An aerial photograph of an offshore oil rig and a supply vessel. The rig is a large, complex structure with a tall derrick and multiple decks, situated in the middle of the ocean. A long supply vessel is positioned to the left of the rig, with a long line connecting them. The water is dark and choppy. The sky is overcast.

**MARITIME
REPORTER**
AND
ENGINEERING NEWS

Special Preview Issue
OFFSHORE TECHNOLOGY CONFERENCE '81
plus
NOR-SHIPPING '81-OSLO

Photo Courtesy of Santa Fe International

Thirteenth Annual OTC-Houston

(SEE PAGE 4)

Nor-Shipping '81 - Oslo

(SEE PAGE 4)

APRIL 1, 1981

When the leaning light is to larboard, you're not far from Gulf.



© Gulf Oil Corporation 1981

When a vessel calls at Los Angeles on her maiden voyage, she's given a plaque with the L.A. Harbor Lighthouse etched on it.

The city's official greeter has stood two miles out at the tip of the San Pedro Breakwater since 1913.

And for a good part of that time, it's stood with a slight list shoreward, the result of a brutal five-day storm that settled the stones of the jetty beneath it.

But it still stands firm and fast and mariners rely on its light, foghorn and radio signal.

Los Angeles. Still another port where you'll find premium Gulf marine lubricants like Gulf Veritas Cylolils.

These highly alkaline cylinder lubricants are for use in all low-speed crosshead diesel engines burning residual fuel oils. They're manufactured from highly refined base oils having maximum film strength and high oxidation stability, compounded with oil-soluble additives to provide the alkaline reserve needed to neutralize the acidic

products of combustion and a high level of detergency to ensure maximum component cleanliness.

All of Gulf's marine products give you maximum quality, performance and bottom-line economy. They're available, backed by a complete and comprehensive service capability, at ports of call throughout the world. For specifics, please contact your local Gulf representative.



Gulf Trading and Transportation Company
A Division of Gulf Oil Corporation

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McAllister Feeder Service on the East Coast, is available weekly.

It's dependable and can save you a considerable amount of money.



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It's the here-and-now, affordable, energy source.

Talk to the Department of Energy about the long-range reserves of coal. Then talk to Skinner, the steam engine people. They can turn you on—to cogeneration, marine propulsion, equipment drive, and “free” steam to perform other energy-saving, money-saving jobs. On ship and on shore.

Skinner started building steam engines 112 years ago, and never really stopped. They just put one in for Lord Corporation in Erie, PA, that will generate enough electricity and low pressure steam to pay for the equipment in three years.

When coal was the fuel for marine vessels, steam engines by Skinner were first in performance and first in preference. Now that owners are considering a return to available, affordable coal, Skinner know-how is only a phone call away. Ask Dick Whiting how coal power fits in your future.



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**MARITIME
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AND
ENGINEERING NEWS

(USPS 016-750)

No. 7

Volume 43

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

ESTABLISHED 1939

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

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

ALL MATERIAL FOR EDITORIAL CONSIDERATION SHOULD BE ADDRESSED TO ROBERT WARE, EDITOR

ON THE COVER

Preview—13th Annual Offshore Technology Conference

Astrodomain Complex
Houston, Texas

Page 47

Preview—Nor-Shipping '81

Sjolyst Exhibition Centre
Oslo, Norway

Page 20

Additions To Tidewater Fleet Valued At More Than \$50 Million

Tidewater Inc. has announced that its marine subsidiary, Tidewater Marine Service, Inc., is supplementing its global offshore oil and gas support fleet by 20 vessels having an aggregate cost of approximately \$50.6 million.

Fourteen vessels costing about \$31 million have recently been acquired as a supplement to the 1981 fiscal year capital spending program that ended on March 31, 1981. Included in the fiscal year 1981 additions are four towing/supply vessels (two of which are leased with an option to buy), three supply vessels, one crewboat, two anchor handling tugs, three oceangoing tugs (which are leased with options to buy), and one construction barge. In addition, six vessels costing about \$19.5 million have recently been committed to construction. Two are towing/supply vessels, two supply vessels, one geophysical vessel, and one fuel barge.

Tidewater's fiscal year capital spending program for marine equipment originally called for the delivery of 20 new vessels at a total contract price of \$31.4 million by March 31, 1981. Eighteen of the 20 vessels have been delivered and the remaining two, inland tugs, are expected to be delivered soon. The new acquisitions and construction commitments, when combined with the original fiscal 1981 program, aggregate a total capital expenditure of about \$82 million.

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Compare these data for 600' coils of 8" rope:

SQUARE BRAID OR 3-STRAND	WEIGHT	MINIMUM TENSILE STRENGTH
POLYPROPYLENE	720 lbs.	81,000 lbs.
PNX	798 lbs.	81,000 lbs.
SSR-300	768 lbs.	98,000 lbs.

PNX costs 50% more than polypro, SSR-300 62½% more but you can expect to receive enough extra service from these blended ropes to make them economical in spite of their higher initial cost.

WHY? Because sun is one of the greatest enemies of polypropylene while our blended ropes are of ultraviolet resistant construction. Blends contain Dacron, nylon and in some cases black polypropylene on the surface, plus an application of RESISTEX, a patented compound developed in our laboratory to increase resistance to wear and abuse. American developed blends to increase heat resistance*, to reduce friction and thereby reduce the possibility of a rope sticking to a bitt or capstan.

SSR-300 is better than most blended ropes because it has surface yarns of 100% DuPont type 77 Dacron, as opposed to a very thin veneer of Dacron in some other blends. Additionally, SSR-300 is very pliable and has a pre-fuzzed surface which gives it a good hand and better wearing properties.

WANT US TO PROVE OUR CASE?

We can guarantee that a blended rope is as economical as any polypropylene rope for most operations. **Contact American for an unusual offer.**

*The melting point of Dacron is 482°F, of nylon 480°F and polypropylene 330°F.

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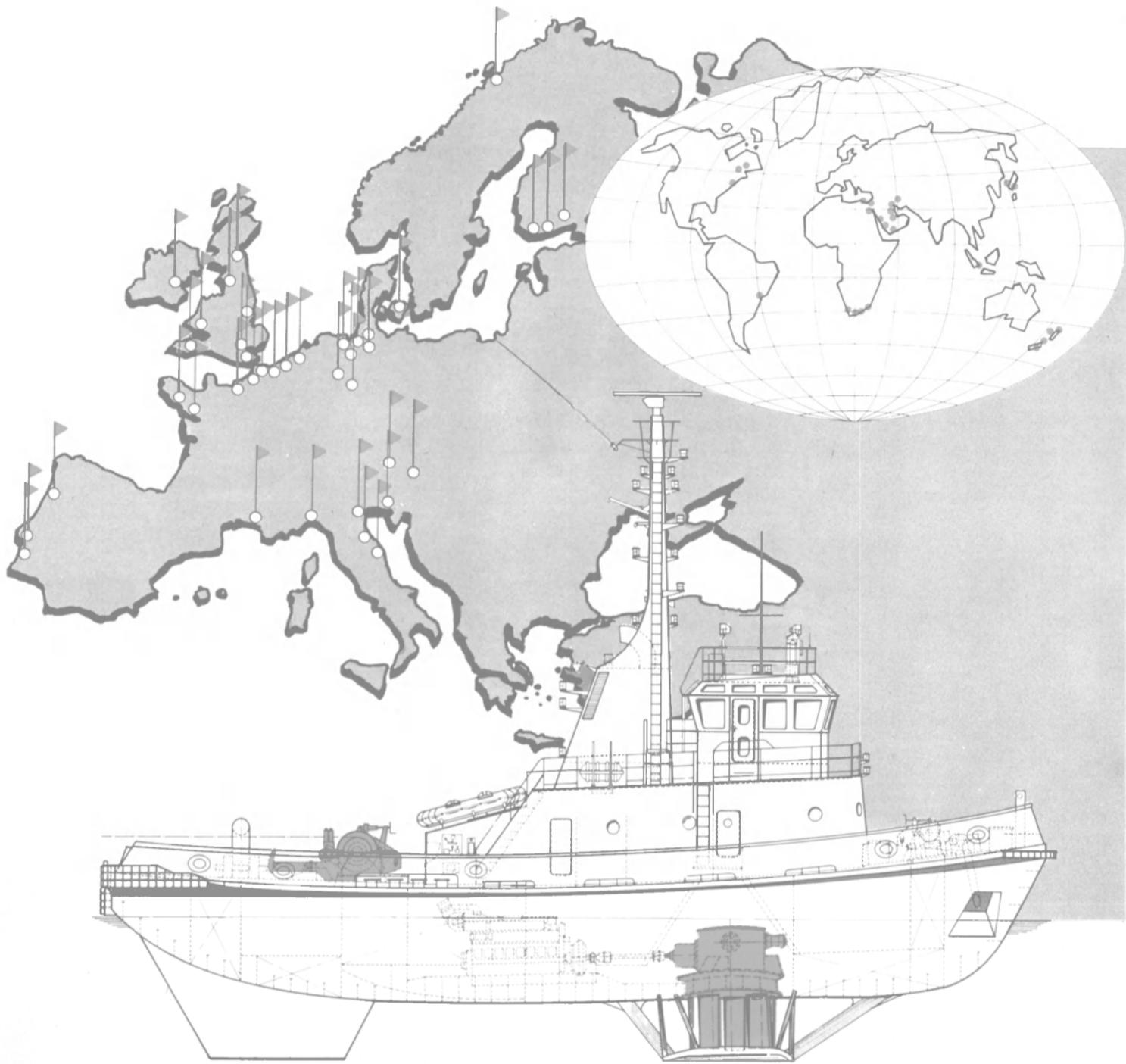
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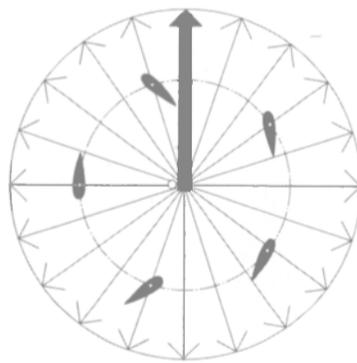




Voith Water Tractors Technical Revolution in Ship Handling

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fore and towing gear aft.

This conception has proved a
worldwide success in many years
of operation. Today, hundreds of
Voith Water Tractors are a
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Donald Caldera Named Senior VP-Marketing For Midland Affiliated



Donald L. Caldera

Eastern Gas and Fuel Associates, Boston, has named **Donald L. Caldera** to the new post of senior vice president, marketing of its Cincinnati-based marine subsidiary, Midland Affiliated Company. Midland, one of the nation's largest barging operation on the inland and coastal waterways, with shipbuilding, terminalling, and harbor towing affiliates, had 1980 revenues of \$211 million.

Formerly executive vice president of Interocean Management Corporation, Philadelphia, Mr. Caldera has held other executive positions in the marine and land transportation industry in operations, administration, and finance. He is a graduate of Yale Law School, and also earned a bachelor of science degree from Webb Institute of Naval Architecture. He is a member of the American and New York Bar Associations, The Society of Naval Architects and Marine Engineers, and the Society of Maritime Arbitrators.

Eastern Gas and Fuel Associates is a diversified energy company with operations in bituminous coal production, natural gas distribution, barge transportation, and oil and gas exploration.

Corrosion-Inhibiting Coating Brochure Offered By A.W. Chesterton

Chesterton Rust Transformer, a product of the A.W. Chesterton Company's Industrial and Marine Maintenance Division, changes iron oxide (rust) into a corrosion-inhibiting coating. The product eliminates the need for special equipment to sandblast or acid-treat metal for painting.

Rust Transformer provides a protective film against flash rusting. It is applied by (1) brushing or washing loose scale, flaking, paint, dirt or oils from a rusted surface; (2) brushing, rolling or spraying the Rust Transformer over the remaining rust on the surface; and (3) hosing down the excess Rust Transformer a day later, when the rust has turned blue-black.

What had been a rusted surface has become a protective molecular film that inhibits further

rusting. It can be coated with a primer immediately. The product has been used successfully in marine applications on seagoing shipping.

Rust Transformer is sold in 3.8-liter (one gallon) plastic bottles, 20-liter (5.3 gallons) plastic pails and 208-liter (55 gallons) drums.

For further information and free brochure,

Write 56 on Reader Service Card

Breland Named Manager Of Gulf Fleet's Gulf Coast Towing Division

Gulf Fleet Marine Corporation, headquartered in New Orleans, has named **B.B. Breland** manager of the company's Gulf Coast Towing Division. He will assume management responsibilities for both tug and barge operations in the Gulf of Mexico.

Mr. Breland has experience in both sales and operations in the petroleum industry, and most recently served as manager of Gulf Fleet's Gulf Coast Supply Boat Division.

Gulf Fleet Marine, one of the Houston Natural Gas group of companies, operates more than 100 vessels in support of the offshore petroleum and offshore construction industry.

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When the others can't get there, the Jetfoil can. Fast. It can take the whole crew and necessary equipment. It adapts easily to existing transfer systems. And with the Relative Motion System

we're developing, transfers will be even easier in rough weather. Write Boeing Marine Systems, P.O. Box 3707, Seattle, WA 98124.

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The savings we delivered 4 years ago are FOUR TIMES GREATER today!

At today's high fuel costs these savings can be up to \$1,000,000 per vessel,** making SCAMP® hull cleanings an essential part of your profit program.

If your vessel has been in service six months or more contact us immediately.

This ad appeared in major marine publications in 1976.

fuel savings up to \$228,000* demonstrated as a result of regular hull cleanings with **SCAMP** underwater hull cleaning services

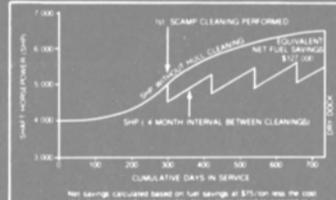


An Exxon Corporation study determined actual cash savings from regular hull cleanings with SCAMP® equipment.

** NET FUEL SAVINGS ATTAINABLE 24 MONTH DRY DOCK CYCLE			
At Constant	21 MDWT	50 MDWT	250 MDWT
Speed of	Diesel	Steam	Steam
11 Knots	\$31,000	\$127,000	\$144,000
12 Knots	\$33,000	\$141,000	\$161,000
13 Knots	\$35,000	\$157,000	\$188,000
14 Knots	\$38,000	\$185,000	\$228,000

The net savings represent total fuel savings from regular hull cleanings and delay costs based on a 16 hour cleaning period. For example, for a VLCC, the savings amounted to 6 tons of fuel per day or \$36,000 per round trip.

The following chart illustrates typical fuel savings of a 50 MDWT vessel operating at a reduced speed of 11 knots as an example.



Increase of shaft horsepower and fuel consumption become necessary to hold speed at 11 knots due to loss of hull and propulsion plant efficiency as time elapses. Since regular hull cleaning takes place after each cleaning maximum net savings are realized from a regular SCAMP hull cleaning program. In the preceding example, net savings (fuel savings less SCAMP hull cleaning costs) were \$127,000.

Optimum cleaning programs are every round trip for long-haul VLCC's and every four months for smaller vessels commencing at the onset of fouling, about 10 to 12 months after dry dock.

A SCAMP hull cleaning program returns fuel savings many times greater than the cost of the cleanings even when operating at reduced speeds.

Since its introduction, over 1600 vessels have been cleaned by SCAMP units. Many ship operators bank on it.

* Source: Exxon Corporation study of various vessel sizes.
A limited number of copies of this Exxon Corporation study are available. Please write on your company letterhead to Donald Power, Sales Manager - Marketing, Butterworth Systems Inc., P.O. Box 8, Dept. LL, Bayonne, N.J. 07002 (USA).



Workboat arrives and the SCAMP unit is lowered into water.



SCAMP unit "swims" to hull.



Working deep.

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VISIT US AT THE 3rd INTERNATIONAL SHIP REPAIR & MAINTENANCE EXHIBITION
& CONFERENCE, NEW ORLEANS MARIOTT HOTEL, BOOTH 32, APRIL 13-15 1981.

William Bolte Named Manager Of Hannah's Transportation Division



William R. Bolte

Hannah Marine Corporation recently announced the appointment of **William R. Bolte** as manager of Hannah's Transportation Division. Mr. Bolte has been in the marine business for 20 years, having started in the accounting department of A.L. Mechling Barge Lines in 1961. He moved to the dispatch department in 1963, and came to Hannah as a dispatcher in 1974. At Hannah he was promoted to chief dispatcher in 1975 and traffic manager in 1977. He is presently serving as co-president of the Illinois River Association.

MarAd Study Details 'Multiplier Effect' Of U.S.-Flag Merchant Fleet

An updated, input-output, economic analysis of America's maritime industries just released by the Commerce Department's Maritime Administration indicates that each dollar in sales by the U.S. merchant marine adds another \$3.81 to the national economy. The study, "Economic Impact of the Maritime Industries on the U.S. Economy 1971-78 (An Interindustry Analysis)," was prepared by **H.C. Chung**, professor of economics at the University of Bridgeport, Bridgeport, Conn. It reports that the chain of purchases begun by the maritime activities of the U.S.-flag merchant fleet has a cumulative "multiplier effect" of 4.811 throughout the economy. This means that each dollar in merchant fleet sales ultimately generates a total of \$4.81 in sales and other business activity.

It should be noted that the dollar amounts used in the study were expressed in terms of 1972 dollars. In 1979 dollars (adjusted for inflation) the figures would be 50 percent higher.

Applying the 4.811 multiplier to the U.S. shipping industry, Professor Chung found that the \$1.5 billion in merchant fleet sales reported in 1972 induced nearly \$7.5 billion worth of business activity in the nation's economy. Similar multiplier effects increased the American shipping industry's contribution to the Gross National Product of the same year to \$3.5 billion.

The multiplier for the Ameri-

can shipbuilding industry in 1972 was 4.701, thus the \$2.8 billion government and business invested in shipbuilding services in 1972 had a \$13.3 billion impact on the entire economy.

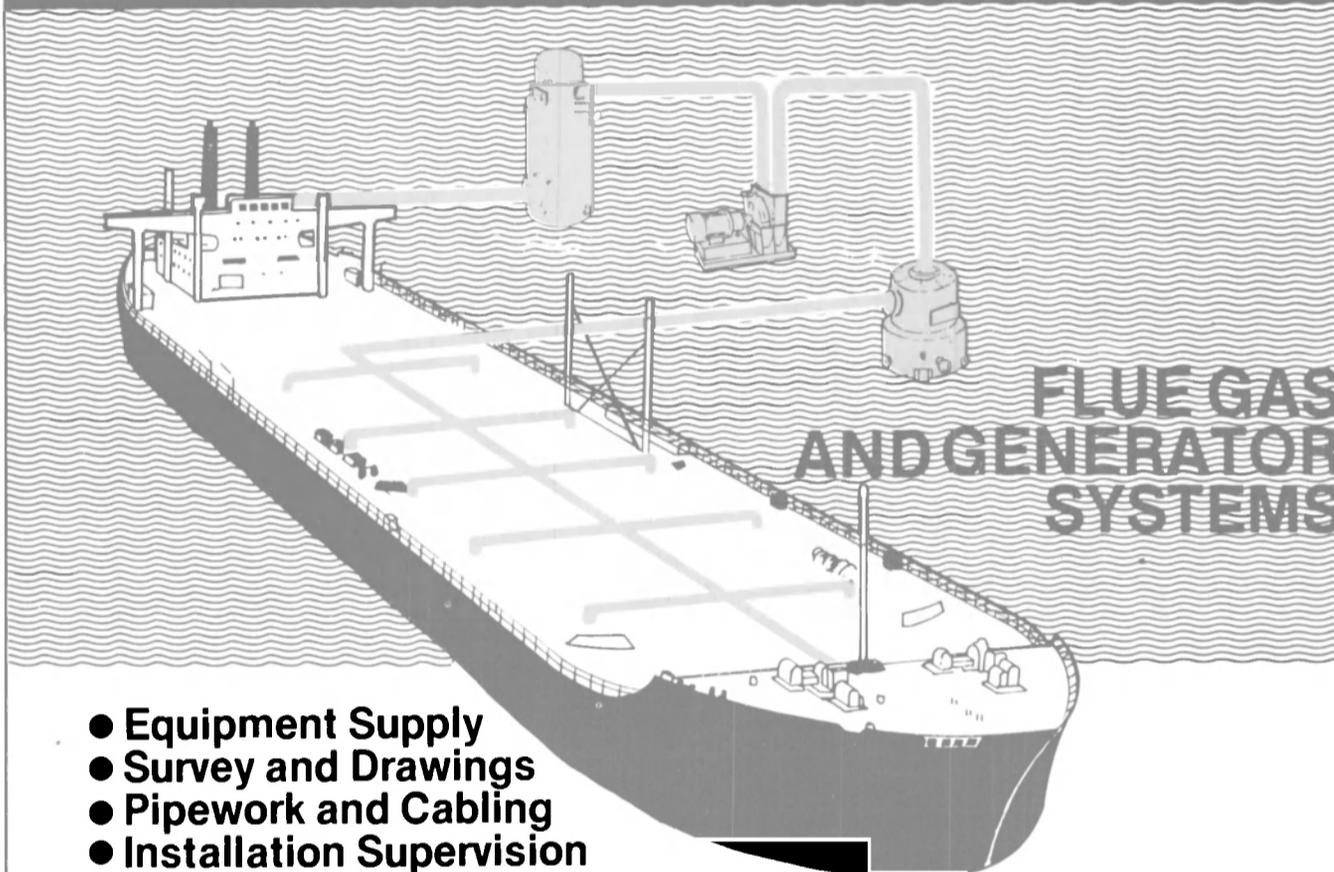
Limited copies of the report are available through MarAd's Public Affairs Office, Room 3895, Main Commerce Building, 14th & E Streets, N.W., Washington, D.C. 20230; telephone (202) 377-2746.

Title XI Asked For Bulk Carrier Conversion To Cost \$8 Million

Allied Barge, Inc., a subsidiary of Allied Towing Corporation, Norfolk, Va., has applied to the Maritime Administration for a Title XI guarantee to aid in financing the reconstruction of the bulk carrier *Seadrift* into a multiple product liquid and dry-bulk carrier.

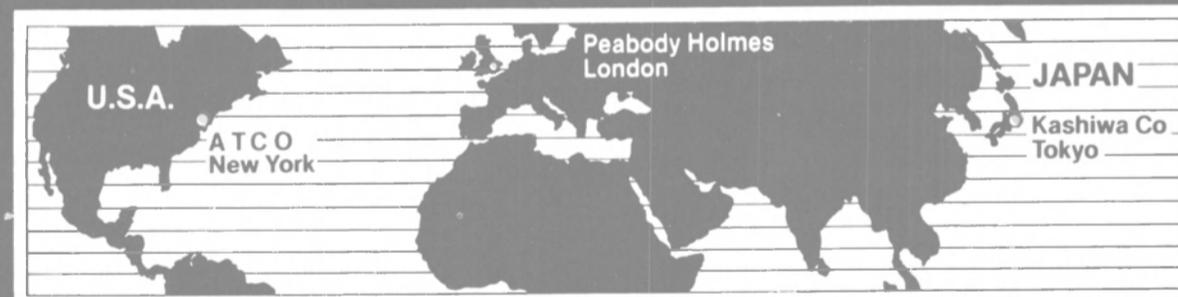
Allied Repair Service, Inc., Norfolk, has been proposed to perform the reconstruction work on the 523-foot-long, diesel-powered vessel, with delivery set for March 1981. The applicant plans to use the vessel along the East and Gulf Coasts of the United States. The estimated cost of the work is \$8 million. The requested guarantee is for 87½ percent of that amount, or \$7 million.

