gear. Turbine is single stage with 2-row bucket wheel—pressure lubricated bearings—carbon shaft packing. Speed is regulated by oil-relayed governor system. REDUCTION GEAR: 5000 RPM to 1425 RPM output. Typical turbine serial #126910/911. G.E.I. Book 27200B.

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**36" Ships Wheels**

Brass bound on rim with brass hub marked "John Hastie & Co. Ltd—Greenock"



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# HITACHI ZOSEN

## LNG CARRIER REFERENCE

### *Hitachi Zosen puts spherical LNG tanks on new gear support*

Hitachi Zosen has a way of making research and development pay off. Our lengthy experience building LPG carriers proves it. Among these, the 100,000m<sup>3</sup>-tank-capacity **Esso Fuji** is the world's largest.

Now our new gear support for Hitachi Zosen-Chicago Bridge & Iron gear-support type LNG carriers helps to prove it again.

#### **We did it our way**

The spherical LNG tank is designed with external horizontal ring girders in the equatorial section.

Support blocks on the bottom of the girders have a gear configuration, and each is accommodated in a recessed construction on the supporting deck with load bearing insulation blocks in between.

The contact surface of the insulation blocks is smoothly machine finished to support the weight of the tank and cargo horizontally and allow free radial contraction toward the

center of the tank during cooling. While restricting vertically and radially longitudinal and traverse loads from ship motions.

There's no integral structural connection between the tank and the ship's hull, so there's free displacement for thermal contraction or retraction of the tank, no excessive stress in the tank shell and minimum bending moment at the tank equatorial section.

What it all means is the Hitachi Zosen-Chicago Bridge & Iron gear support is simple. Highly efficient. And easy to install.

This is what you want when you build an LNG carrier now or in the future. This is what you get when you come to Hitachi Zosen.

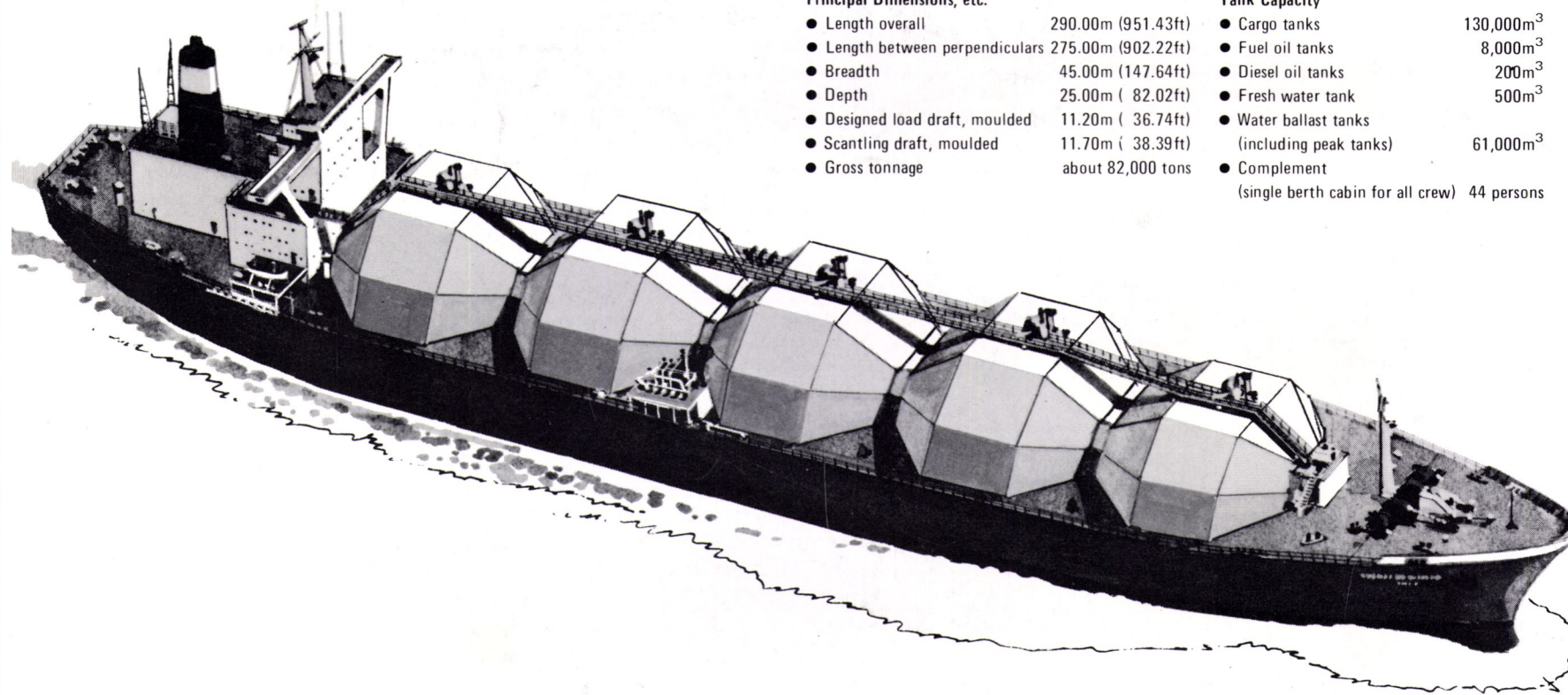
#### **130,000m<sup>3</sup> Type LNG Carrier**

##### **Principal Dimensions, etc.**

● Length overall	290.00m (951.43ft)
● Length between perpendiculars	275.00m (902.22ft)
● Breadth	45.00m (147.64ft)
● Depth	25.00m ( 82.02ft)
● Designed load draft, moulded	11.20m ( 36.74ft)
● Scantling draft, moulded	11.70m ( 38.39ft)
● Gross tonnage	about 82,000 tons

##### **Tank Capacity**

● Cargo tanks	130,000m <sup>3</sup>
● Fuel oil tanks	8,000m <sup>3</sup>
● Diesel oil tanks	200m <sup>3</sup>
● Fresh water tank	500m <sup>3</sup>
● Water ballast tanks (including peak tanks)	61,000m <sup>3</sup>
● Complement (single berth cabin for all crew)	44 persons



**HITACHI ZOSEN:** 1-1-1 Hitotsubashi, Chiyoda-ku, Tokyo 100, Japan Phone: 03-213-6611 Telex: J22363, J24490 **OVERSEAS OFFICES & SUBSIDIARIES:** **Oslo:** Raadhusgaten 4, Oslo 1, Norway Phone: 411275 Telex: 16934 **Greece:** Room 5/6, 5th Floor, No. 33 Akti Miaouli, Piraeus, Greece Phone: 452-7549/9 Telex: 212943 **Hitachi Zosen Company (HK) Ltd.:** Room 408, Tak Shing House, 20 Des Voeux Road, Central, Hong Kong Phone: 5-220597 or 5-246237 Telex: 73648 **Hitachi Zosen Industria Pesada Ltda.:** Rua Mexico 90, 5º Andar, Rio de Janeiro-RJ, Brasil Phone: 221-5979 Telex: 2122904 **AGENTS:** **Hitachi Zosen International, S.A.:** **London:** Winchester House, 77 London Wall, London, England Phone: 01-588-3531/3 Telex: 887873/884009 **New York:** 345 Park Avenue, New York 10022, U.S.A. Phone: 212-355-5650 Telex: 232036 **Houston:** Suite 1450, One Allen Center, 500 Dallas Avenue, Houston, Texas 77002, U.S.A. Phone: 713-658-0136/8 Telex: 775038, 910-881-1191