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Peabody Holmes

**New Scanning Pyrometer
For Diesel Temperatures**
—Literature Available

National Marine Service has introduced a scanning pyrometer, which is a basic tool to help the operating engineer maintain full power and fuel economy while minimizing downtime by scanning

diesel engine cylinder temperatures automatically. This scanning pyrometer can be used for single- or twin-engine installations, and can display up to 40 individual zone temperatures. Zone enable/disable selection allows continuous use of the system even when one thermocouple has failed. Isolated alarm outputs

are available for high temperature and temperature deviation. On-site programming of zones enabled, alarm limits, thermocouple type, scan time, second engine scan, and degrees centigrade or Fahrenheit is standard. Simple 2-wire, party line remote displays are optional. The National Marine automatic scanning pyrometer meets the reduced engine

room manning regulatory body requirements for diesel cylinder temperature monitoring.

For more information,

Write 44 on Reader Service Card

**Pisani Named Head Of
MarAd's Port And
Intermodal Office**

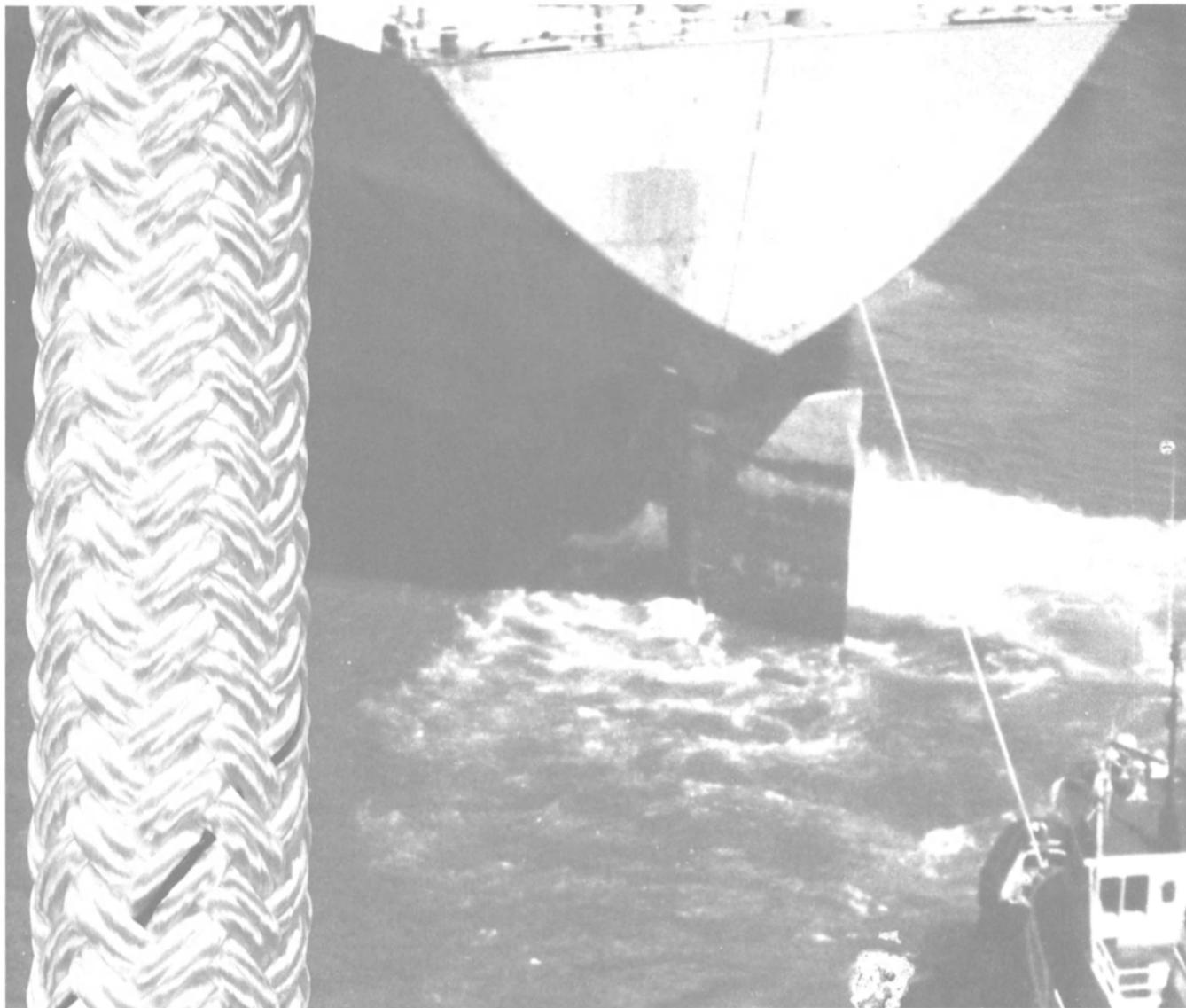
The appointment of **John M. Pisani** as director, Office of Port and Intermodal Development at the Maritime Administration (MarAd), was announced by **Samuel B. Nemirow**, Assistant Secretary of Commerce for Maritime Affairs. An employee of MarAd for 12 years, Mr. Pisani most recently was manager of the agency's port planning program. His responsibilities included coordinating research projects and technical assistance in port impact analyses and productivity, port planning studies, port finance, port promotion publications, emergency planning, data development, and intergovernmental programs.

In his new position, Mr. Pisani will provide technical guidance and leadership in promoting the development of improved port facilities and intermodal transport operations. He replaces **Armour S. Armstrong**, who has retired. Before joining MarAd, Mr. Pisani worked for three years for a New York international freight forwarder and customhouse broker. As an officer in the U.S. Army Transportation Corps, he directed marine terminal operations at several ports in South Vietnam.

**Delta Line Appoints
World Shipping As
Midwest Agents**

Delta Steamship Lines, Inc. announces the appointment of World Shipping, Inc. as its agents for the Midwestern territory, based in Chicago. World Shipping will assume the Chicago area office location held formerly by Delta Line at 3001 Butterfield Road in Oakbrook, Ill., and the current telephone and telex numbers will continue in effect. They are, respectively, (312) 789-0700 and 25-3213.

The World Shipping office will be under the direction of **Steven D. Hossa**, vice president, who will undertake sales and marketing responsibilities on behalf of Delta Line in the states of Illinois, Wisconsin, Minnesota, North and South Dakota, Iowa, and Missouri. **Irvin Bedrava**, formerly Delta's Chicago office manager, has been retained by Delta as its senior sales executive for the region, and will continue at the Oakbrook address reporting directly to Delta's senior management in New Orleans.



**Stronger, tougher
headlines with Samson
Duron II Fiber Ropes**

Samson Stable Braid is the strongest low-stretch rope you can use. Duron II fibers also make it the toughest—maximum resistance to abrasion, especially under wet and dry conditions.

Check all the advantages:

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- Stays flexible, even after prolonged use.
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- Low elongation for better control.
- Higher working loads.
- Conforms to NATO Specification 4020 Supp. 1972.

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Built to Serve World Trade

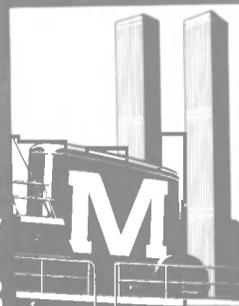


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with powerful and efficient tugs,
and a century of experience.

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"The Best in the Business"

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**Rio Marine Asks Title XI
On Eight Tank Barges
To Cost \$4.8 Million**

Rio Marine, Inc., Houston, has applied to the Maritime Administration for a Title XI guarantee to aid in financing the construction of eight 200-foot-long, double-skinned chemical tank barges.

Each is to have a capacity of 10,000 barrels and will be operated on inland rivers and the intracoastal waters of the U.S. Gulf area.

Platzer Shipyard of Houston is building the vessels, with the first to be delivered July 1 and the others at one-month intervals thereafter. The estimated cost of the barges has been set at \$4,

860,519, with the requested guarantee for 87½ percent of that amount, or \$4,200,000.

**Marine Industries Corp.
Will Market NABRICO
Products In St. Louis**

Marine Industries Corporation has opened an office in St. Louis making Nashville Bridge Compa-

ny (NABRICO) products readily available in that area for the first time in several years. Located at 1544 Autumn Leaf Drive in Manchester, Mo., the office will be headed by Lonnie Jacobs, according to Byron T. Bailey, president of Marine Industries. The telephone number for the new office is (318) 225-6507.

With the opening of the new office, the company now serves the Upper Mississippi River area as well as the Ohio Valley area. Marine Industries Corporation, founded in 1978, is headquartered in Clarksville, Ind. The company has been a stocking distributor for NABRICO for approximately two years, handling winches, hatches, and all other standard deck fittings sold by Nashville Bridge Company.

NABRICO is a wholly owned subsidiary of The American Ship Building Company, Tampa, Fla. Headquartered in Nashville, Tenn., NABRICO has been in the marine field for more than 60 years and is primarily concerned with the design, engineering, and construction of barges, drydocks, and towboats. The company is a major supplier of marine deck hardware to the entire marine industry. NABRICO, which has plants in Nashville and Ashland City, Tenn., pioneered in the design and building of much of the modern equipment used on rivers today.

**American Aero To Build
New Facility That Will
Double Current Capacity**

American Aero, Inc., a subsidiary of Weatherford International, will more than double its current production capacity by building a new manufacturing plant, warehouse, and office complex in northwest Houston. The AAI plant proposal, more than a year in the planning stages, was approved by Weatherford's board of directors at its last meeting.

Although a site for the new plant has not been announced, company officials are considering several northwest Houston locations, all within 10 miles of the existing plant at 10950 Old Katy Road. AAI's operations currently occupy seven acres of land in five separate locations, but the new plant will put all of the company's Houston activities under one roof. The planned facility will most likely be constructed on a 25-acre tract.

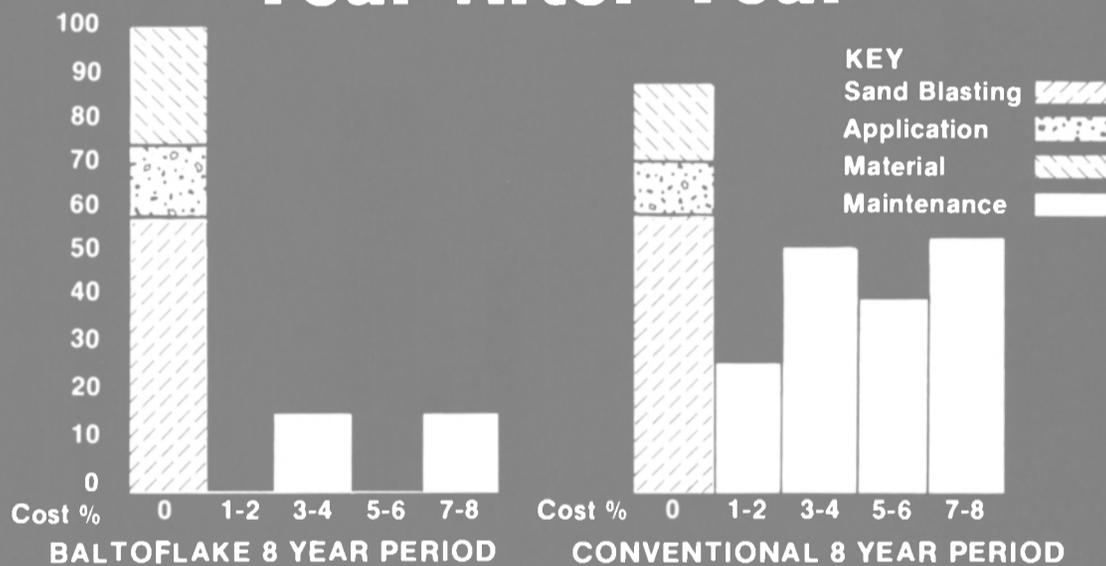
American Aero manufactures and markets hydraulic pedestal cranes and high-pressure water blasters. The company's cranes are approved for use aboard any marine vessel, but their compact design has proved particularly attractive to the offshore drilling industry. AAI's water blasters are used in a variety of industrial cleaning applications.

For more information,
Write 58 on Reader Service Card

**CUT MAINTENANCE COSTS
20% PER YEAR**

INVEST IN BALTOFLAKE

**Stop Spending Money
On Conventional Coatings
Year After Year**



BALTOFLAKE does cut maintenance costs. The money saving and time saving is shown on the chart.

Note: There is no allowance for inflation or return on investment. The example is based on user experience. application cost is based on labor price per gallon/liter.

BALTOFLAKE is the result of a technological breakthrough. Its ultra highbuild one-coat (60 mils) protection is formulated of a glassflake reinforced peroxide catalysed polyester. BALTOFLAKE was created to withstand heavy abrasion, to prevent corrosion and undercutting before it starts. It is highly resistant to chemicals, too.

Beat abrasion and you stop corrosion.

For more information on BALTOFLAKE contact:



JOTUN B.C.P. MARINE COATINGS

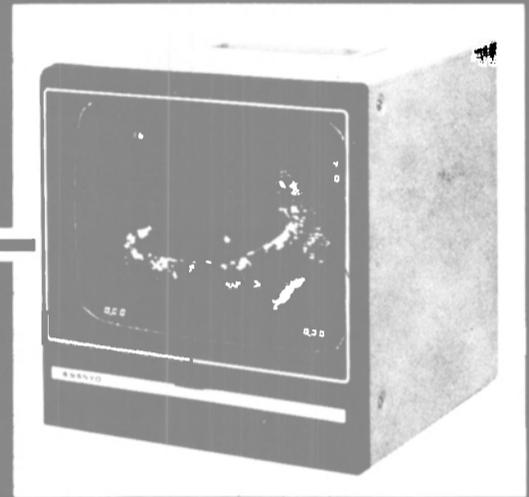
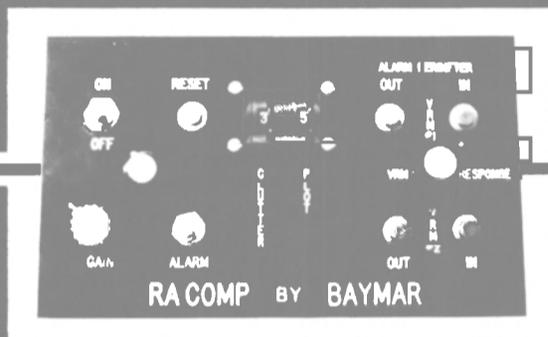
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Naikai Zosen Delivers Versatile Cargo Ship For Philippines

The Galleon Agate (shown above), a 19,102-dwt cargoliner built for Galleon Shipping Corporation, Philippines, was delivered recently by the Setoda Shipyard of Naikai Zosen, an affiliate of Hitachi Zosen. She is the second of three ships of the same type ordered by Galleon from Hitachi. The first, Galleon Diamond, was constructed at the Hiroshima Works (Innoshima) of Hitachi; the third ship also will be built there.

The Galleon Agate is designed to carry general cargo, containers, lumber, and bulk cargoes between Philippine ports and North America. She will also be used to transport tobacco, coconut products, and hemp; for this purpose, all cargo holds are fitted with dehumidifiers. The ship is equipped

with three 16-ton cranes for handling general cargo, and one 50-ton, twin-type deck crane for heavy lifts such as construction machinery. Cargo hold capacity is 28,727 cubic meters.

Her main engine is the newly developed, long-stroke Hitachi/B&W diesel with constant-pressure turbocharging, type 6L67-GFC, which has a maximum continuous rating of 11,200 bhp at 119 rpm. Trial speed was 19.618 knots.

Classed by the American Bureau of Shipping, the Galleon Agate has a length between perpendiculars of 152.00 meters, beam of 23.10 meters, depth of 14.10 meters, and full-load design draft of 9.90 meters (498.68 by 75.79 by 46.26 by 32.48 feet).

Chesapeake Shipbuilding Constructing Third Vessel For American Cruise Lines

Officials of Chesapeake Shipbuilding, Inc., Haddam, Conn., announced that construction has begun on a new coastal cruise ship for American Cruise Lines. The ship, which is to be named America, will be the largest inland coastal cruise ship in the country, and is expected to be completed in the spring of 1982.

The America is being built at the Chesapeake Shipbuilding construction yard in Salisbury, Md. She will be powered by Caterpillar diesels for both the main propulsion engines and generators. The ship's bridge will be equipped with the latest safety and communication devices including radars, sonars, radios, telecommunications, and Loran navigation systems. All machinery is located below the main deck in acoustically isolated spaces employing the latest innovations in soundproofing in order to provide the quietest and most vibration-free operation.

Similar in appearance to its sister ship the Independence, the America will have 43 double, five single, and three triple staterooms. All of the cabins are outside and above the main deck, each with its own facilities and a large, opening picture window. The glass-enclosed Nantucket lounge located on the second deck will give the passengers a panoramic view of the ever-changing scenery, and access to the forward sun deck at the bow of the ship.

ward sun deck at the bow of the ship.

The America's operation and schedules will be similar to those of the Independence and American Eagle, both of which are owned and operated by American Cruise Lines. The itineraries, yet to be scheduled, will be of 7, 10, and 14-day cruises and will include the New England Islands, the Chesapeake Bay, and the inland waterways of the East Coast.

Watts Named President And Chief Operating Officer Of Solus Ocean Systems



David H. Watts

David H. Watts, formerly executive vice president of the company's Americas Region, has been elected to the position of president and chief operating officer of Solus Ocean Systems, Inc., Houston. He joined the company in 1965, participating as a research diver in the company's 650-foot diving program. He became general manager for the Australian operation in 1969; in 1973, on his return to the U.S., manager of diving divisions; in 1975, vice president-operations; and in 1979, following the Ocean Systems/Solus Schall merger, executive vice president, Americas Region.

Solus Ocean Systems is an international offshore service company providing diving, underwater submersible inspection, non-destructive testing, and contract engineering services to the petroleum industry. The company is a wholly owned subsidiary of ENSERCH Corporation, a diversified energy company based in Dallas.

New Brochure Available From Hydro Products

Hydro Products, Inc. has published a 1981 product catalog detailing the company's line of offshore and radiation-tolerant television and lighting systems, oceanographic instruments, and remote controlled vehicles. A unique feature of the catalog is the inclusion of technical selection guides, explaining factors for users to consider in choosing the best equipment to fulfill specific job requirements.

For a free copy of the new catalog,

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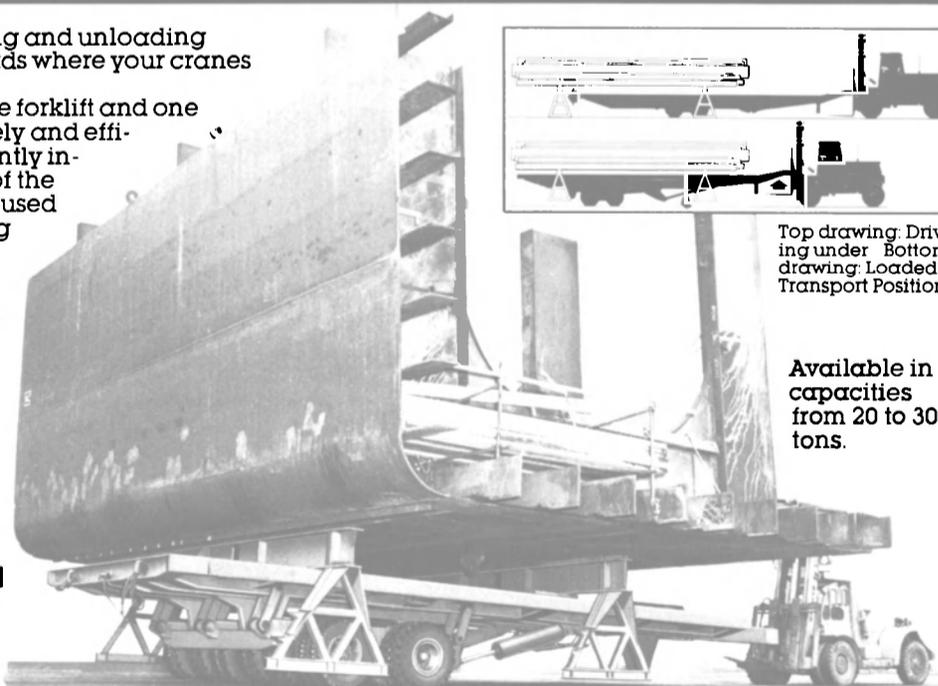
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Consortium To Offer New Container Service Between Canada And Europe

Three major shipowners — Canadian Pacific, Compagnie Maritime Belge S.A., and the C.Y. Tung Group's interests including Furness Withy — have announced that CP Ships, Dart, and Manchester Liners have agreed to coordinate on an equal basis the container services they now operate between Canada, the U.K. and Continental Europe.

The new coordinated service will employ four cellular container vessels, each of about 1,500-TEU capacity and will use Montreal's Racine Terminal as its Canadian handling facility. The ships will be the largest cellular container vessels to call regularly at the Port of Montreal. There will be several ports of call in Continental Europe and the United Kingdom.

CP Ships, Dart, and Manchester Liners will each own and operate one vessel, with the fourth to be provided jointly. As part of the arrangement, CP Ships will acquire the 1,500-TEU vessel Dart Atlantic. Each of the lines will continue to market under its own name and will be responsible for the handling of the traffic it generates. The capacity of each vessel will be shared by the lines to take full advantage of the economies of the large ships.

"This new arrangement will enable us to provide a more competitive and cost-effective Western Europe-Canada container service," said a spokesman for the lines. The coordinated service is expected to be fully operational by late summer of 1981. CP Ships and Manchester Liners currently provide a weekly container service to and from the Port of Montreal.

The existing Dart container service operating between Europe and the Port of Hali-

fax will be discontinued. Dart's new service to the Port of Montreal will be provided by Dart Canada, a new company established for this purpose.

Richard Caesar Named Marketing Vice President For Gleason Reel

Richard J. Caesar has been named to the new position of vice president, marketing, for Gleason Reel Corporation, P. Richard Schumann, Gleason's vice president and general manager, has announced. Mr. Caesar joined Gleason in May 1980 as Eastern regional sales manager. He came from Instruments Systems Corporation, Chicago, where he was national sales manager for the Markstone Division.

Gleason, a division of Maysteel Corporation, is a major manufacturer of cable/hose carriers, as well as spring and electric motor-driven cable and hose reels for diverse industries.

District Engineer James Ton Gets Philadelphia SAME Award

Col. James G. Ton, past president of the Philadelphia Post of the Society of American Military Engineers (SAME), received the SAME Board of Directors Service Award from Brig. Gen. William T. Meredith, USAF (ret.), regional vice president and a national director of SAME, and Dr. August Pistilli, current president of the Philadelphia Post of SAME, a professional engineering society comprised of military and civilian engineers who are dedicated to the defense of the United States.



Col. James G. Ton (center) receives the Society of American Military Engineers (SAME) Board of Directors Service Award from Brig. Gen. William T. Meredith, SAME regional vice president, and Dr. August D. Pistilli, president of the Philadelphia Post of SAME.

In receiving the award, Colonel Ton was praised for his efforts in revitalizing the Philadelphia Post of SAME, for his ability in establishing effective communication with regional headquarters, and for his accomplishments in developing the awareness of the American public to the military posture of the nation. He is the District Engineer for the Army Corps of Engineers, responsible for federal/civil works projects in portions of New York, Pennsylvania, New Jersey, Maryland, and Delaware.

Dr. Pistilli is president of the American Dredging Company with headquarters in Camden, N.J. He is a veteran of both World War II and Korean War, and he served as a special consultant to the Defense Department in Vietnam during the TET offensive. General Meredith is vice president of Parsons, Brinckerhoff, Quade, & Douglas, Inc. He has been the project manager for construction management of the \$260-million-dollar commuter rail connection in Center City, Philadelphia.

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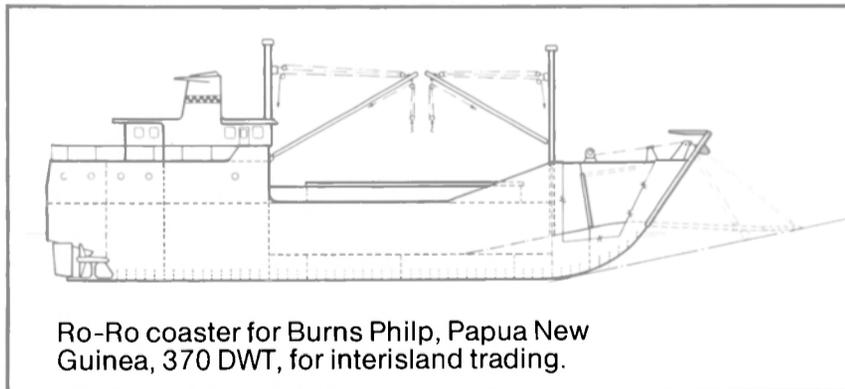
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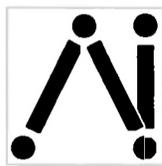
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**New Tube-Cleaning Unit
Announced By Goodway
—Literature Available**

With the high cost of energy it has become more important than ever to clean tubes in condensers and heat exchangers on a regular schedule. Goodway Tools Corporation has developed the Ream-

A-Matic machine featuring an electric motor that turns a flexible shaft inside a nylon casing and ejects a water jet at the cleaning tool. This keeps the cutting tool or brush clean at all times and flushes out loosened deposits. The flexible shaft incorporates a quick disconnect coupling and can be supplied in various sizes to clean tubes from 5/16

to 1 inch in diameter and up to 100 feet long.

Goodway's new Model RAM-3 detaches from the dolly and has a handle for carrying into tight areas. The motor is turned on and off by a footswitch, and a solenoid valve is activated to provide automatic water feed. The self-contained Ream-A-Matic requires no special skills, and can

be handled easily by one man, cleaning from one end only with a minimum of space needed.

For additional information and free literature on the Model RAM-3,

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**Northern Radio Announces
New Line Of SSB Units
—Literature Available**

Northern Radio Company has recently introduced a new fully synthesized, moderately priced line of quality SSB/HF radios. Designated the N830 and the N835, these radios provide the user with 1.6-9 MHz and 1.6-18 MHz frequency ranges, respectively. Providing 150 watts of power (100 watts optional), advanced automatic squelch, speech processing, and 24-channel frequency selection, these units possess an unusual array of features in a one-half cubic foot package.

For additional information and a free brochure,

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**William Turner Named
Vice President For
Ryan-Walsh Stevedoring**

William J. Turner Jr. has been named by Ryan-Walsh Stevedoring Company, Inc. as vice president and managing director for its recently leased bulk terminal in New Orleans. He has extensive bulk handling experience reaching back several decades. Since 1977, he has been managing director of Ormet Corporation's Burnside Bulk Terminal, located approximately half-way between New Orleans and Baton Rouge.

In 1951, he joined the Port of Stockton (Calif.) as manager of freight warehouse and operations. In 1974, he was appointed port director, guiding a staff and port activities of various commercial and industrial facilities serving shipping-related businesses.

Mr. Turner's first responsibilities will be initial reactivation of the New Orleans Bulk Terminal, which has been inactive since previous contract management expired in September 1980. He will be working under the direction of Robert R. Barkerding Sr., senior vice president of Ryan-Walsh in New Orleans, and John L. McCarron Jr., executive vice president of Ryan-Walsh at its corporate offices in Mobile, Ala.

Ryan-Walsh plans to handle various bulk commodities compatible with the systems at the bulk terminal, which it is committed to improve and modernize with emphasis on coal and ores. The company expects to handle between 1.5 and 2 million tons during the first of the five years of the present contract, with tonnage rising to the 3.5 to 4-million ton range by the fifth year.

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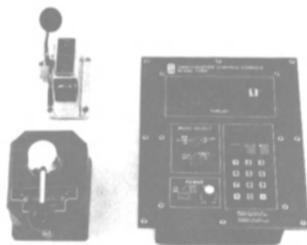
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Marepcon Named Exclusive U.S. Agent For Gotaverken Cityvarvet Of Sweden



Frederick A. Ganter

Gotaverken Cityvarvet AB, Gothenburg, Sweden, has announced the appointment of Marepcon Corporation International as its sole agent in the United States. **Frederick A. Ganter**, vice president of Marepcon, describes Cityvarvet as an exceptionally well equipped and manned repair facility located in an area convenient for vessels trading in North Europe. For additional information contact Mr. **Ganter** at Marepcon Corporation International, 65 Broadway, New York, N.Y. 10006; telephone (212) 269-3170, telex 129247, or

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Kitamura Named Marine Sales Manager For Kubota America Corporation



Hirohisa Kitamura

Hirohisa Kitamura has been named a sales manager for marine products for Kubota America Corporation, New York, a wholly owned subsidiary of Kubota, Ltd. of Japan. He had been assistant chief, castings and industrial, Machinery Export Department, for Kubota in Tokyo.

Hiroshi Ito, president, Kubota America, said the company is expanding its sales force as a result of increasing business from Kubota's KCP line of cargo oil pipe. Mr. **Kitamura** will assist **Y. Seo**, Kubota America's vice president for marketing.

The KCP series has been installed in more than 500 Japanese-built tankers over the past 20 years and, since 1975, Kubota has also been marketing the product worldwide as a replacement for conventional pipe.

New Cummins Brochure Describes K Series Of Marine Diesel Engines

Cummins Engine Company offers a 12-page, four-color catalog containing specifications, design features, and marine applications for the company's latest K series diesels. Five models are available,

with marine continuous ratings ranging from 365 to 1,250 bhp.

The K series is available in a 6-cylinder in-line and in 12- and 16-cylinder V configurations. Turbocharged versions are offered on the 6- and 12-cylinder models. In addition, turbocharged/after-cooled configurations are offered on all three models.

All models have a 6¼-inch (159-mm) cylinder bore and a

6¼-inch piston stroke. The 6-cylinder model has a piston displacement of 1,150 cubic inches (18.9 liters), the V12 has a displacement of 2,300 cubic inches (37.8 liters), and the V16 has a displacement of 3,067 cubic inches (50.3 liters).

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In Oslo, Norway, May 11-16

NOR-SHIPPING '81

Eighth Presentation Of This High-Quality Exhibition Is Booked To Capacity

Indications are that this year's Nor-Shipping Exhibition, to be held as usual at the Sjolyst Centre in Oslo, will attract great interest. All available exhibition space had been booked six months in advance, and the show's organizer, The Norwegian Fair Organization (Norges Varemesse), has also arranged an impressive seminar that will run for two days during the exhibition's May 11-16 schedule.

The first Nor-Shipping Exhibition took place in 1965, with subsequent shows held in 1968, 1971, 1973, 1975, 1977, and 1979. Nor-Shipping '79 was visited by about 9,000 people from 43 countries. A total of 266 exhibitors from 20 nations represented manufacturers from 25 countries. More than 500 commodity groups were represented, including banks and other financial institutions, classification societies, harbor and canal authorities, international maritime publications, marine insurance companies, private and public shipping and export organizations, salvage companies, shipbrokers, shipbuilding and repair yards, suppliers of marine equipment, stevedores and cargo-handling firms, suppliers of stores and bunkers, training and recruitment organizations, carriers, and others who serve or are associated with the shipping industry.

From the beginning, a seminar has been held in connection with the Nor-Shipping Exhibition. This

year it will take place on May 12-13. The goal of the seminar committee, chaired by **H.T. Gram**, honorary member of the board of R.S. Platou A/S, has been to let recognized experts present some of the current issues within shipping, thereby throwing light on these topics through internal panel discussions and possible contributions from the seminar participants.

At the Nor-Shipping '79 Seminar, most of the speakers expressed cautious optimism, which proved to be justified. Since then, the market has improved considerably in most trades. The future will, however, present new problems. Ways in which to deal with these problems will be subject to thorough discussion at this year's seminar.

Among the subjects to be taken up during the two seminar days will be the role of shipping in a turbulent world — politically and economically; cooperation in shipping — the need for an international approach; energy — another field in cost savings; and problems of manning, education, and safety.

SEMINAR PROGRAM TUESDAY, MAY 12

In Section I of the seminar, chaired by Mr. Gram, three papers will be presented by internationally known experts. The seminar committee anticipates that these presentations will in-

fluence strategic planning in sectors of the international marine industry.

The Unyielding 1980s: **Andrew Knight**, editor, *The Economist*. This presentation will cover the uncertain and turbulent international scene, with some direct references to energy, oil, and the role of shipping and shipping-related industries.

Reflections on the Shipping Policy of the OECD and its Coordination: **R.A. Humphrey**, head,

Maritime Transport Division, Organisation for European Economic Development.

Australian Export Potential of Raw Products — Visualized Demand for Transportation — Australia's Own Shipping Policy: **Ross Hawke**, general manager-transport, The Broken Hill Proprietary Company Ltd.

Section II will be devoted to the relations between developed and developing countries in the mar-

(continued on page 22)



His Majesty King Olav V touring the exhibition after the official opening of Nor-Shipping '79. Behind him in photograph is Crown Prince Harald.



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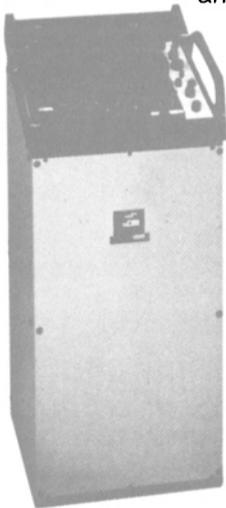
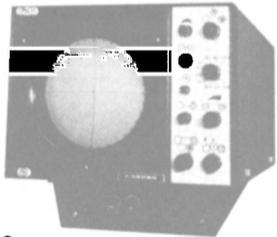
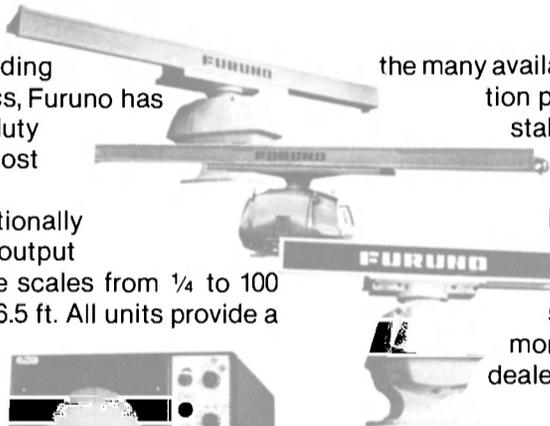
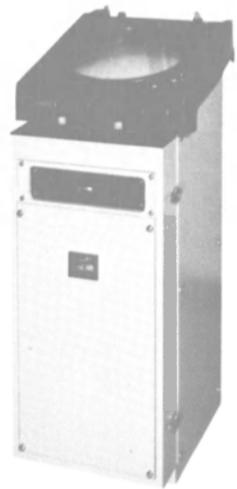
SERIES 7 radars are exceptionally compact units with available output power from 5 to 25 kW, range scales from 1/4 to 100 n.mi. and antennas from 3 to 6.5 ft. All units provide a 7" bright CRT, built-in VRM, 3 pulselengths for high discrimination, standard magnifiers and backlighted controls.

SERIES 10 radars offer the same basic performance features as

above, but have a 10" CRT. Each unit has provision for a second built-in VRM and displays are available in bulkhead, table-top, or free-standing console versions. Also, the 25 kW models include optional gyro stabilization and provision for a reflection plotter.

SERIES 12 radars combine a 12" CRT with 1/4 to 100 n.mi. range, 25 kW output and antenna length to 10' for operation anywhere. Standard features include digital VRM, circuit checkmeter, off-centering and three switchable pulse lengths for optimum performance in any situation. Among

the many available options are reflection plotter, gyro or azimuth stabilization, radar alarm, second VRM and performance monitor. For complete information on any of these outstanding radars, simply visit one of our more than 200 authorized dealer outlets; or return the coupon below.



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NOR-SHIPPING '81

(continued from page 20)

itime field. Leading representatives from government and private industry will discuss the possibilities of establishing a constructive framework for the future maritime relations between these sectors. Under the chairmanship of **Sven H. Salen**, chairman, Saleninvest AB, Stockholm, and president of the Swedish Shipowners' Association, the general theme for this section will be Cooperation in Shipping—the Need for an International Approach.

Developing and Developed Countries—Partners or Adversaries in the Future?: **Larime Fadika**, minister of shipping, The Ivory Coast; **Brian P. Shaw**, chairman, Committee of European National Shipowners' Association (CENSA); and a third speaker, to be announced, representing the International Chamber of Commerce (ICC).

Cooperation on the Industry Level—What Is in it for Developing Countries?: **Arsenio Carlos Nobrega**, director, Empresa de Navegacao Alianca, S.A., Brazil;

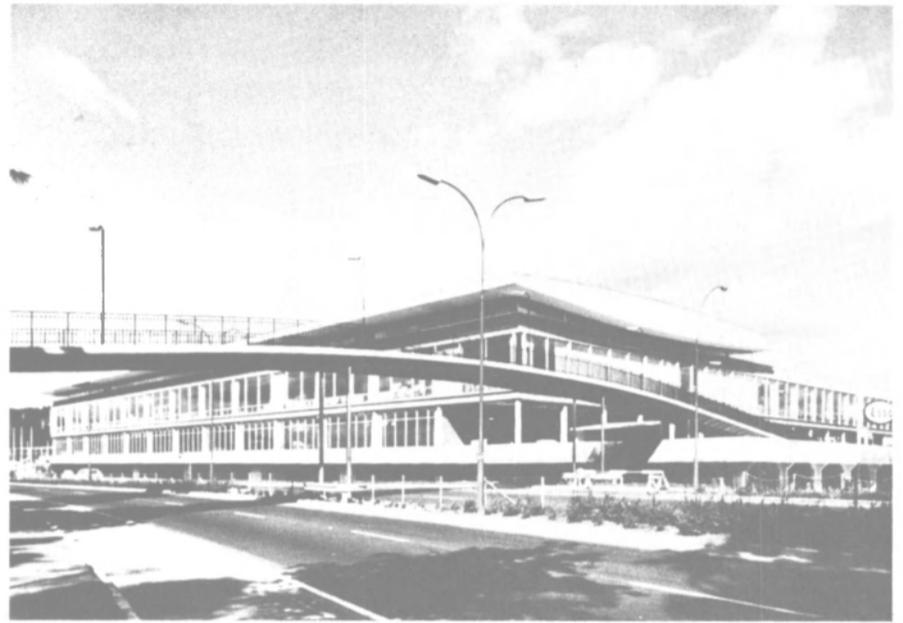
J.P.J. Besman, L.D. Travel International (Ship Freight) Ltd.; and **Atle Jebsen**, vice chairman, The Norwegian Shipowners' Association.

WEDNESDAY, MAY 13

Section III will focus on the current energy situation and address different ways of reducing energy bills. With the soaring cost of oil and rapidly rising prices for all sorts of energy supplies, the question of fuel economization has become a very important one. This section will be chaired by **Bjorn Wilhelmsen**, managing director, Nortank-Sigurd Sverdrup A/S.

Coal and Oil Reserves in the 80s: **Prof. Vidkunn Hveding**, C.E., Oslo. This presentation will contain estimates of the existing coal and oil reserves available this decade. Of particular interest are the North Sea reserves, which seem to be a vast resource where technical and political decisions could be a hindrance.

What Can Be Done To Existing Tonnage To Save Energy?: **Carsten Boe**, Det norske Veritas; and **Arnold Kr. Hansen**, managing director, The Ship Research



Sjolyst Exhibition Centre in Oslo is site of Nor-Shipping '81 8th International Shipping Exhibition and Seminar. Complex has total net exhibit area of approximately 10,000 cubic meters (9,500 indoors).

Institute of Norway. The two speakers will discuss possibilities of saving energy in existing tonnage, concentrating on methods to improve machinery performance and reduce hull friction.

Coal Burning as Fuel in New Vessels: **W.F. Ellis**, principal consultant, W.F. Ellis and Associates Pty, Ltd. There are different theories on how coal can be utilized as fuel in new ships, but very few vessels have actually been ordered and only a handful

are in service today. The speaker will report on the operation of coal-fired ships and the criteria needed for a successful project.

The final Section IV will deal with manning of ships, education of ship's personnel, and ship safety in general. The two introductory speakers and the four panelists are internationally well-known experts in this field. The session will be chaired by **Egil Abrahamsen**, president of Det norske Veritas.

NOR-SHIPPING '81 List of Exhibitors*

Aberdeen Harbour Board
Aker Group
Aker Products
Aker Trondelag A/S
Akerpanel A/S
Alfsen & Gunderson A/S
Andersen & Odegaard A/S
Ankerlokken Gruppen
Aqua Teknisk A/S
Arentz & Amundsen A/S
Arnesen, Christensen & Company A/S
ASEA A/S
Asec A/S
Atlantic Diesel A/S
Aukra Bruk A/S
Autronica Marine Automation
BT Cabindoors-Baggerods Trevarefabrikk A/S
Beha-Hedo A/S
A.S. Bergens Mek Verksteder
Bergsli A/S
Berner & Larsen A/S
Bjorshol Mek. Verksted A/S
Blohm + Voss AG
Bolsones Verft
Brannvernanslegg A/S
Brazil Export
British Shipbuilders
Brodr. Brunvoll Motorfabrikk A/S
Bruusgaard & Blindheim A/S
Bulten-Kanthal AB
Centromor
Chris-Marine AB
Christiania Bank og Kredittkasse
A/S Clausen, Kaldager & Company
Corrintec Scandinavia A/S
Daewoo Shipbuilding & Heavy Machinery
Danfoss A/S
Brodrene Davidsen Shipselectro A/S
Det norske Veritas
A/S Edco
Eisenwerke Reintjes GmbH
Elektrisk Bureau
Elkem-Spigerverket A/S
A/S Eltek
Euroclean A/S
Fekete & Company A/S

Finnish Foreign Trade Association
Olaf Fjeldsend A/S
A/S Frydenbo Mek. Verksted
GEA Luftkuehlergesellschaft
W. Giertsen A/S
Glamox A/S
Ing. Firma K.E. Gleditsch
Golar Metall
Grandi Motori Trieste
Gotaverken Arendal AB
Gotaverken Cityvarvet AB
Hafen-u. Verkehrsbetriebe der
Landeshauptstadt Kiel
Peder Halvorsen A/S
Harding A/S
A/S G. Hartmann
Erik B. Hasvold
AB Hedemora Verksteder
Hjelset Motorfabrikk A/S
Holec Gas Generators
A/S Horten Verft
Kelvin Hughes A/S
Hydranor Trading A/S
A/S Hydraulik Brattvaag
Hytek A/S, Ingeniører
Hyundai Corporation
Idhammar Konsult AB
IMI A/S
International Farvefabrikk A/S
Inchape Export Limited
Interpower A/S
Intraship Ltd. A/S
Iotron Corporation
Jadranbrod
Japan Ship Exporters' Association
Japan Ship Machinery Export Association
The Axel Johnson Group
Karmoy Mek. Verksted A/S
The Kihlinvest Group
Klockner-Humboldt-Deutz AG
Kockums AB
Kongsberg Vapenfabrikk A/S
Finn Koren & Company A/S
N.O. Krog Andvik A/S
Fried. Krupp GmbH, Krupp Atlas
Elektronik
Kvaerner Group
Laholm Stal A/S
A/S Langesund Verft
Irgens Larsen A/S

Olof Lindstedt & Company AB
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M.A.N.
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Hans A. Mathiesen A/S
Metos-Scheller A/S
Micor Systems A/S
A/S Moelven Brug
Frank Mohn A/S
Nauteknisk A/S
Navimor
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Dusseldorfer Messegellschaft mbH
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Saab Marine Electronics
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Shipping World & Shipbuilder
Simrad Trading A/S
Sjøfartsdirektoratet/Oljedirektoratet
Bjarne Sjong & Company A/S
Skanti Radio A/S
A/S Skarpenrod
Association of Danish Shipbuilders
Skip og Maskin A/S
Skipsrevyen
Societe Alsacienne de Constructions
Mecanique de Mulhouse
Sperre Mek Verksted A/S
SPM Instrument A/S
Standard Telefon og Kabelfabrikk A/S
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Stord Elektro A/S
Stork-Werkspoor Diesel B.V.
Stromag Norge A/S
Sulzer Brothers Ltd.
AB Svenska Flaktfabriken
Swedish Export Council
Swedwards/Svenska Varv AB
Syberg & Syberg A/S
Sigurd Sorum A/S
Tanksystem A/S
Technocommerz GmbH
Teknisk Presse A/S
Teknisk Service A/S
Telaeg Aksjeselskap
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Tranberg A/S
Transocean Marine Paint
Turbo-Technik GmbH
Turners of Shettleston Ltd.
Uddeholm Stal A/S
Unitor Ships Service A/S
Volvo Norge A/S
West Norway Shipbuilders Association
A/S Westad Armaturfabrik
Thor Westad A/S
Weswitco A/S
A/S Wichmann
Witt & Borgen A/S
Wartsila Diesel Division
Oy Wartsila AB, Shipbuilding Division
* As available at press time.

IMCO's Work for Safety at Sea: **E.P. Srivastava**, secretary general, Inter-governmental Maritime Consultative Organization (IMCO). This talk will have a special bearing on IMCO's work on international requirements regarding standards of manning, certification, and watch keeping.

U.S. Coast Guard and International Work on Safety at Sea: Rear Adm. **Henry H. Bell**, U.S. Coast Guard, Chief, Office of Merchant Marine Safety. This paper will explain the difference between international regulations adopted or to be adopted by IMCO and those applied by the U.S. Coast Guard considering the impact of such differences on foreign vessels calling at U.S. ports.

IMIF's Contribution To Better Operating Standards: Dr. **Helmut Sohmen**, chairman, International Maritime Industries Forum (IMIF), and chairman of Marine Navigation Company Ltd. This presentation will deal with safety in human terms, elaborating on manning policies, morale and staff welfare, and safety consciousness.

Human Factors and Safety: **William O. Gray**, senior advisor, Petroleum Products Department, Exxon Corporation. This speech will deal with human errors defined as "competent" and "incompetent" errors, stressing the question as to where the responsibility primarily rests and how a major company like Exxon attacks these problems.

Accident/Incident Statistics for Safety: **K. Harold Drager**, principal research engineer, Det norske Veritas. The ultimate objective of statistics on marine casualties is to create a base for deciding priority as to where remedial actions should be put in. Safety at sea being an international matter, worldwide marine casualty statistics defining the causes of the accidents in a manner suited to an overall and systematic analysis is of paramount importance, this paper states.

Vessel Traffic Systems for Safe Navigation—Limited Guidance or Extensive Control?: **Frode Ringdal**, attorney at law. This speaker will question whether participation in shore-based monitoring systems should be voluntary or made mandatory. He will also discuss whether such systems should be of a passive, advisory type or be given the power to take direct action in the movements of the vessel. In the latter case the legal aspects, such as liability in case of wrong information or orders being given, have to be clarified.

Manning of the Bridge: Capt. **Erik Salvesen**, Norwegian Maritime Directorate. This paper will deal with the general basis for the existing manning rules applicable to Norwegian ships, particularly emphasizing rules and regulations related to navigational watchkeeping.



Liquefied Gas Minicarrier Delivered By Moss Verft

Moss Verft, a member of the Norwegian Kvaerner Group, recently completed the liquefied gas/ammonia carrier Hebe (shown above) for K/S A/S Helengas of Stavanger, Norway. The vessel will be operated by Rederiet Helge R. Myhre A/S, also of Stavanger. She is built to Det norske Veritas Classification +1A1, Tanker for Liquefied Gas, Ice C, EO, as well as the U.S. Coast Guard's Rules and Regulations for Foreign Flag Vessels, and IMCO's Code for Gas Carriers, Resolution A 328.

With a cargo capacity of 2,600 cubic meters, Hebe has an overall length of 246 feet, beam of 46 feet, depth of 26 feet, and maximum draft of 22.3 feet. Her main

engine is a 12-cylinder, turbo-charged diesel, Nohab Polar type F212V825, which has a maximum continuous rating of 2,638 bhp at 825 rpm. It drives a controllable-pitch propeller via a flexible coupling and a reduction gear. Auxiliary engines are four Volvo Penta diesels, each coupled to a Stamford generator with a rating of 215 kw.

Hebe is built with a single deck, transom stern, and bulbous bow. Accommodations and the engine room are located aft, while the reliquefaction plant is installed in the deckhouse amidship. Manufactured by Kvaerner Kulde A/S, the reliquefaction plant consists of twin unit, each comprising

three compressors able to carry two cooled cargoes simultaneously.

A combined inert gas/incinerator plant is installed in the engine room. The inert gas generator has a capacity of 500 cubic meters of nitrogen per hour. Both liquid and solid wastes can be burned in the incinerator. This combined plant was developed and built by Moss Verft. In function, the plant can supply inert gas to the cargo tanks, the hold spaces surrounding them, and all cargo-handling piping.

The ship has three cargo tanks in separate holds — one conical twin tank, one cylindrical twin tank, and one transverse cylindrical tank. Constructed of low-temperature steel with an external insulation layer of polyurethane, the tanks are designed to carry cargoes with temperatures down to minus 48 C.

Cargo may be arranged in two separate systems, with three different tank combinations. The tanks are fitted with vertical, centrifugal deepwell pumps supplied by Thune-Eureka A/S. Two different cargoes can be carried simultaneously. Calculated loading/discharging time is approximately 8 hours. Cargoes that can be carried include LPG as propane or butane, or mixtures of these; butadiene, vinyl chloride, propylene, propylene oxide, anhydrous ammonia, butylene, and isoprene.

Among the electronic gear are two Decca radars, Decca Navigator, echosounder, gyrocompass system, and a complete radio station supplied by STK. The ship will operate with a crew of 19.

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* Test data available upon request

Hayward Offers New Line Of Valve Operating Stands —Literature Available

A new series of welding type, fabricated valve operating stands, used to operate valves below decks, is now being manufactured by the Marine Products Division of Hayward Manufacturing Company, Elizabeth, N.J. Two stand-

ard heights, 14-inch and 24-inch, are available. Each can be supplied with stainless-steel stems in 1, 1¼, or 1½-inch diameters. Handwheels are available in several sizes, from 8-inch through 24-inch diameters. Bushings are self-lubricating bronze Oilite. An indicator on the stem moves up and down to show relative open or closed position.

Because of the flexibility of this design, many options are available. The stem may be modified to accommodate each rod or cable coupling for extension below decks. The indicator can be designed to coincide with the operation of the valve. Special modifications may be supplied on request, including flanged mounting to decks. Delivery is from stock

for marine repair jobs, retrofiting, or new construction.

For additional information,
Write 48 on Reader Service Card

James Thrane Appointed VP-Capital Projects For Santa Fe Engineering



James C. Thrane

James C. Thrane, the man responsible for Santa Fe Engineering Services Company's new equipment construction, has been promoted twice recently. In December 1980 he was named vice president of construction; two months later, he was promoted to vice president of capital projects. He was succeeded as manager of construction and repair by Dennis Yenzler. Mr. Thrane joined Santa Fe in 1973 as a construction superintendent. Prior to that he was general manager of PACECO's Gulfport, Miss., manufacturing plant.

Automatic Logging System Developed By NMS— Literature Available

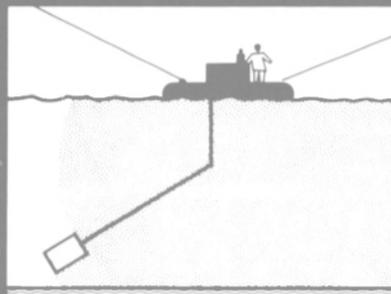
The tasks of logging ship's control commands, responses, and propulsion system operation can be completely turned over to an automatic printout logging system developed by National Marine Service Incorporated. The bell logger system automatically prints engine order telegraph commands, responses, throttle position, propeller pitch, and shaft rpm. Data and time are recorded for every control or function. The system is extremely flexible, and any parameters may be selected by the vessel operator. Customization to a specific vessel is said to be easy and economical.

The bell logger system is designed for the marine environment, including the printer, whose output is impervious to light, temperature, or humidity. Compatibility with National Marine's master clock system is designed into the automatic logger. According to a National Marine spokesman, the bell logger system is competitively priced and is also compatible with National Marine's monitoring systems for diesel-powered vessels.

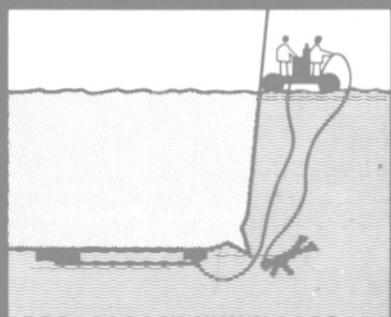
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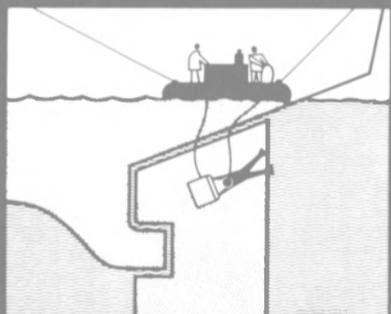
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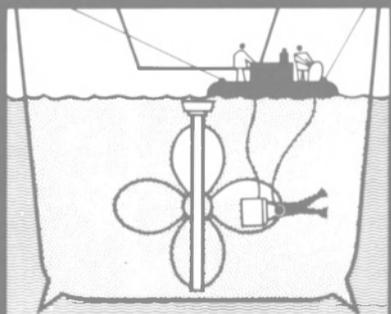
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TRELLEBORG AB is speedy, cleaning the sides of a VLCC in about 8-12 hours and the whole hull including the flat bottom in 24 hours.

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TRELLEBORG AB is available now at stations in Scandinavia, Rotterdam (serving Western European ports), Houston (serving Gulf Coast ports), Norfolk VA (serving U.S. East Coast ports), Singapore, Fujairah U.A.E. and more stations will be announced later.

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**Hanson Joins Simrad
As Manager-Technical
Service Department**



Dean Hanson

Dean Hanson has joined Simrad as manager of the technical service department. He brings to Simrad 15 years of varied and intensive experience in the electronic field. He has worked extensively as a field engineer, a design engineer in marine electronics, and as a marketing sales engineer.

Mr. Hanson has also served in the U.S. Navy as an electronics technician-radar specialist. He will visit Simrad dealers to hold equipment seminars, and develop higher levels of responsiveness to dealer and customer needs. Mr. Hanson will be stationed in Simrad, Inc.'s main U.S. office in Armonk, N.Y. He will also work closely with Simrad's branch offices in New Orleans, Houston, Seattle, and San Diego.

**Hoover Appointed Manager
Of General Electric's
Tidewater Service Shop**

William F. Hoover has been named manager of the recently established Tidewater Service Shop, Chesapeake, Va., for General Electric's Apparatus Service Division (ASD). The appointment was announced by Gerald S. Seay, manager of the division's Richmond Service Territory. Mr. Hoover was previously sales engineer for GE's Richmond ASD shop.

In his new position, he is responsible for service and sales to power plants, chemical manufacturers, and the paper and marine industries in southeastern Virginia and northeastern North Carolina. Currently, the shop provides mechanical repairs, with electrical and motor repairs scheduled for later in the year.

**Neorion Yard Expands
Its Gritblasting And
Coating Facilities**

Wesley D. Wheeler Associates of New York City has announced that Neorion Shipyards Syros Ltd. and Peiniger GmbH have formed a joint venture company,

NEPECOR, to offer shipowners internal gritblasting and coating facilities at Neorion Shipyard, which is on the island of Syros, Greece, a Mediterranean crossroads near the Suez Canal and the Dardenelles.

Shipowners will now be able to utilize Neorion's ship repairing expertise combined with Peiniger's extensive experience in the

coating field. Resident manager of the new company is R. Simmel, who has wide coating experience with Peiniger.

Among the major equipment to be available at the shipyard are three Munkebo abrasive recovery units, four Munters dehumidifiers, and six ventilators. A bulk handling system for the grit is being installed, and sheds will be

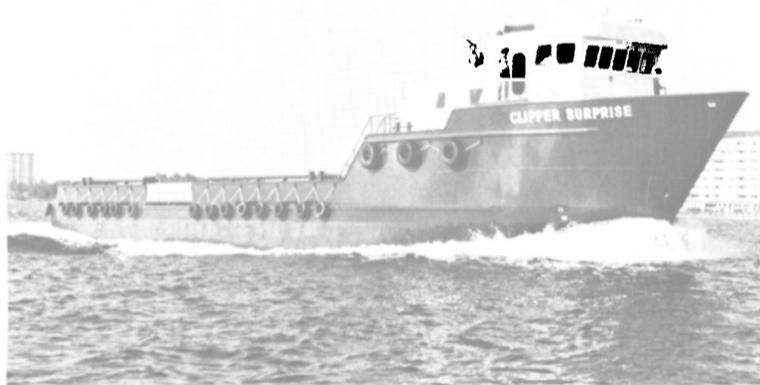
built to handle the gritblasting and coating of new steel, pipes, hatch covers, etc.

NEPECOR recently was awarded two contracts each involving 40,000 square meters of internal blasting and coating for a major U.S.-based oil company. The Wheeler firm is exclusive agent in the United States for the Neorion yard.

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**John Papp Appointed
Staff Meteorologist
At Fleetweather**

Tore H. Jakobsen and James F. Witt, owners of Fleetweather, Inc., have announced that John Papp has joined the staff as staff meteorologist. Mr. Papp's responsibilities will include preparation and dissemination of in-port and

offshore forecasts for the firm's customers.

Fleetweather, Inc. specializes in providing detailed weather consultation for safe and cost-effective terminal and offshore operations on the U.S. East and Gulf Coasts. The firm's customers include more than 100 steamship companies, stevedores, and agents. All operations originate at the firm's headquarters in Hopewell Junction, N.Y.

**\$5-Million Contract
Awarded By South Jersey
Port Corporation**

The South Jersey Port Corporation recently awarded a contract for \$5,152,500 to Raymond International Builders of Rochelle Park, N.J., the low bidder, for construction of the final 540 feet of the Beckett Street Terminal

Wharf extension, Camden, N.J. This contract is part of an overall \$16-million modernization and improvement program designed to increase the port's tonnage handling of bulk, general, and containerized cargo.

The major project is the 740-foot extension of the Beckett Street Wharf, which will give the terminal a fourth berth. Last year, using three berths totaling 1,550 feet, the terminal handled 1,085,786 tons of cargo, making it one of the most efficient terminals in the country.

South Jersey Port Corporation board chairman Edward J. McManimon said the total cost of the extension is approximately \$7 million, and the port spent an additional \$1.1 million for the removal of the collapsed Spruce Street Pier.

**William Ball Appointed
North American Sales
Manager For SRS**

William C. Ball has been appointed North American sales manager for Separation and Recovery Systems, Inc. (SRS) it was announced by Joseph De Franco, president of the company. Mr. Ball was formerly marketing manager of Western Filter Company, responsible for all sales and distribution activities, and prior to that was associated with Torite Filter Company, Jepco Sales, and Purolator Aerospace and Industrial Division.

SRS and its Sarex product line is based in Irvine, Calif., and is a leading manufacturer and distributor of oil pollution control equipment, with offices in London and Tokyo. Technical and service representatives are located in most major seaports.

**New Publications Catalog
Available From SNAME**

The Society of Naval Architects and Marine Engineers has announced that its 1981 Publications Catalog is now available at its headquarters office. The handy-size booklet lists the many SNAME publications in print, and introduces by abstract, seven new technical publications from its Technical and Research program. The last two Spring Meeting/STAR Symposia are also abstracted. In addition, the catalog lists the Society's books, periodicals, and 97 previously published T&R guides, reports, and data sheets.

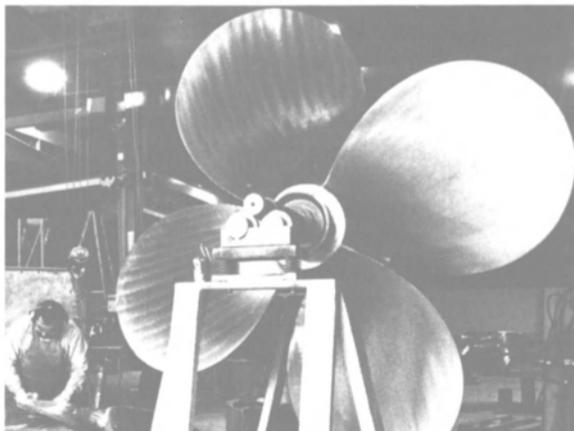
All SNAME publications are modestly priced, and almost all offer a 33-percent discount to SNAME members. For additional information, contact the Publications Department at One World Trade Center, Suite 1369, New York, N.Y. 10048.

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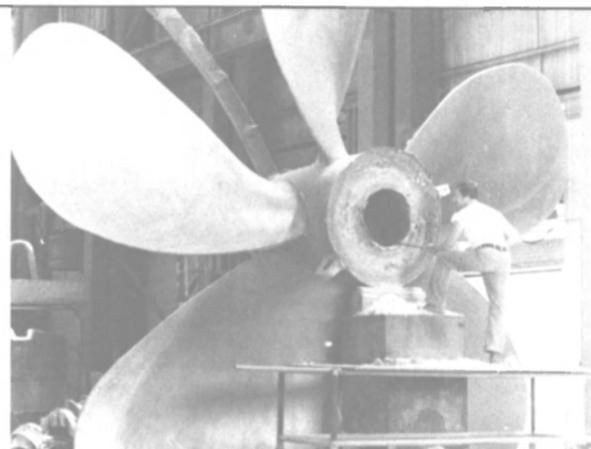
For the most part, power, efficiency, maneuverability and smoothness of operation depend upon what's on the business end of your power plant. And that's where Michigan Wheel goes to work for you. Whether your needs are small or large, rely on Michigan's free expertise and consulting service to assure correct fit to your engine, hull and use requirement. As a result, you can get the most from every drop of fuel and make even the most difficult maneuvers with ease. For example —



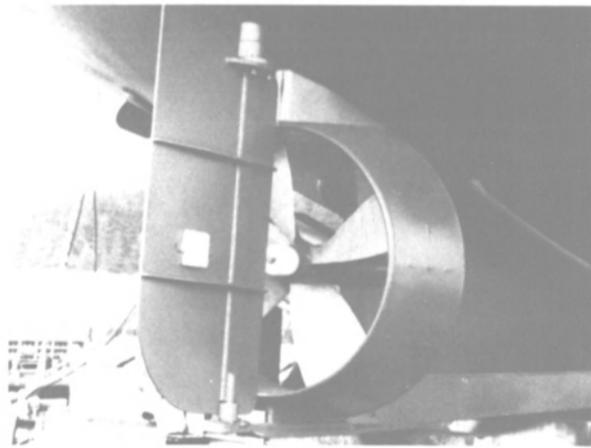
Michigan's Work-Horse™ is a tough 4-blade propeller with heavy cross-sections and heavy-duty leading edges designed to give you smoother operation than the 3-blade wheel it replaces. It is cast and available in three very strong materials: Michalloy K bronze and Ni-Bral through 30' dia., and CF 3 mod Stainless Steel in sizes through 18' dia. All offer exceptional resistance to corrosion and damage ... could save costly haul-outs, repair and downtime.



Coolidge Propellers have earned a world-wide reputation for tough, yet readily repairable stainless steel propellers. That's because, with more than 60 years of experience, Coolidge has accumulated vast knowledge about casting stainless steel. Coolidge also claims a world reputation for efficient prop designs. 3-, 4-, or 5-blade styles up to 13' dia., as well as CP blades, are available in bronze or stainless. Our engineers will create custom designs to suit your need.



Michigan Wheel Gulf Coast is Michigan's newest facility, providing 64,000 sq. ft. of manufacturing area on 47.5 acres of easily accessible land. Furnace capacity is 10 tons for stainless and 75 tons for manganese bronze. Bronze propellers can be cast to 30' diameter, poured to your specifications or custom engineered by our Michigan staff. Stainless steel propellers can be cast to 18' diameter. Propellers are generally produced to ABS, Lloyds or Bureau Veritas, or other classification society standards.



Michigan's Ducted Propeller System is the biggest energy saver of all. It can give you (1) more thrust with the same power, or (2) the same thrust with less power ... and increased thrust means more towline or bollard pull. The system uses Kaplan-style propellers mated to the Michigan fixed or steering nozzle. Nozzles are available, suited to your particular application, in NSMB type 10B or 37 with all stainless steel interiors or stainless wear ring. Fuel consumption goes down and profitability goes up. Get all the facts before you reprop.

Besides propellers, Michigan® can supply you with fairwaters in stainless or bronze, prop shafting to any specification in ABS, steel or stainless alloys, together with a full line of hardware ... stuffing boxes, stern bearings, sea fittings and couplings. Before you pick your source, add up the pros and cons ... then go with the pros! Send for Michigan's FREE consulting analysis form. Michigan Wheel, 1501 Buchanan Ave., S.W., Grand Rapids, MI 49507.

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**J.J. McCarthy Appointed
Director Of Sales At
Waukesha Engine Division**



John J. McCarthy

John (Jack) J. McCarthy has been named to the newly created position of director of sales at Waukesha Engine Division, Dresser Industries Inc. In this position, he is responsible for all the division's product sales, including construction and industrial OEM, petroleum OEM, North American distributor, international distributor, and service parts sales worldwide. He reports to Peter C. Trombley, executive vice president of marketing & service.

Mr. McCarthy joined Waukesha Engine Division as director of domestic field sales in 1978. Prior to that he had been with Alco Power, Inc. for 13 years, where he was regional manager active in the marketing of diesel engines for various industrial applications.

Waukesha Engine is a manufacturer of heavy-duty diesel and gas engines for the marine, petroleum, off-highway, and power generation markets.

**Butterworth Systems
Opens Supply Center
In Piraeus, Greece**

Zervoudakis-Deka Marine Supplies Ltd. has been appointed as supply center for Butterworth portable tank cleaning machines and tank cleaning hose and accessories in Greece. They are located at 67 Akti Miaouli, Piraeus, Greece. Operators requiring equipment, parts, service, or accessories for Butterworth K series tank cleaning machines for vessels in Greek waters should contact Zervoudakis-Deka direct.

Butterworth Systems is an international company that manufactures equipment for tank cleaning, SCAMP® underwater hull cleaning machines, oil/water separators and high-pressure water jetting.

For additional information,
Write 42 on Reader Service Card

**Curry Named VP And
Ritch Secretary Of
Ogden Corporation**

Robert E. Curry Jr. has been named vice president and head of the Legal Department, and Kathleen Ritch has been named secretary of the Ogden Corporation, it was announced by Ralph E. Ablon,

Ogden chairman and chief executive officer.

Mr. Curry joined Ogden in 1975, and has been vice president and chief counsel, Ogden Transportation Corporation, since 1978. He will be responsible for the management of Ogden's legal staff and legal activities, reporting to Donald Krenz, executive vice president and chief legal officer.

Ms. Ritch joined Ogden in 1972, and has been assistant corporate secretary and administrative assistant to the chairman and president since 1973. She will function as secretary to the board of directors and committees of the board, with responsibility for shareholder relations and corporate contributions, in addition to her current responsibilities for headquarters services.



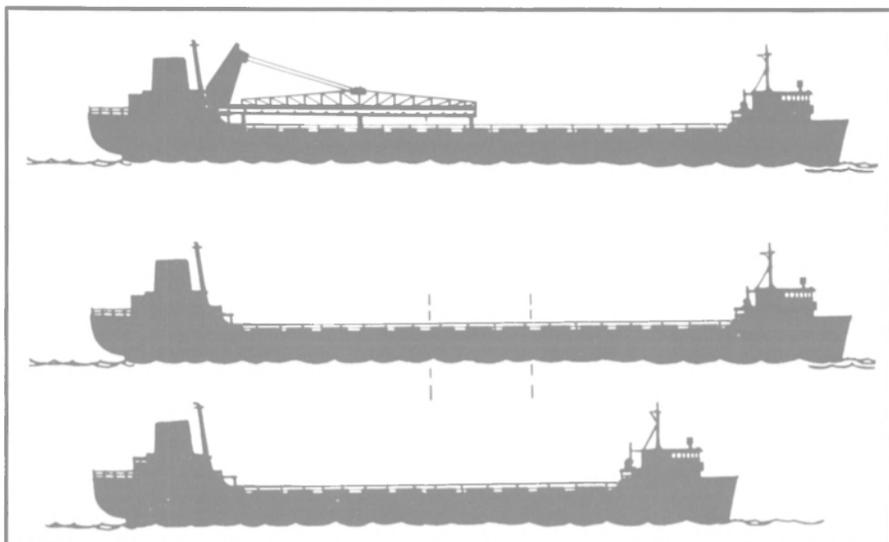
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Fraser Shipyard Will Convert Three U.S. Steel Ore Boats To Self-Unloaders

Boat watchers around the Great Lakes may be momentarily confused next year when three well-known U.S. Steel ore vessels appear on the horizon with new silhouettes (shown above, top). Robert D. Goldbach, vice president-shipbuilding for U.S. Steel's Resource Development group, announced recently that the Steamers Cason J. Callaway, Arthur M. Anderson, and Philip R. Clarke will be outfitted with topside self-unloading gear for use during the 1982 sailing season. Fraser Shipyard Inc.,

in Superior, Wis., will perform the conversion on the three ore vessels.

According to Mr. Goldbach, when the boats were launched in 1952 they were 647 feet long with a cargo capacity of about 19,700 long tons. Each was lengthened to 767 feet in the mid-1970s, which increased their trip capacity to 26,500 long tons.

"Our first improvement in productivity for these vessels was the 120-foot lengthening and increased liftability. The addition

of the self-unloading equipment will further improve the boats' productivity by decreasing turnaround time at the unloading docks," Mr. Goldbach said. Currently, the ore freighters are unloaded by dockside equipment in approximately 17 hours. Fitted with new self-unloading equipment manufactured by Stephens-Adamson Division of Allis-Chalmers Canada Ltd., the cargo can be discharged in five hours.

"Additionally, these self-unloading modifications will afford U.S. Steel the added flexibility of scheduling the more efficient Callaway, Anderson and Clarke into

any and all U.S. Steel discharge ports," Mr. Goldbach noted.

Included in the modification plans are the installation of a hopper-type arrangement in each cargo hold, a belt conveying system under the hoppers, and a deck-mounted, 250-foot boom to transport the cargo to shoreside facilities. In addition, increasing generating capacity will be added to the boats to accommodate the extra power needs of the self-unloaders.

The new unloading equipment is manufactured by Stephens-Adamson, Division of Allis-Chalmers Canada, Ltd.

Billy Pugh Offshore Asks Title XI On Tug/Supply Boats To Cost \$6.7 Million

Billy Pugh Offshore Limited 1981, a subsidiary of Billy Pugh Offshore, Inc., Corpus Christi, Texas, has applied to the Maritime Administration for a Title XI guarantee to aid in financing the construction of two 180-foot tug/supply vessels. These 3,000-horsepower, twin-screw diesel-powered vessels are to be used in offshore oil exploration. Rysco Shipyard, Inc., Blountstown, Fla., is the proposed builder.

If approved, Title XI financing would cover \$4,800,000, or approximately 87½ percent of the estimated cost of \$6,743,865. Deliveries are scheduled for October 1981 and February 1982.

Newport News Shipbuilding Gets \$43.5-Million Navy Award For Carrier Work

Newport News Shipbuilding, Newport News, Va., has been awarded a \$43,479,700 modification to a previously awarded fixed-price incentive contract to modify CVN-71 (nuclear-powered aircraft carrier) shipbuilding contract to include improved structural changes. The Naval Sea Systems Command is the contracting activity. (N00024-80-C-2023)

Val Gandelsman Named Engineering Manager For EG&G Sea-Link Systems



Val Gandelsman

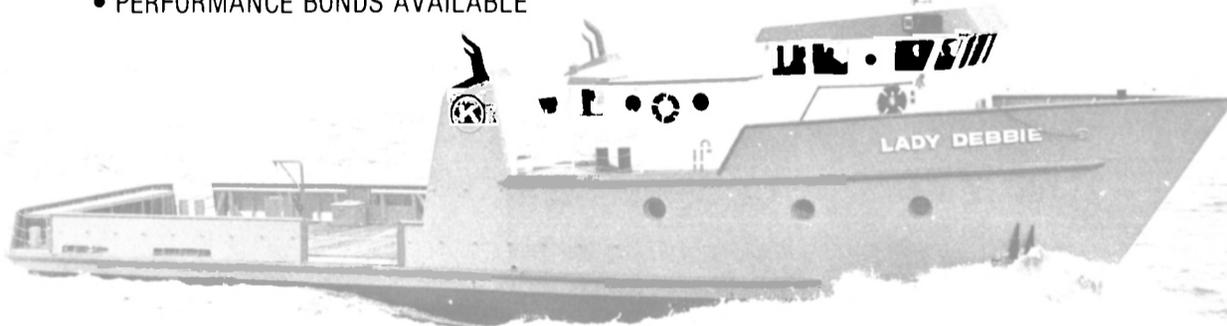
EG&G Sea-Link Systems of Herndon, Va., in a move to strengthen its new product development, has announced the appointment of Val Gandelsman as manager of engineering. Prior to joining Sea-Link Systems, he was employed by Coulter Electronics, Inc. He brings over 16 years of product development and engineering management experience to EG&G.

EG&G Sea-Link Systems manufactures a wide variety of underwater acoustic remote control/navigation and current meter products. These can be used in diverse applications from offshore drilling to ocean-bed mining, and from oceanographic research to tracking submarines and rescue operations.

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Crowley Subsidiary Asks Title XI On Five Barges To Cost Of \$26.5 Million

The Maritime Administration has approved in principle an application by Trailer Marine Transport Corporation, a subsidiary of Crowley Maritime Corporation, San Francisco, for Title XI financing to aid in construction of five deck-cargo barges. The barges measure 400 feet in length, have a beam of 99 feet 6 inches, and a draft of 25 feet. They are intended for use primarily in the U.S. West Coast and Alaska trade.

Two barges are being built at Bethlehem Steel Corporation, San Francisco, and three are being built by FMC Corporation, Portland, Ore. Two have already been delivered, the others are scheduled to be delivered by mid-1981. The Title XI guarantee covers \$23,162,000, or 87.15 percent of the estimated cost of \$26,471,945.

Fischer Named Sales Vice President-New York For Savannah Shipyard



Warren H. Fischer

David H. Green, president of Savannah Shipyard Company, recently announced the appointment of Warren H. Fischer as vice president, sales. Mr. Fischer is a former Naval officer. He is a member of The Society of Naval Architects and Marine Engineers. He will maintain the company's New York office at 74 Trinity Place, Suite 1800; (212) 432-0350.

Savannah Shipyard Company, a subsidiary of Aegis Corporation, is a full service overhaul, repair and conversion facility located in Savannah, Ga.

Tracor Introduces New Satellite Navigator —Literature Available

Tracor has introduced a new Satellite Navigator. Named after the North Star and the submarines which first tested the Transit system, the Polaris SatNav is a full-feature, total-performance system at a competitive price. Its housing is sleek yet functional

with a yoke that provides overhead, bulkhead, or tabletop mounting flexibility.

The large, two-line LED presentation clearly details the navigation data required to efficiently and safely sail anywhere in the world. Tracor chose the LED display because of fewer components and less power required,

the LED display has an inherent reliability. Second, the Tracor Polaris LED display can be read from across the bridge. Finally, only the necessary data is shown for clarity and simplicity. Other navigation data is instantly available at a touch of a button, but is not continuously displayed.

Polaris only draws 1.5 amps at

12 volts. The navigation program for Polaris is based upon the Tracor SatNav II, which has received international type approvals from Det norske Veritas, Norwegian Maritime Directorate, and Swiss PTT.

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Gems Offers Explosion-Proof Junction Boxes
—Literature Available

Now offered as an option from Gems Sensors Division, Transamerica Delaval Inc., are level switches and level transmitters with explosion-proof junction boxes. This option is approved by

Factory Mutual (FM) for Class I, Division I, Group D hazardous areas.

The level switches offered with this option are the LS-800 as well as other standard models. The LS-800 is available in either brass or stainless steel with stainless floats. With one to six level stations, it is designed for multi-level monitoring. The LS-800 can

signal alarms or provide automatic control.

Two types of Gems level transmitters are offered with this option. Included are those offered as signal-conditioned components with 2-wire, 4-20 milliampere dc outputs, as well as those supplied as a complete system with display receiver modules. These units provide continuous monitoring or

control with direct level measurement of water, oils, process blends, fuels and chemicals.

For more information and free literature,

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Foremost Maritime Relocates To New Office In New York

Foremost Maritime Corporation, formerly located at 32 Broadway, has relocated its office to 50 Broad Street, Suite 834, New York, N.Y. 10004; telephone (212) 943-2335.

Foremost represents several shipowners in the Far East for a fleet of more than 45 vessels. Besides long-term contracts in chartering and newbuildings, the firm is heavily involved in ship financing.

Ferguson Retires As Chief Estimator At Bethlehem's Baltimore Yard

John M. Ferguson Jr., chief estimator in the estimating department of Bethlehem Steel Corporation's Baltimore yard, has retired after 34 years of service, it was announced by Milton H. Leubecker, general manager.



John M. Ferguson Jr.

Following a summer at sea as an oiler on a passenger ship, Mr. Ferguson worked for five years in the outside machine department of Newport News Shipbuilding and Dry Dock Company. He entered the U.S. merchant marine in 1940, served during World War II, attaining the position of chief engineer. Following the war in 1945, he was named an assistant general foreman when he joined the estimating department of Bethlehem's Baltimore yard.

He served for a short period as a ship supervisor manager before becoming an estimator in 1947. Mr. Ferguson was named a technical assistant in estimating in 1969, assistant chief estimator in 1974, and chief estimator in 1976.



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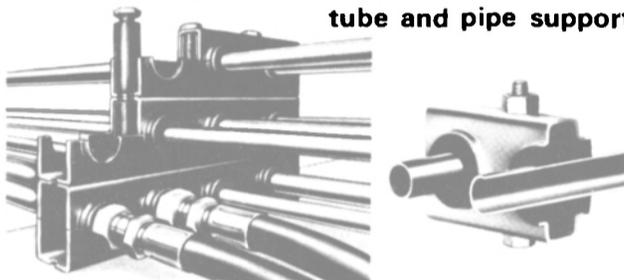
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**New Brochure Describes
Dillon's New Line Of
Digital Crane Scales**

A four-page catalog of detailed engineering information describes the all-new digital crane scale available from W.C. Dillon & Company, Inc. Twelve capacities are featured, ranging from 0-2,000 pounds up to 0-50,000 pounds. Metric models are also offered, with capacities from 0-1,000 kilograms to 0-20,000 kilograms. Accuracy charts indicate plus/minus 0.1 percent for ranges through 10,000 pounds (5,000 kilograms). Higher capacities are rated at plus/minus 0.25 percent of full range.

Additional data presents a dimensional drawing of all models, detailing overall measurements, listing capacities, and showing net and gross weights for each range. A separate chart lists available tare compensation for

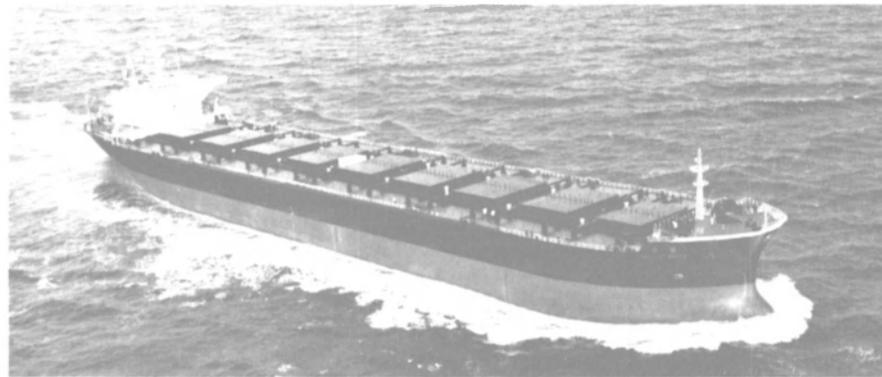
each model (20 percent of full range), and incremental breakdown by capacity. Electrical specifications and significant features are shown for all models, including battery ratings and charger voltage requirements.

For a free copy of Dillon's catalog DCS-1-1,

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**Kotelnikoff Appointed
Safety Director For
Matson Terminals**

Matson Terminals, Inc. has named Igor S. Kotelnikoff director of corporate safety. He succeeds Dino A. Dini, who has retired. Mr. Kotelnikoff formerly was manager of terminal services. He joined the company in 1961 after 14 years with Pacific Far East Line, Inc., including four years as a deck officer.



**B&W-Powered Bulk Carrier
Delivered By Hitachi Zosen**

The 133,361-dwt bulk carrier World Dulce (shown above) was completed recently at the Ariake Works of Hitachi Zosen for Kingdom Company S.A., Panama. This large-capacity bulker was developed specifically to meet world industry's growing raw materials needs. Ore and coal will be her main cargoes.

Her Hitachi/B&W 6L80GFCA main engine has a maximum continuous rating of 18,400 bhp at 106 rpm, which produced a trial speed of 16.50 knots. The ship is fitted with a special nozzle propeller, HZ Nozzle developed by Hitachi, for improved propulsion efficiency. Operation of the main engine is highly automated, as is deck machinery to simplify cargo handling and mooring. Built to Lloyd's Register of Shipping clas-

sification, the ship is operated with a complement of 35.

The World Dulce has an overall length of 270.88 meters, beam of 43.00 meters, depth of 23.80 meters, and full-load summer draft of 16.352 meters (888.7 by 141 by 78 by 53.6 feet).

**IBM Division Awarded
\$94.6-Million Navy Contract
For Sonar Systems**

IBM Corporation Federal Systems Division, Manassas, Va., has been awarded a \$94,573,000 firm fixed-price contract for AN/BQQ-5 sonars, conversion kits with applicable engineering services and data. The Naval Sea Systems Command is the contracting activity. (N00024-81-C-6030)



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Stiles Appointed Marine Sales Representative-New York For Farboil



Wayne Stiles

Wayne Stiles has been appointed marine sales representative for Farboil Company in New York City, it was announced by Joseph F. Harrington, vice president of sales. Mr. Stiles has been a sales representative for Line Fast Corporation, New York, and Tidewater, New Orleans. Earlier, he served as captain and mate aboard various offshore supply vessels serving domestic and international oil drilling operations.

Allied Barge Seeks Title XI On \$2-Million Barge Reconstruction

Allied Barge, Inc., a subsidiary of Allied Towing Corporation, Norfolk, Va., has applied to the Maritime Administration for a Title XI guarantee to aid in financing the reconstruction of the oceangoing oil barge Matthew into a multiple product liquid chemical carrier.

Work on the 302-foot-long vessel was performed by Tampa (Fla.) Shipyards, Inc., and it was redelivered last December. The applicant said the reconstructed barge will be used along the East and Gulf Coasts of the United States.

The actual cost of the vessel was listed as \$2,000,000. The requested guarantee is for 87 1/2 percent of that amount, or \$1,750,000.

Barges Carried Some 40 Percent Of U.S. Grain Exported In 1980

Barge shipments of grain destined for export reached a record 1.95 billion bushels in 1980, according to figures recently released by the U.S. Department of Agriculture. The share of all export grain carried by barges last year reached 40.3 percent, also a record.

"These impressive figures are testimony to the low-cost, fuel efficient freight service provided by our industry," said Ralph Van der Naillen, vice chairman of the

American Waterways Operators, Inc. "The U.S. farmer knows that, when accessible, barge transportation offers the best means of getting the product to market." Mr. Van der Naillen is also vice president of Cargo Carriers Co., Minneapolis, Minn.

Compared with the previous year, barge carriage of export grain in 1980 increased 20 per-

cent. Total grain exports rose 6 percent, to 4.83 billion bushels, during the same period. "The barge share of grain exports has been rising dramatically since 1973," Mr. Van der Naillen said. "It is no coincidence that this has also been a period marked by soaring fuel costs and double-digit inflation. Just as when factors have increased consumer

awareness of fuel conservation and careful shopping, it has made barge transportation all the more attractive to shippers."

On the average, barges move a ton of freight 514 miles on a gallon of fuel, compared with 202 miles by rail. It costs only about 7 mills per ton-mile to ship by barge, far less than the average rail cost.



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Floating Desalination Plant Ordered From Krupp By Abu Dhabi

The Krupp-Owned Buckau-Walther group has been commissioned by Abu Dhabi's Water and Electricity Department to supply a floating seawater desalination plant worth about 21-million

Deutschemarks (about \$10.5 million). It is one of the first units of this kind in the world, and the first commercial contract of this magnitude awarded to a German company in the face of international competition. The complete unit will be handed over in the spring of 1982.

The self-propelled seagoing barge, 60 meters (196.85 feet)

long, 18.5 meters (60.69 feet) wide, and with minimal draft, employs two multi-flash seawater desalination units to produce a total of 2,500 cubic meters of drinking water per day. The barge has two 1,000-kw diesel generators for electricity required onboard. An emergency generator set, tanks for drinking water and diesel oil, workshop, laboratory, and accom-

modations for the crew of eight make up the remaining facilities. Separate pumps transfer the desalinated drinking water via floating pipeline to consumers on land-building sites and people living on the coast of Abu Dhabi.

Tacoma Boat Had Record Year In 1980—Backlog Is More Than \$300 Million

Tacoma Boatbuilding Company, Tacoma, Wash., has reported the best year in the company's 60-year history. The company's year-end backlog, at more than \$300 million, also is the highest recorded, said Frank B. Lynott, chairman. For the year 1980, Tacoma Boatbuilding had net income of \$4.6 million or \$3.86 per share on total revenues of \$119.4 million, compared with net income of \$3.4 million or \$2.91 per share on revenues of \$94.1 million for the prior year.

"Our revenues during the year increased 27 percent and net income increased 34 percent compared with 1979, and we expect to be able to continue or exceed this performance," Mr. Lynott reported. "The outlook for 1981 is excellent," he continued, "because of our substantially increased bidding activity for large commercial projects, particularly for the offshore petroleum industry, and defense-oriented vessels. Tacoma Boat's backlog now equals more than two year's revenues at our current rate."

Major repair work on a Washington State ferry and an Army ship and several construction contracts for oil company barges, amounting to a total of about \$15 million, have been started recently in the company's shipyards. The second of four 270-foot medium endurance cutters being built for the U.S. Coast Guard was launched March 19.

MarAd Approves Title XI On 15 Shearson Barges That Cost \$4 Million

The Maritime Administration has approved in principle an application from Shearson River Barge Associates IV, New York, for a Title XI guarantee to aid in financing 15 river barges. Built by Nashville Bridge Co., Nashville, Tenn., the 195-foot-long vessels were delivered in mid-1980 and are to be operated and managed by the Marine Equipment Corporation. The barges are expected to be used primarily in the carriage of grain, but also may be used to transport northbound cargoes such as coal.

The approved guarantee is for a maximum of \$3,637,000, which is 87½ percent of the total depreciated actual cost of \$4,157,457.

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Davits are built to the highest standards and are now approved by every leading safety authority in the world. The latest seal of approval comes from the U.S. Coast Guard, allowing ship owners and builders to retrofit this proven davit on their vessels.

Slewing Arm Design. Schat's design features the slewing arm for maximum flexibility. The internal winch mechanism means that several fully-loaded inflatable rafts can be launched

in sequence within 30 minutes. Simple to operate, easy to maintain, and designed for space-saving stowaway, the

Raft Launching Davit is fitted on hundreds of ships, ferries, oil rigs and platforms around the world. Now it's made in America for American ships and offshore structures.

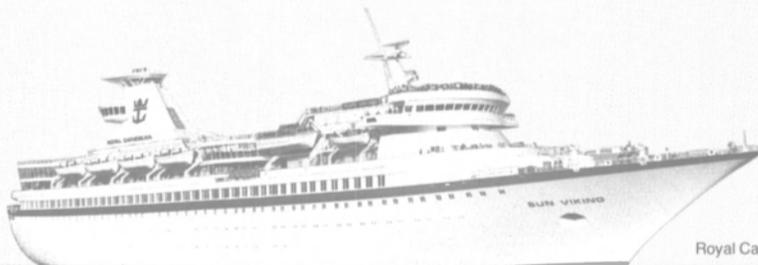
For full details on the Raft Launching Davits or other items of Schat lifting and transfer equipment, contact The Schat Davit Corporation, 226 West Park Place, Newark, Delaware 19711. Telephone: 302/366-1961. Telex: 835374.



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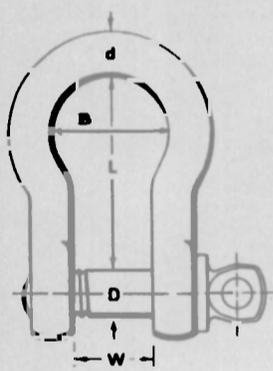
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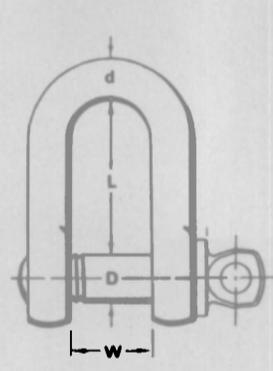
FORGED STEEL

"HIGH LOAD" SHACKLES



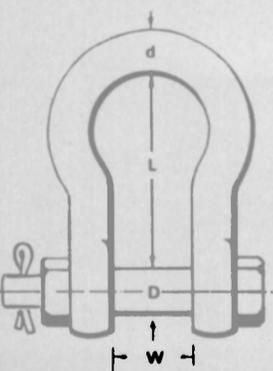
Sale Working Load U.S. tons	Body Dia d	Pin Dia D	Inside Length L (Min.)	Inside Width at Pin W	Inside Width at Bow B	Outside of eye Dia (Max.)	Approx. Wt. per 100 in lbs	Ordering Code Galvanized
1/2	7/16	3/8	3/4	3/4	3/4	7/8	5	UBG 1X
3/4	1/2	1/2	1 1/8	1 1/8	1 1/8	1 1/4	12	UBG 2
1	5/8	5/8	1 1/2	1 1/2	1 1/2	1 3/4	18	UBG 2 1/2
1 1/2	3/4	3/4	1 7/8	1 7/8	1 7/8	2 1/8	30	UBG 3
2	7/8	7/8	2 1/8	2 1/8	2 1/8	2 3/4	49	UBG 3 1/2
2 1/2	1	1	2 3/8	2 3/8	2 3/8	3 1/8	76	UBG 4
3 1/2	1 1/8	1 1/8	3 1/8	3 1/8	3 1/8	3 3/4	149	UBG 5
4 1/2	1 1/4	1 1/4	3 3/4	3 3/4	3 3/4	4 1/8	222	UBG 6
6 1/2	1 3/8	1 3/8	4 1/4	4 1/4	4 1/4	5 1/4	343	UBG 7
8 1/2	1 1/2	1 1/2	4 3/4	4 3/4	4 3/4	5 3/4	534	UBG 8
9 1/2	1 5/8	1 5/8	5 1/8	5 1/8	5 1/8	6 1/8	746	UBG 9
12	1 3/4	1 3/4	5 3/4	5 3/4	5 3/4	6 3/4	968	UBG 10
13 1/2	1 7/8	1 7/8	6 1/4	6 1/4	6 1/4	7 1/4	1,287	UBG 11
17	2	2	7 1/4	7 1/4	7 1/4	8 1/4	1,749	UBG 12
25	2 1/2	2 1/2	9 1/4	9 1/4	9 1/4	10 1/4	2,802	UBG 14
35	3	3	11 1/4	11 1/4	11 1/4	12 1/4	4,134	UBG 18
45	3 1/2	3 1/2	13 1/4	13 1/4	13 1/4	14 1/4	5,940	UBG 18
55	4	4	15 1/4	15 1/4	15 1/4	16 1/4	8,412	UBG 20
70	4 1/2	4 1/2	17 1/4	17 1/4	17 1/4	18 1/4	10,850	UBG 22
85	5	5	19 1/4	19 1/4	19 1/4	20 1/4	11,946	UBG 24
120	6	6	23 1/4	23 1/4	23 1/4	24 1/4	21,000	UBG 28

DIMENSIONS SHOWN ARE NOMINAL



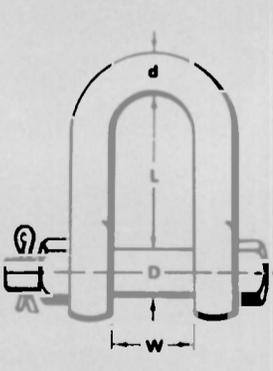
Sale Working Load U.S. tons	Body Dia d	Pin Dia D	Inside Length L (Min.)	Inside Width at Pin W	Outside of eye Dia (Max.)	Approx. Wt. per 100 in lbs	Ordering Code Galvanized
1/2	3/8	3/8	1 1/8	1 1/8	1 1/4	11	UDG 2
3/4	1/2	1/2	1 3/4	1 3/4	1 7/8	17	UDG 2 1/2
1	5/8	5/8	2 1/8	2 1/8	2 3/8	29	UDG 3
1 1/2	3/4	3/4	2 3/4	2 3/4	3 1/8	42	UDG 3 1/2
2	7/8	7/8	3 1/4	3 1/4	3 3/4	71	UDG 4
2 1/2	1	1	3 3/4	3 3/4	4 1/8	127	UDG 5
3 1/2	1 1/8	1 1/8	4 1/4	4 1/4	4 3/4	221	UDG 6
4 1/2	1 1/4	1 1/4	4 3/4	4 3/4	5 1/4	315	UDG 7
6 1/2	1 3/8	1 3/8	5 1/4	5 1/4	5 3/4	460	UDG 8
8 1/2	1 1/2	1 1/2	6 1/4	6 1/4	6 3/4	668	UDG 9
9 1/2	1 5/8	1 5/8	6 3/4	6 3/4	7 1/4	896	UDG 10
12	1 3/4	1 3/4	7 1/4	7 1/4	7 3/4	1,220	UDG 11
13 1/2	1 7/8	1 7/8	7 3/4	7 3/4	8 1/4	1,635	UDG 12
17	2	2	9 1/4	9 1/4	9 3/4	2,550	UDG 14
25	2 1/2	2 1/2	11 1/4	11 1/4	11 3/4	3,830	UDG 18
35	3	3	13 1/4	13 1/4	13 3/4	5,500	UDG 18
45	3 1/2	3 1/2	15 1/4	15 1/4	15 3/4	7,420	UDG 20
55	4	4	17 1/4	17 1/4	17 3/4	9,850	UDG 22
70	4 1/2	4 1/2	19 1/4	19 1/4	19 3/4	10,850	UDG 24
85	5	5	21 1/4	21 1/4	21 3/4	10,850	UDG 24
120	6	6	25 1/4	25 1/4	25 3/4	19,250	UDG 28

DIMENSIONS SHOWN ARE NOMINAL



Sale Working Load U.S. tons	Body Dia d	Pin Dia D	Inside Length L (Min.)	Inside Width at Pin W	Approx. Wt. per 100 in lbs	Ordering Code Galvanized
2	1/2	3/8	1 1/8	1 1/8	85	USBG 4
3 1/2	3/4	1/2	1 3/4	1 3/4	182	USBG 5
4 1/2	5/8	5/8	2 1/8	2 1/8	287	USBG 6
6 1/2	3/4	3/4	2 3/4	2 3/4	402	USBG 7
8 1/2	1	1	3 1/4	3 1/4	571	USBG 8
9 1/2	1 1/8	1 1/8	3 3/4	3 3/4	795	USBG 9
12	1 1/4	1 1/4	4 1/4	4 1/4	1,129	USBG 10
13 1/2	1 1/2	1 1/2	4 3/4	4 3/4	1,536	USBG 11
17	1 3/4	1 3/4	5 1/4	5 1/4	1,968	USBG 12
25	2	2	6 1/4	6 1/4	3,140	USBG 14
35	2 1/2	2 1/2	7 1/4	7 1/4	4,645	USBG 16
45	3	3	8 1/4	8 1/4	6,750	USBG 18
55	3 1/2	3 1/2	9 1/4	9 1/4	9,420	USBG 20
70	4	4	11 1/4	11 1/4	12,000	USBG 22
85	4 1/2	4 1/2	12 1/4	12 1/4	14,530	USBG 24
120	5 1/2	5 1/2	15 1/4	15 1/4	25,080	USBG 28
150	6 1/2	6 1/2	17 1/4	17 1/4	35,900	USBG 32

DIMENSIONS SHOWN ARE NOMINAL



Sale Working Load U.S. tons	Body Dia d	Pin Dia D	Inside Length L (Min.)	Inside Width at Pin W	Outside of eye Dia (Max.)	Approx. Wt. per 100 in lbs	Ordering Code Galvanized
2	1/2	3/8	1 1/8	1 1/8	1 1/4	78	USDG 4
3 1/2	3/4	1/2	1 3/4	1 3/4	1 7/8	160	USDG 5
4 1/2	5/8	5/8	2 1/8	2 1/8	2 3/8	269	USDG 6
6 1/2	3/4	3/4	2 3/4	2 3/4	3 1/8	372	USDG 7
8 1/2	1	1	3 1/4	3 1/4	3 3/4	544	USDG 8
9 1/2	1 1/8	1 1/8	3 3/4	3 3/4	4 1/8	738	USDG 9
12	1 1/4	1 1/4	4 1/4	4 1/4	4 3/4	1,038	USDG 10
13 1/2	1 1/2	1 1/2	4 3/4	4 3/4	5 1/4	1,349	USDG 11
17	1 3/4	1 3/4	5 1/4	5 1/4	5 3/4	1,855	USDG 12
25	2	2	6 1/4	6 1/4	6 3/4	2,865	USDG 14
35	2 1/2	2 1/2	7 1/4	7 1/4	7 3/4	4,128	USDG 16
45	3	3	8 1/4	8 1/4	8 3/4	6,340	USDG 18
55	3 1/2	3 1/2	9 1/4	9 1/4	9 3/4	8,465	USDG 20
70	4	4	11 1/4	11 1/4	11 3/4	10,800	USDG 22
85	4 1/2	4 1/2	12 1/4	12 1/4	12 3/4	12,360	USDG 24
120	5 1/2	5 1/2	15 1/4	15 1/4	15 3/4	21,860	USDG 28
150	6 1/2	6 1/2	17 1/4	17 1/4	17 3/4	31,100	USDG 32

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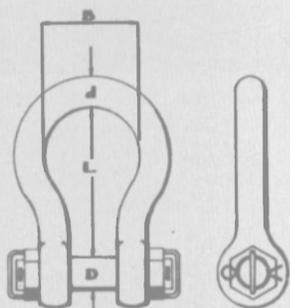


L SHACKLES

"HIGH CAPACITY" SHACKLES

DIMENSIONS IN MM (AND INCHES)							
Safe Working Load U.S. tons	Body Dia d	Pin Dia D	Inside Length L (Min.)	Inside Width at Pin W	Eye Dia B (Min.)	Ordering Code	Approx Weight Each Kgs (lbs)
50	50 (2)	55 (2 1/4)	250 (9 7/8)	85 (3 3/8)	180 (6 3/4)	HCA 50	22 (48)
80	65 (2 1/2)	70 (2 3/4)	320 (12 5/8)	110 (4 3/8)	200 (7 7/8)	HCA 85	43 (95)
120	80 (3)	82.5 (3 1/4)	390 (15 3/8)	130 (5 1/8)	250 (9 7/8)	HCA 80	73 (160)
150	90 (3 1/2)	95 (3 3/4)	435 (17 1/2)	150 (5 7/8)	280 (11 1/8)	HCA 90	115 (260)
175	105 (4)	110 (4 1/4)	480 (18 7/8)	165 (6 5/8)	300 (11 7/8)	HCA105	175 (385)
200	110 (4 1/4)	120 (4 3/4)	520 (20 4 7/8)	175 (6 7/8)	330 (13)	HCA110	210 (460)
250	120 (4 3/4)	130 (5 1/4)	575 (22 5/8)	200 (7 7/8)	380 (14 7/8)	HCA120	280 (640)
300	130 (5)	145 (5 3/4)	650 (25 5/8)	210 (8 1/4)	400 (15 3/4)	HCA130	370 (810)
400	145 (5 1/4)	155 (6 1/8)	710 (28)	225 (8 7/8)	450 (17 3/4)	HCA145	520 (1140)
500	155 (6)	170 (6 3/4)	775 (30 5/8)	250 (9 7/8)	500 (19 5/8)	HCA155	630 (1380)
750	205 (8)	215 (8 1/2)	830 (32 3/4)	340 (13 3/8)	585 (23)	HCA205	1400 (3070)
1000	245 (9)	255 (10)	990 (39)	395 (15 5/8)	740 (29 1/4)	HCA245	2350 (5150)

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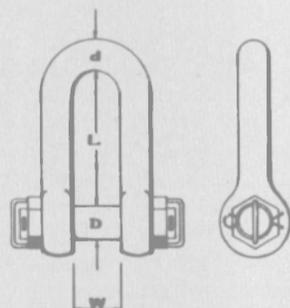
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DIMENSIONS IN MM (AND INCHES)						
Safe Working Load U.S. tons	Body Dia d	Pin Dia D	Inside Length L (Min.)	Inside Width at Pin W	Ordering Code	Approx Weight Each Kgs (lbs)
50	50 (2)	55 (2 1/4)	200 (8)	85 (3 3/8)	HCC 50	20 (46)
80	65 (2 1/2)	70 (2 3/4)	250 (10)	110 (4 3/8)	HCC 65	40 (90)
120	80 (3)	82.5 (3 1/4)	300 (11 3/4)	130 (5 1/8)	HCC 80	70 (160)
150	90 (3 1/2)	95 (3 3/4)	350 (13 3/4)	150 (5 7/8)	HCC 90	115 (250)
175	105 (4)	110 (4 1/4)	400 (15 3/4)	165 (6 5/8)	HCC105	170 (370)
200	110 (4 1/4)	120 (4 3/4)	450 (17 3/4)	175 (6 7/8)	HCC110	200 (445)
250	120 (4 3/4)	130 (5 1/4)	500 (19 5/8)	200 (7 7/8)	HCC120	280 (620)
300	130 (5)	145 (5 3/4)	550 (21 5/8)	210 (8 1/4)	HCC130	350 (780)
400	145 (5 1/4)	155 (6 1/8)	600 (23 3/4)	225 (8 7/8)	HCC145	500 (1100)
500	155 (6)	170 (6 3/4)	640 (25 1/8)	250 (9 7/8)	HCC155	600 (1330)
750	205 (8)	215 (8 1/2)	700 (27 3/4)	340 (13 3/8)	HCC205	1350 (2970)
1000	245 (9)	255 (10)	850 (33 1/2)	395 (15 5/8)	HCC245	2260 (4970)

DIMENSIONS SHOWN ARE NOMINAL



SAFETY CHAIN

**SNAME New England
Section Hears Paper
On Thrust Bearings**

A recent SNAME New England Section meeting was held at the Faculty Club of the Massachusetts Institute of Technology in Cambridge, Mass. The speaker was Lyssimachos Vassilopoulos,

president of Maritech, Inc. He presented a paper titled "Stiffness and Damping of Thrust Bearings." Engineering procedures for determining thrust bearing stiffness and damping properties at the design stage, using simplified structural models and elementary lubrication theory, were discussed in detail by the author. The utility of the finite element method

for more refined assessments was also illustrated.

Mr. Vassilopoulos concluded his presentation by discussing some specific examples to show how the properties of existing bearings can be determined. Due to their simplicity, the methods suggested in the paper can be of great usefulness at the design stage. The presentation was followed by a

discussion period in which many members of the audience participated.

**O&K To Build Split
Hull Hopper Dredge
For Heinrich Hirdes**

O&K Orenstein & Koppel Aktiengesellschaft recently delivered a contract to supply a hopper suction dredger with a hopper capacity of 1,500 cubic meters. The contract was placed by Heinrich Hirdes GmbH, Hamburg. The dredger will be built to Germanischer-Lloyd class +100 A4 "Dredger" + MC AUT 16/24 at O&K's shipyard in Lubeck. Called a "split hopper," the hull is divided longitudinally and is opened for unloading.

The two side suction pipes with pressure-activated, trailing suction heads are designed for 73-foot dredging depth. The dredge pumps can be used for loading and unloading the hopper. For unloading, the pumps can be operated singly, connected in parallel or in series. The engine plant is designed for unattended engine room. Two main diesels will provide primary energy for propulsion, the dredge pumps, and the ship's mains. The diesels can be operated with heavy oil. The total diesel capacity installed will be 3,200 bhp.

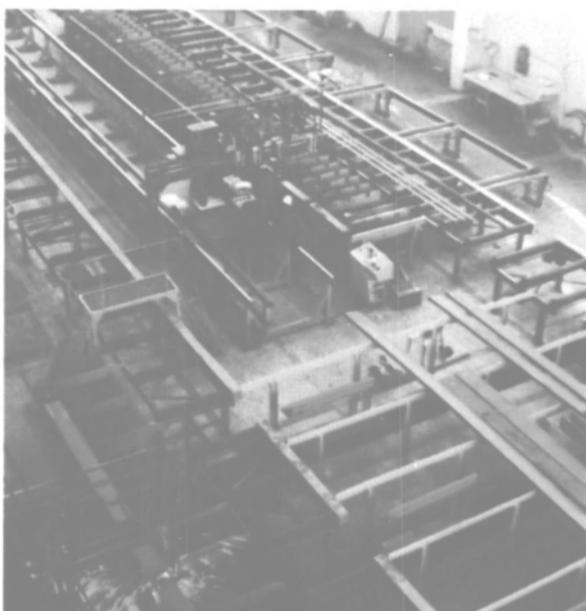
Two variable-pitch propeller systems and an O&K Tornado transverse thruster will provide for good maneuverability of the dredger in narrow estuaries. The fully laden dredger will reach a speed of more than 10 knots. Air-conditioned cabins will be provided for a crew of 11. The dredger could also be operated in tropical waters. Delivery is scheduled for the beginning of 1982.

**Roger Potash Joins
David J. Seymour, Ltd.
As Principal Associate**

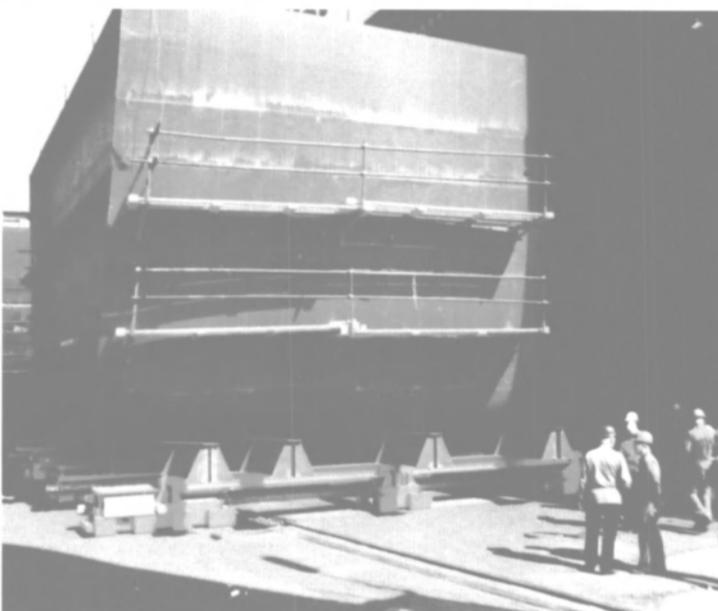
Dr. Roger L. Potash has joined the firm of David J. Seymour, Ltd., naval architects and marine consultants, as principal associate. In his new position he is responsible for project management, naval architecture, and ocean engineering design and analysis.

Formerly with Ocean Systems Division of Lockheed Missiles & Space Company for nine years, Dr. Potash has extensive experience in research and development in such diverse programs as OTEC (Ocean Thermal Energy Conversion), ocean mining, surface effect ships, offshore oil spill recovery, and 12-meter yachts. He conducted research in ship hydrodynamics at the Danish Ship Research Laboratory, and yacht design with Gary Mull and Sparkman & Stephens.

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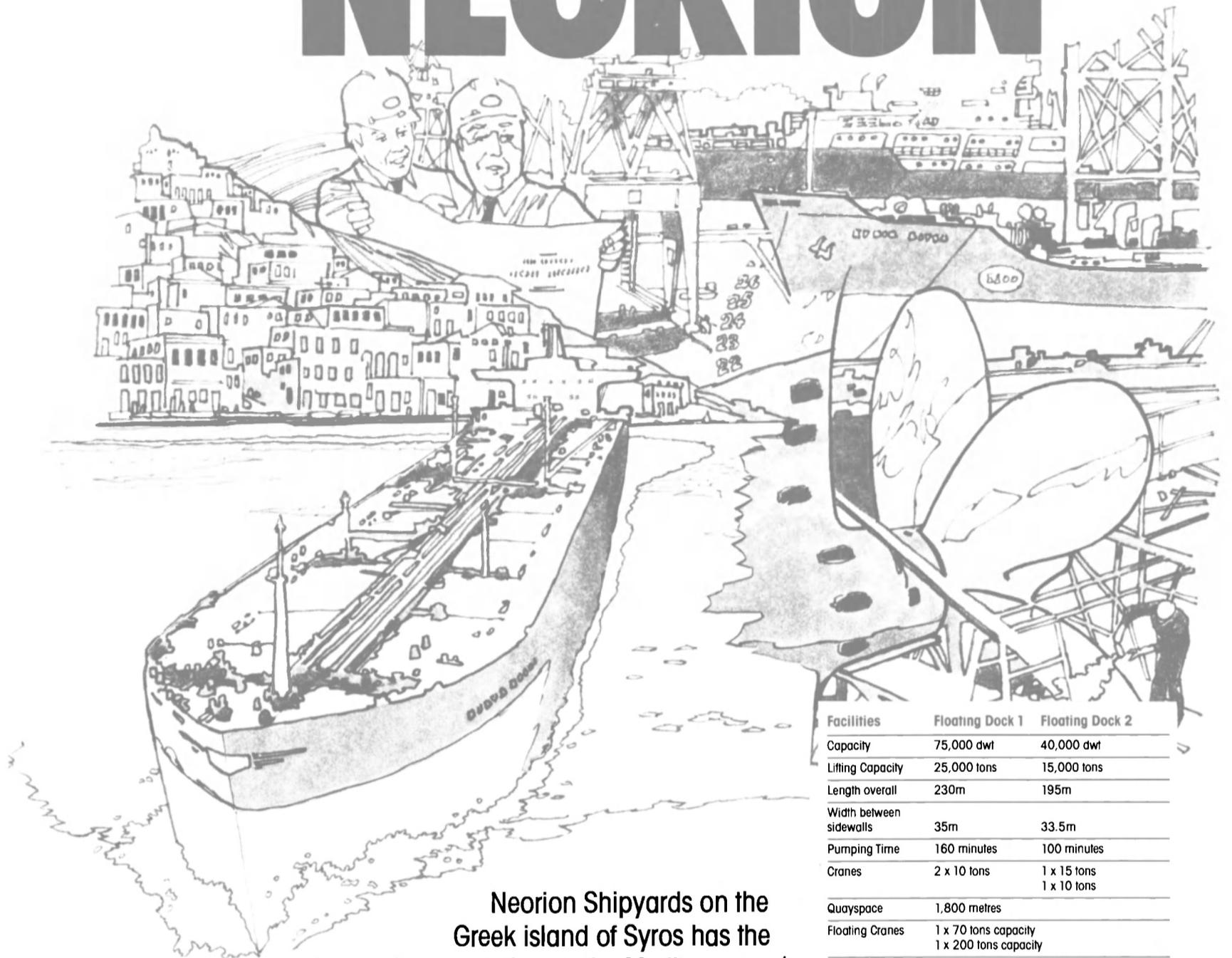
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Santa Fe Drilling's Seven Offshore Rigs To Cost \$350 Million

The contract oil and gas well drilling industry is enjoying an unprecedented boom, both on land and offshore, around the world. New construction of drilling units is announced almost daily. The

ability of drilling contractors to order offshore drilling units is often limited by the availability of construction slots in shipyards that build rigs.

The reasons for the boom in

drilling appear to be twofold. First, of course, is the higher price of crude oil on a worldwide basis. But this does not fully explain the story. The second reason is a compelling political drive by the producing countries—and the third world nations—to define

their ultimate reserves regardless of the near-term market for their oil.

As this assessment may take 10 years or more, the drilling contractors have been quite aggressive in ordering new rig construction. Some companies are building



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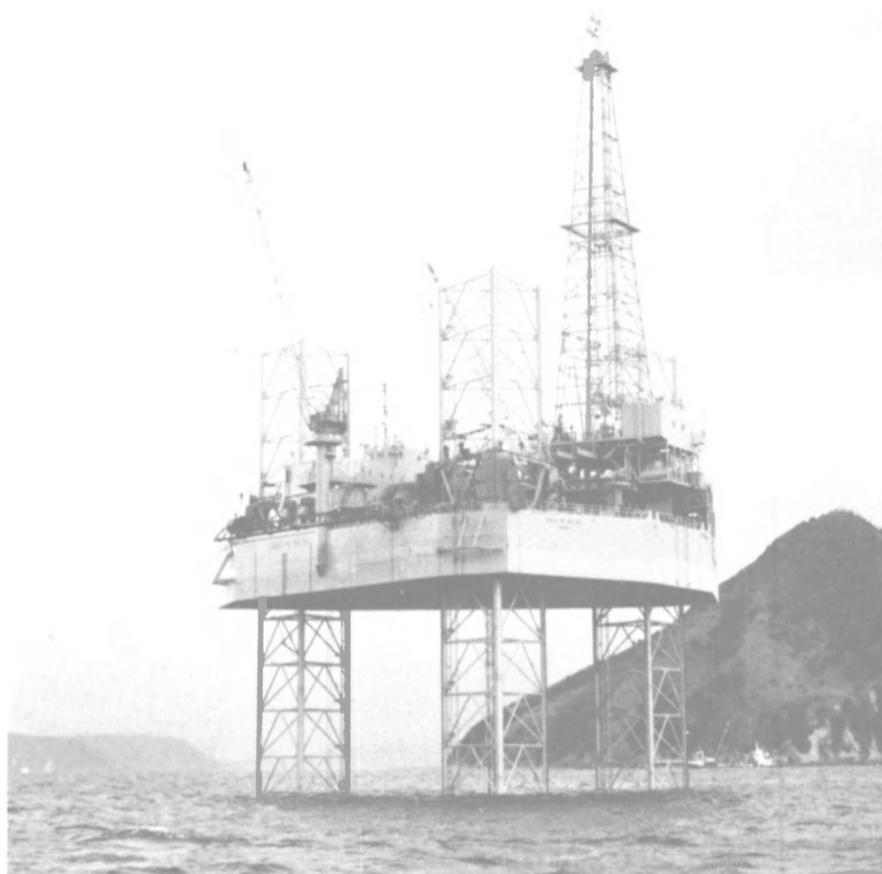
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FMC

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Santa Fe Drilling Company's new three-leg jackup, Rig 124, arrived in Indonesian waters from Japan recently and went to work for Arco-Indonesia. The \$26-million unit, pictured here undergoing tests in the Inland Sea of Japan, was built by Mitsui Ocean Development & Engineering Co. (Modoc) at the Kanrei shipyard, Takushima, Japan.



on speculation; others order new rigs only after they have been committed.

The construction activities at Santa Fe Drilling Company, headquartered in Orange, Calif., are probably typical of the industry. New construction by Santa Fe is unusual only in the diversity of equipment being ordered.

When Santa Fe Rig 124 (photo) went to work for Arco-Indonesia in the Java Sea earlier this year, it marked the first of eight new mobile offshore drilling units scheduled to go into operation for the company in the early 1980s.

Santa Fe has seven other marine units either on order or undergoing conversion, at a cost in excess of \$350 million. (An additional 13 land rigs are on order at a cost of \$92 million, making the grand total \$442 million.)

When this phase of construction activity is completed, Santa Fe will be operating 34 marine units and 74 land rigs, for a total of 108 drilling units. Most of these rigs are working overseas in 15 different nations, primarily in Venezuela, the Middle East, the North Sea, Africa and Southeast Asia. Santa Fe's domestic operations are in Texas and Louisiana.

Now in design or under construction for Santa Fe are three large semisubmersibles, a trio of three-leg jackups similar to Rig 124, and a swamp barge. Here is a breakdown:

Rig 130. This semisubmersible is the former Choctaw I, the world's first twin-hull, column-stabilized pipelaying and derrick barge. It was built in 1969 and performed construction work from Australia to the North Sea for 11 years for Santa Fe Engineering & Construction Company, a sister company to Santa Fe Drilling. The barge is presently undergoing conversion at the Avondale shipyard near New Orleans. Upon completion in August, Rig 130 will begin a two-year drilling contract for Cities Service.

Rigs 135 and 140. These large, all-weather semisubmersibles will be modified versions of the Enhanced Pacesetter series designed by the marine architectural firm of Friede and Goldman of New Orleans. They will be capable of operating in such hostile environments as the Gulf of Alaska and north of the 62nd parallel in the North Sea. Both are being built in South Korea by Daewoo Shipbuilding & Heavy Machinery Ltd. at its Okpo Island shipyard near Pusan. Rig 135 will be delivered in November 1982 and Rig 140 the following March. Both of these \$80-million units are committed for work.

Rigs 127, 134, and 136. These three jackups, under construction at China Shipbuilding Company, Kaohsiung, Taiwan, are sched-

uled for completion in April 1983, December 1983, and June 1985. They are committed to work initially for Arco, Union Oil, and Gulf of Suez Petroleum Co., an affiliate of Standard Oil Co. (Indiana). They, like Rig 124, are modified versions of the L-780 series cantilevered jackups designed by Friede and Goldman. They are capable of drilling in

250 feet of water to depths 20,000 feet below the seabed.

Rig 132. This unit will go to work this summer as a swamp barge in the Orinoco Delta of Venezuela. Rig 132 is the former Santa Fe launch barge Shawnee. It is being renamed the Orinoco I, and is committed for three years to the Venezuelan oil company Lagoven.

The seven marine units and 13 land rigs being built for Santa Fe Drilling are being designed and rigged up by Santa Fe Engineering Services Company, another sister company. In addition, this Engineering Services group is designing and rigging up 11 other drilling rigs for outside clients. Nine are land units for two Ven-

(continued on page 42)

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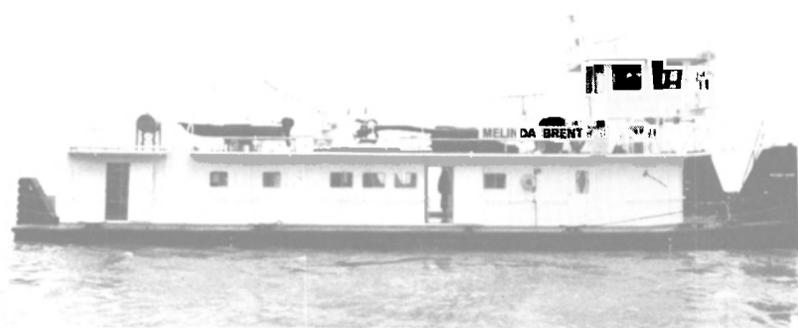
Santa Fe Drilling's Seven Rigs

(continued from page 41)

ezuelan oil companies. A British-based affiliate, Taywood-Santa Fe Ltd., is designing and building two fixed-platform rigs for Gas Council (Exploration) Ltd., a sub-

sidiary of British Gas Corporation. These fixed platform rigs will be operated by a joint venture, Taywood-Santa Fe Drilling Ltd.

James C. Thrane, vice president and manager of capital projects at Santa Fe Engineering Services Company, said his design and construction people are as busy now as they have ever been.



Brent Christens Cummins-Powered Towboat 'Melinda Brent'

The Melinda Brent (shown above), an 86-foot inland waterways towboat, was christened recently in New Orleans by her owners, Brent Towing of Greenville, Miss. Designed and built by Superior Boat Works of Greenville, the vessel is powered by Cummins KTA-2300-M marine diesel engines generating 1,880 total continuous duty horsepower at 1,800 rpm. Power is transmitted to 76-inch, stainless-steel Kahlenberg propellers through Twin Disc MG-540 gears set at 6.18:1. The Melinda Brent is the first of Brent's 18 boats powered by Cummins engines.

The company plans to operate the boat primarily on the Illinois River and Chicago area waterways, where it will transport chemicals to contract customers. The vessel has a beam of 27 feet and a draft of 9 feet. It is the first of two tugs ordered by Brent from Superior Boatworks, a whol-

ly owned subsidiary. A retractable pilothouse gives the boat maneuverability under low bridges in the Chicago area yet still provides adequate visibility for short runs on the choppy waters of Lake Michigan.

Manufacturer's published fuel curves show the 12-cylinder KTA-2300-M consumes 47.4 gallons per hour under full-load, continuous-duty applications. Aside from fuel efficiency, Brent also looked at power and service considerations before choosing Cummins. "The twin engines give us over 1,800 horsepower—plenty of power for the harbor maneuverability we need with the Melinda Brent," vice president Lea Brent says.

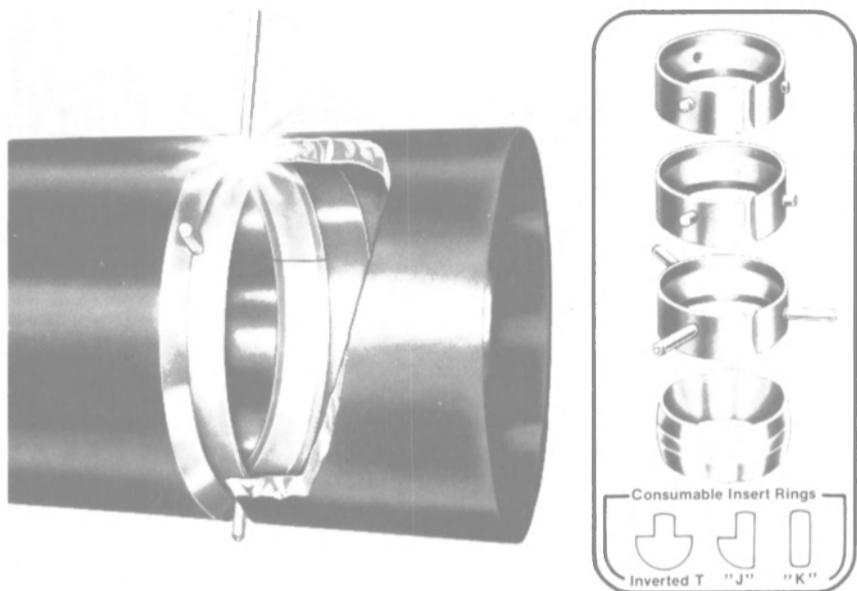
The Melinda Brent is also equipped with a Cummins fuel/oil blender to convert dirty lube oil into a mixture that can be burned with diesel fuel, thereby stretching fuel supplies. The vessel is also equipped with four Sarex 10 oil/water separators to filter water and contaminants from fuel.

Two Lima 75-kw generators powered by Cummins NT-495 marine auxiliary engines supply power for electronic gear and Gardner-Denver air compressors. Patterson 20-ton deck winches powered by a five-horsepower electric motor secure tow ropes. Communication equipment includes Triton 20 SSB and 55/75 VHF radios. Radar from Furuno and a LAZ-43 depth sounder pinpoint potential waterways hazards.

Paneled quarters for the eight-man crew are located on the main deck and a spacious galley features full-size range, refrigerator and dishwasher along with a color television. The Melinda Brent is equipped with a full array of warning and safety equipment including Kahlenberg air horns, Carlisle & Finch searchlights, Perko navigation lights, and Anslul fire extinguishers.

Brent Marine Supply Company outfitted the boat, while Cummins Mid-South, Inc. of Jackson, Miss., supplied both the main propulsion engines and the auxiliary generator sets.

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American Tankships – An Ingram Affiliate Now Constructing Five 37,000 DWT Product Tankers.

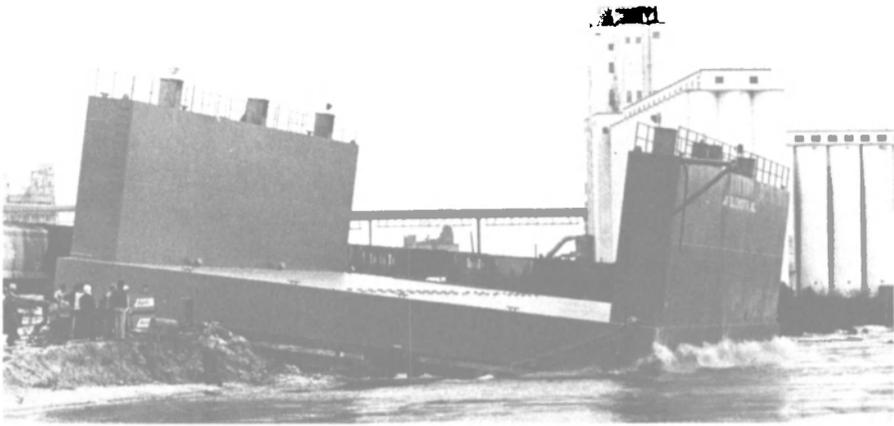
Just as Ingram Tankships' integrated Tug-Barge units merited international acclaim for economy, efficiency and profitability, its affiliate American Tankships Inc.'s new building program represents another major Ingram contribution to modern marine transportation.

The five 37,500 DWT tankers represent a new class of ship with a LOA of 658 feet, a beam of 90 feet, and a fully loaded draft of 36 feet. These ships, to be built by NASSCO

in San Diego, are among the first U. S. flag coastwise product tankers to be powered with slow-speed diesel engines. American Tankships' new vessels offer further proof of Ingram's dedication to providing the marine industry with innovative technology.

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Corpus Christi Gets Its First Floating Drydock

The first floating drydock in Texas south of Houston was launched (photo above) at the Port of Corpus Christi recently. The facility has the capacity to lift boats and barges weighing up to 1,300 tons, and is operated by Jay Bludworth Inc. The first ves-

sel hauled out for repairs on the 108-foot drydock was the Philip K, a Corpus Christi harbor tugboat that was designed by Mr. Bludworth five years ago.

Mr. Bludworth anticipates that most of his business will come from the growing number of sup-

ply and crewboats that are being used to service offshore oil and gas drilling and production operations in the Gulf. Positioned on the north bank of the ship channel just west of Corpus Christi Public Elevator, the drydock will haul out vessels of up to 200 feet in length. It will accommodate vessels up to 62 feet wide, and some larger barges will extend

from either end of the drydock. This will allow work such as changing shafts and propellers, repairing hulls, painting, repowering, and doing annual inspections.

"This facility adds a new dimension to the type of maintenance service that will be available to the south Texas marine industry," said Corpus Christi port director Harry Plomarity.

Brochure Available From Stacey Valve On Its Spectacle Line Blinds

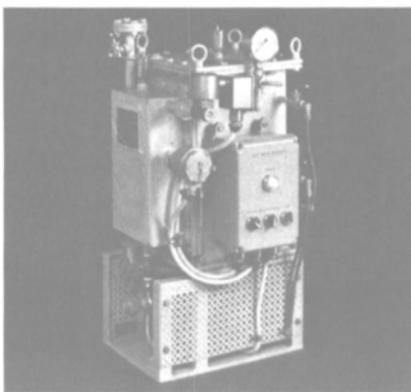
Stacey Valve Company, Brooklyn, N.Y., is offering a catalog that gives detailed specifications and operating features of its 601-AJ Spectacle Line Blind. This blind, particularly suited for shipboard fuel and liquid cargo lines, is said to provide positive dead-tight shutoff in piping from 2 to 18 inches.

With the Stacey 601-AJ blind,

opening is accomplished by a single turn of three bolts. The spectacle is rotated to the desired position—with either the "blind" plate or the full-bore "open" plate in the pipeline—and the bolts are retightened. A short steel bar or pipe is the only tool required. The exposed plate of the spectacle indicates the status of the blind at a glance, even from a distance, a valuable safety and maintenance feature.

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

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

Ease of installation is due primarily to the design, low weight and compactness of the engines. In addition, MTU offers complete service/parts back-up and a proven service/parts exchange program for any area of the world. The reliability of an MTU engine is unsurpassed

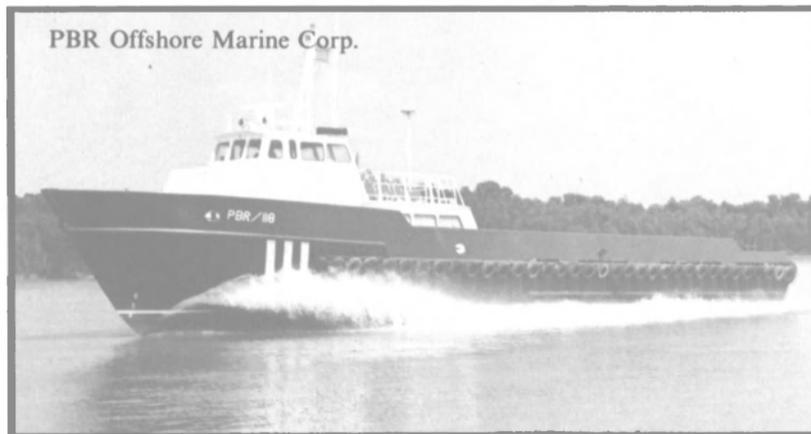
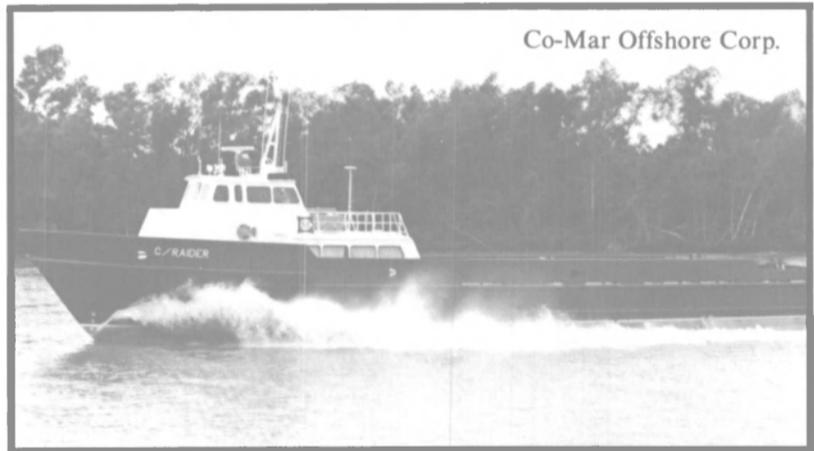
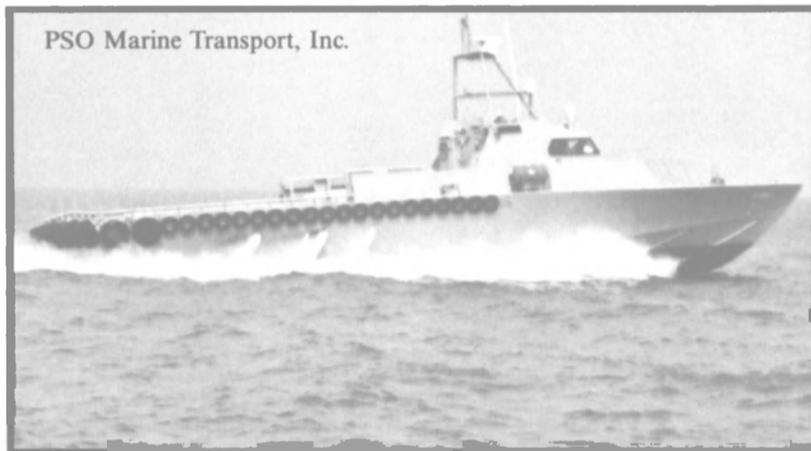
due to the rugged quality control tests and checks performed on each one.

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they have had as industry leaders.

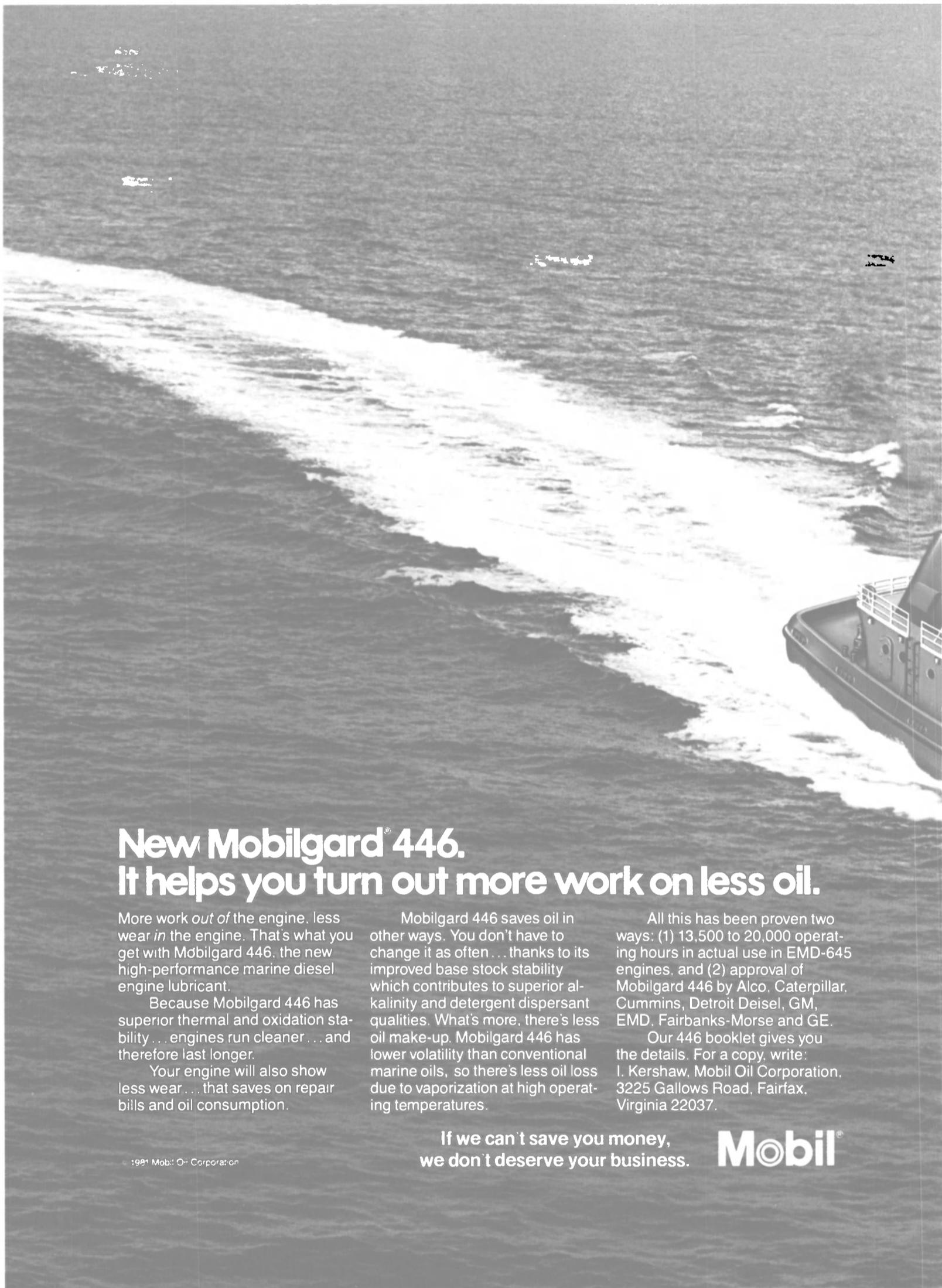
No other engine manufacturer can make the claims we do and back them up. And with fuel and other operating costs rising almost daily, MTU marine diesel engines make more sense than ever. You can tell by the company we keep.



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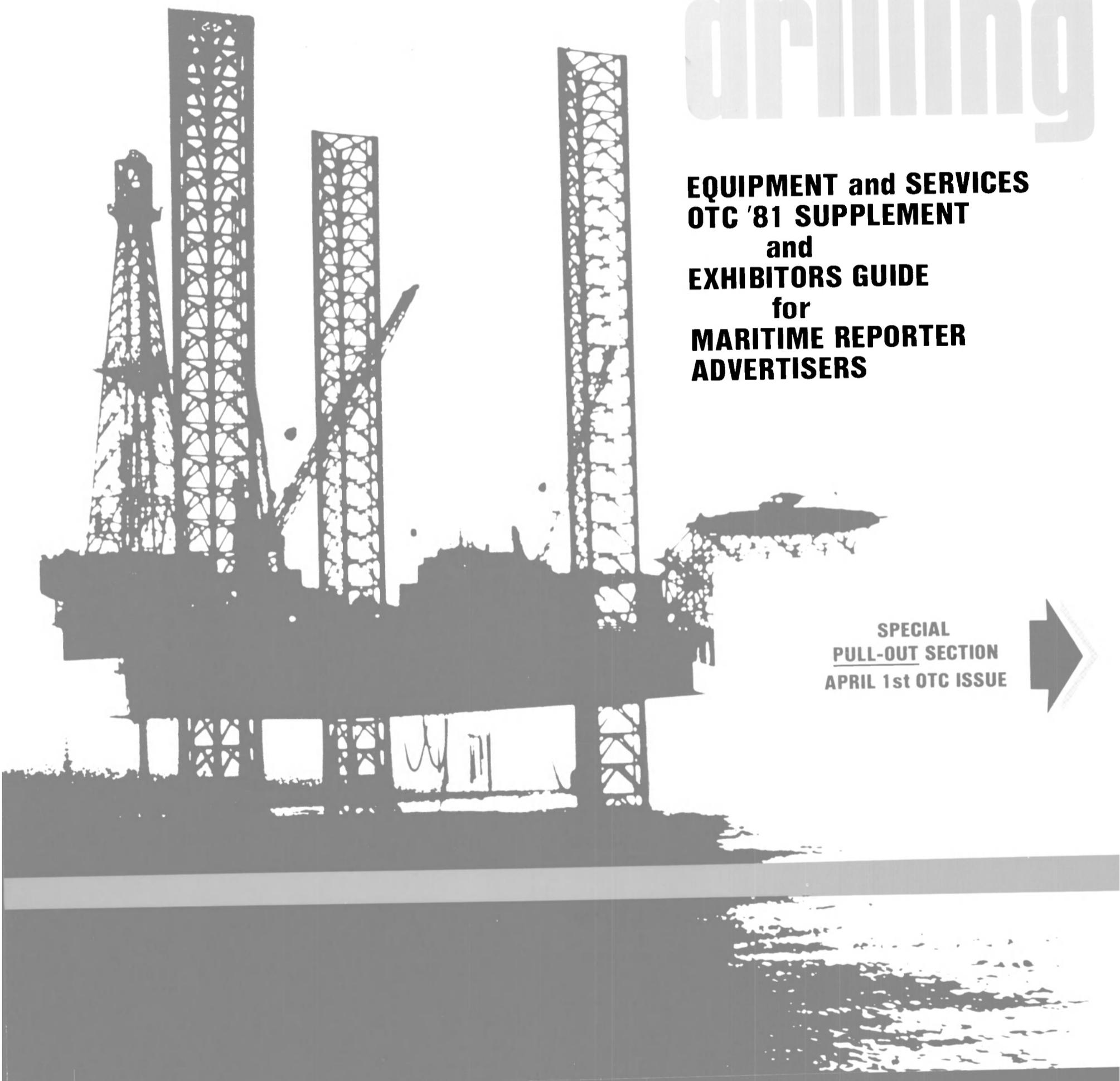
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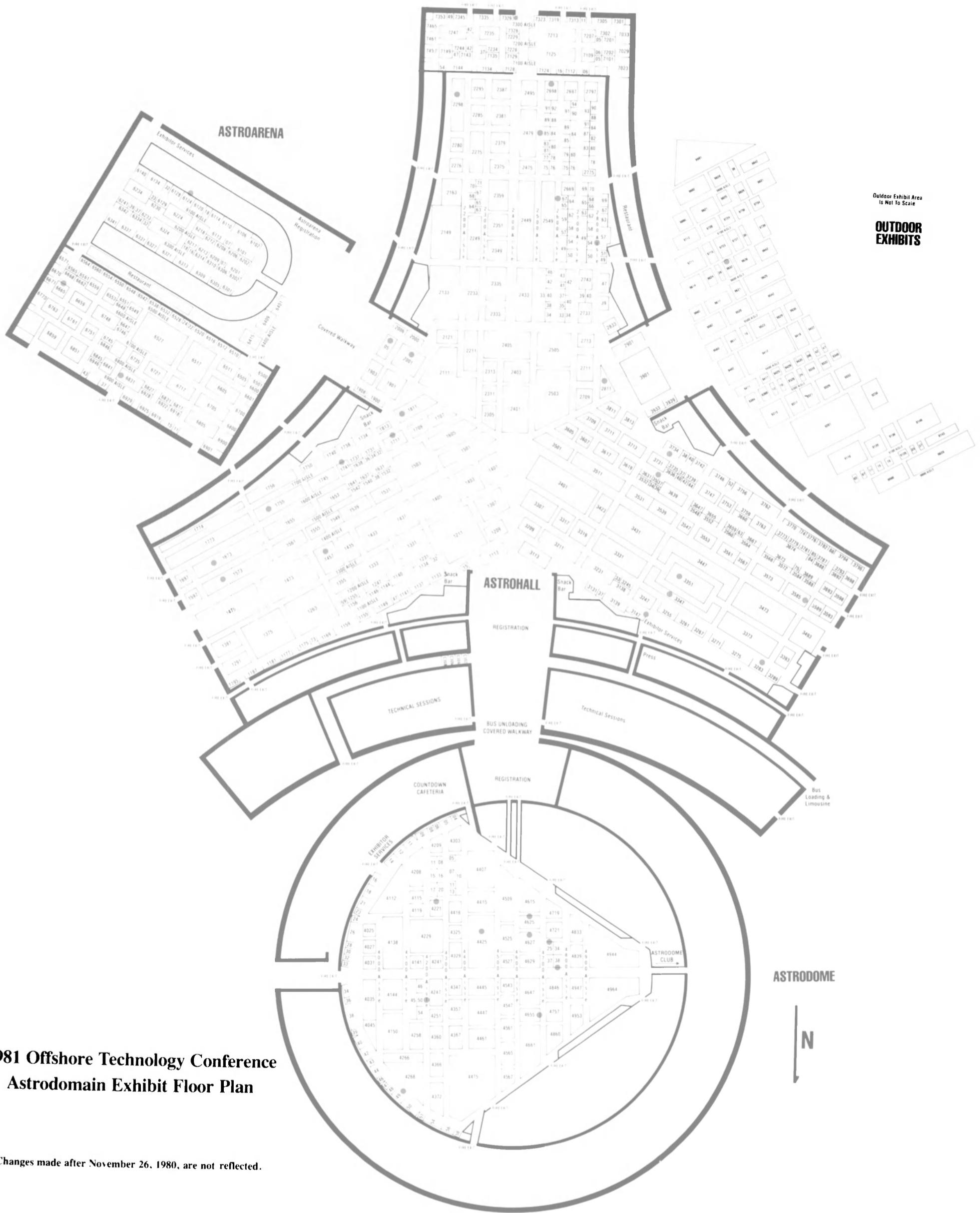
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Outdoor Exhibit Area
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**OUTDOOR
EXHIBITS**

**1981 Offshore Technology Conference
Astrodomain Exhibit Floor Plan**

*Changes made after November 26, 1980, are not reflected.



A Preview

OTC '81

May 4-7, 1981-Houston

RED DOTS ● (on facing page) INDICATE BOOTH LOCATIONS FOR THE FOLLOWING ADVERTISERS IN MARITIME REPORTER

ALCO Power Inc. 4627	Hydronautics, Incorporated 2635	MonArk Boat 4625	Seaward International, Inc. 4221
Aqua-Chem 2005	Kawasaki Heavy Industries Ltd. 2002, 1573, 1073	Newport News Shipbuilding 6831	Selby, Battersby & Co. 2667
Avondale Shipyards, Inc. .. 3283	Krupp Atlas Elektronik .. 4250	Philadelphia Resins Corporation 4725	Smit International 1457
Bethlehem Steel Corporation 2001	Lockheed Corporation 1711	Products Research & Chemical Corporation (PRC) 6124	Transamerica Delaval Inc. 4838
Blohm & Voss Co. 1755	McDermott Incorporated .. 1811	Radar Devices, Inc. 3635	Twin Disc, Incorporated .. 3147
Centrico, Inc. 6665	J.H. Menge & Company, Inc. 3734	Raytheon Company 3585	Washington Chain & Supply Incorporated 2698
Combustion Engineering Inc. 4425	Midland Marine Corporation 2854	Riley-Beaird 2811	Wilson Walton International Ltd. 3348, 3351
Dover Corp./Norris Div. .. 4655		Seacoast Electric 4049	
Dreyfus Supply & Machinery Corporation .. 2698			
Engelhard Industries Div. 2585			

(continued on page 50)



Aerial view of the Astrodomain Complex — Houston, Texas

OTC '81

(continued from page 49)

The Offshore Technology Conference is the definitive international forum on ocean resources exploration and production. OTC attained this distinction early in its 12-year history and continues to build on its own success by annually creating the most conducive atmosphere for the open discussion of virtually every aspect of the technology, products, and services associated with the offshore industry.

This year the 13th Offshore Technology Conference will be held on May 4-7, 1981 in the Astrodomain in Houston, Texas.

The medium of OTC '81—220 technical paper presentations with discussions, coupled with a technical exhibition of more than 483,000 square feet—will draw professionals from all over the world to create the annual forum. Last year, 87,000 scientists, managers, engineers, and government representatives from 90 nations attended OTC. It is expected that this year's attendance will exceed that of last year.

The Conference's Program Committee has created the ideal forum by assembling the world's foremost scientific minds to reveal the latest insights and developments in technology. Participants will have the opportunity to share in open discussions of theories and practical applications of offshore resource development, including deep-water drilling, offshore safety, subsea min-

ing, and ocean thermal-energy conversion. As an added feature, the Conference this year will present two special sessions of particular significance. One general session examines "Offshore Oil and Gas Operations—Assessment for the 1970s and Forecast for the 1980s." Industry representatives will discuss the achievements for the 1970s and the challenge for the 1980s. The other special session addresses the legal uncertainties involved in the deep-sea mining of manganese nodules.

The technical exhibition demonstrates the industry's latest technological advances through 2,200 participating exhibitors. Company representatives from 23 nations explain the equipment and services in such areas as drilling, completion, production, navigation, pollution control, and power generation.

Awards Luncheon

The 1981 OTC Achievement Awards for Individuals and Organizations will be presented during the Awards Luncheon, Tuesday, May 5. This year's recipients of the prestigious awards—Dr. Lyle S. St. Amant and Gulf Universities Research Consortium—were selected in recognition of their outstanding achievements in the field of offshore technology.

Dr. St. Amant, assistant director of the Louisiana Wildlife and Fisheries Commission, receives the award for his work on coastal and estuarine environments and for his objective counsel to the

offshore resources industry on methods to improve the compatibility of industrial and natural activities. Dr. St. Amant, a noted scientist and conservationist, has authored numerous articles dealing with the effects of petroleum production on the marine environment. His research is viewed as a valuable contribution to the development of the offshore industry.

Gulf Universities Research Consortium (GURC) is being honored for its extensive study of offshore ecology during the period of 1971-79. The conclusions of the study, which culminated in the publication "The Offshore Ecology Investigation," provide a sound understanding of the effects of petroleum operations on the ecology of estuarine and offshore waters. Without GURC's

OTC Executive Committee

Because of the diversity of engineering and scientific disciplines involved in offshore resource development, interdisciplinary cooperation is a key part of the OTC success record. The 11 international engineering and scientific organizations that joined in 1968 to establish OTC represent more than 475,000 professionals. One of the earliest provisions made for Conference management called for representatives of each Sponsor Society to participate in the overall governing of the Conference through an Executive Committee. Each representative responsible for the 1981 OTC is shown below with his corresponding society:

Dan K. Adamson, OTC Executive Manager.
 R.C. Rieder, Exhibitors' representative, Continental Emsco Co.
 C.A. Hutchinson (SPE-AIME), consultant.
 Howard Breck (SEG).
 James A. Rickard (MTS), Exxon Production Research Co.
 James R. Jackson Jr. (AAPG), Exxon Co., U.S.A.
 Conrad G. Welling (SME-AIME), Ocean Minerals Co.
 William duBarry Thomas (SNAME), J.J. Henry Co., Inc.
 Joseph D. Defilippi (TMS-AIME), U.S. Steel-Research.
 Mickey M. Livingston (ASME), Oilwell Division, U.S. Steel Corp.
 William B. Katz (AIChE), Illinois Chemical Corp.
 William J. Emrich (ASCE), McClelland Engineers.
 John C. Redmond (IEEE), Stromberg-Carlson.

efforts, many experts feel that U.S. leasing and offshore operations would be at a considerably lower level than they are today.

Message Center

A Message Center will be operated by Southwestern Bell in the lobby of the Astrohall during the Conference. The Message Center will be open from 7:30 a.m. to 6:00 p.m. on Monday, 8:00 a.m. to 6:00 p.m. on Tuesday and Wednesday, and 8:00 a.m. to 3:00 p.m. on Thursday. All messages for persons attending the Conference should be telephoned to (713) 791-0949. No paging system is available in the Astrodomain complex.

Transportation

OTC will provide its registrants complimentary shuttle-bus service between the Astrodomain complex and all hotels and motels listed with the OTC Housing Bureau and the official travel agents during the Conference, May 4-7. Bus schedules will be available in the registration areas at the participating hotels and motels.

OTC-TV Coverage

Throughout its 12-year history, OTC has sought to reach beyond the technical community to explain and interpret the spectrum of ocean resources development to the lay audience. The Conference will continue this public-outreach program again in 1981 with the airing of OTC-TV over KUHT-TV, Channel 8, Houston's Public Broadcasting Service affiliate, during the week of OTC.

Programs to be aired will concentrate on the issues of today that reflect the growth and the challenges of the offshore industry. The noncommercial, public-interest program will parallel the Conference itself by calling on the worldwide experts attending OTC to translate into layman's terms the significant and fascinating achievements of industry and academia.

For the third year, KUHT has donated 11 broadcast hours to OTC over a five-day period (including the Sunday before OTC).

And while the program is specifically designed for a public audience, registrants at OTC will be able to broaden their total understanding of the diverse offshore industry by tuning in to OTC-TV.

Broadcast times and program descriptions will appear in the Houston media TV sections during the week of OTC. During Conference hours, OTC-TV will broadcast closed-circuit in the Astrodome Complex information on technical sessions and other items of interest to Conference registrants.

Accommodations

The OTC Conference Committee reports that rooms have been reserved in 88 hotels/motels in the Houston area. During OTC '81 these accommodations will be booked to capacity. Room requests are filled by the OTC Housing Bureau in order of receipt by mail. No rooms are available for arrival on Monday, May 4. Registrants who desire accommodations for Monday should plan to arrive on Sunday, May 3. Any housing requests indicating an arrival on Monday will automatically be changed to reflect an arrival on Tuesday, May 5.

Requests for accommodations should be made through the OTC Housing Bureau and they will notify you of your hotel assignment. The hotel will then confirm to you directly. Unless arrangements are made directly with the hotel from which you receive confirmation, reservations will not be held past 6:00 p.m.

Rooms are available for students. Each student housing request should be mailed to the

Housing Bureau along with a cover letter identifying it as a request for a student.

The OTC Housing Bureau is located at 1522 Main Street, Houston, Texas 77002.

Registration

Registration for the 1981 Offshore Technology Conference are based on two registration alternatives:

1. A four-day registration allowing access to both conference and exhibition for the duration of OTC '81, or

2. Daily registration allowing access to the conference and exhibition for a single, specified day.

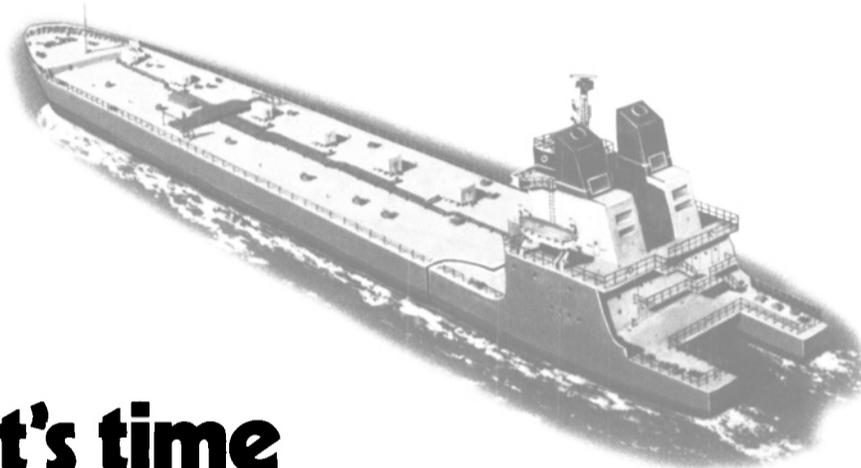
Registration for college or university students with valid registration cards from their respective schools is complimentary.

Advance registration by mail may be made with Offshore Technology Conference before April 10. This may be done by contacting OTC, 6200 North Central Expressway, Dallas, Texas 75206.

For early-bird registration for the convenience of Houston residents and out-of-town visitors who plan to be in Houston Wednesday, April 29, through Sunday,

(continued on page 52)

When diesel engine breakdown is unthinkable...



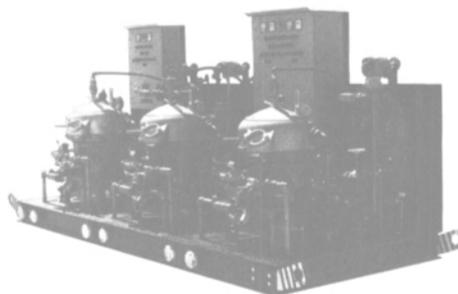
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CONFERENCE SCHEDULE

Monday, May 4

Registration

7:30 a.m.—6:00 p.m.

Exhibition

8:30 a.m.—6:00 p.m.

Technical Programming

9:30 a.m.—12:00 noon

2:30 p.m.—5:00 p.m.

Tuesday, May 5

Registration

8:00 a.m.—6:00 p.m.

Exhibition

8:30 a.m.—6:00 p.m.

Technical Programming

9:30 a.m.—12:00 noon

2:30 p.m.—5:00 p.m.

Awards Luncheon

12:15 p.m.—2:00 p.m.

Wednesday, May 6

Registration

8:00 a.m.—6:00 p.m.

Exhibition

8:30 a.m.—6:00 p.m.

Technical Programming

9:30 a.m.—12:00 noon

2:30 p.m.—5:00 p.m.

Thursday, May 7

Registration

8:00 a.m.—3:00 p.m.

Exhibition

8:30 a.m.—3:00 p.m.

Technical Programming

9:30 a.m.—12:00 noon

OTC '81

(continued from page 51)

May 2, there will be three advance registration sites located at the Hyatt Regency's Ebony Room, the Astro Village's Forum

Five Room, and the Stouffer's Greenway Plaza's Poinsettia Room.

During OTC registration counters will be open at three locations in the Astrodomain Complex during Conference hours. However, registration lines during the Conference may be long so registration by the other methods is recommended.

NASA Tours

Tours are scheduled for Tuesday, May 5, and Wednesday, May 6, to the Lyndon B. Johnson Space Center, departing from the Astrohall. Reservations may be made at the NASA tour desk in the International Center in the Astrohall.

The Lyndon B. Johnson Space Center is one of the newest and

largest research and development facilities of the National Aeronautics and Space Administration. The Center, a \$202-million complex, serves as the focal point for the U.S. manned space flight program and houses a fascinating display of spacecraft and flight items. Visitors also may see the Mission Simulation and Training Facility and the Space Shuttle Orbiter Mock-Up and Integration Laboratory.

OTC Publications

If you are unable to attend the 1981 Conference and would like (continued on page 54)

TIMETABLE TECHNICAL SESSION

Monday Morning—9:30 a.m. to 12 noon

- Floating Structure Response
- Offshore Processing
- Fatigue Considerations in Offshore Systems
- Platform Installation
- Soil Wave Interaction and Seafloor Instability
- Structural Analysis and Design
- Trenching Systems

Monday Afternoon—2:30 p.m. to 5:00 p.m.

- General Session: Offshore Oil and Gas—A Review of the 1970s and a Forecast for the 1980s

Tuesday Morning—9:30 a.m. to 12 noon

- Wave Forces and Hydroelastic Response
- Undersea Vehicles
- Wire and Synthetic Rope
- Drilling and Production Practices
- Special Session: Deep Ocean Manganese Nodule Mining: Outlook for the 1980s
- Terminals—Experience and Design
- Seafloor Surveying and Mapping
- Geophysical Data Processing

Tuesday Afternoon—2:30 p.m. to 5:00 p.m.

- Diving, Salvage, and Repair Operations I
- Materials and Fabrication Procedures for Offshore Structures
- Subsea Production Systems
- Potential Worldwide Offshore Oil and Gas Reserves
- Mooring and Anchoring
- Navigation and Data Display
- Environmental Considerations

Wednesday Morning—9:30 a.m. to 12 noon

- Offshore Pipelines II
- Tension Leg Platforms—Design and Analysis
- Ice and Arctic Activities
- Geophysical Data Acquisition
- Diving, Salvage, and Repair Operations II
- Ocean Mining I

Wednesday Afternoon—2:30 p.m. to 5:00 p.m.

- Geophysical Interpretation
- Offshore Pipelines I
- Tubular Members and Joints
- Design and Analysis of Arctic Structures
- Marine Geology and Geotechnical Engineering
- Wind and Wave Forces
- Ocean Mining II

Thursday Morning—9:30 a.m. to 12 noon

- Ship Collisions and Structural Monitoring
- Towage of Offshore Structures
- Field Development and Economics
- Foundation Performance
- Corrosion Control/Cathodic Protection of Offshore Production Systems
- Satellite Data Collection

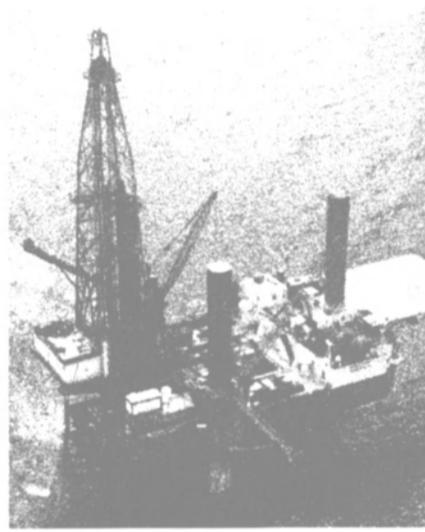
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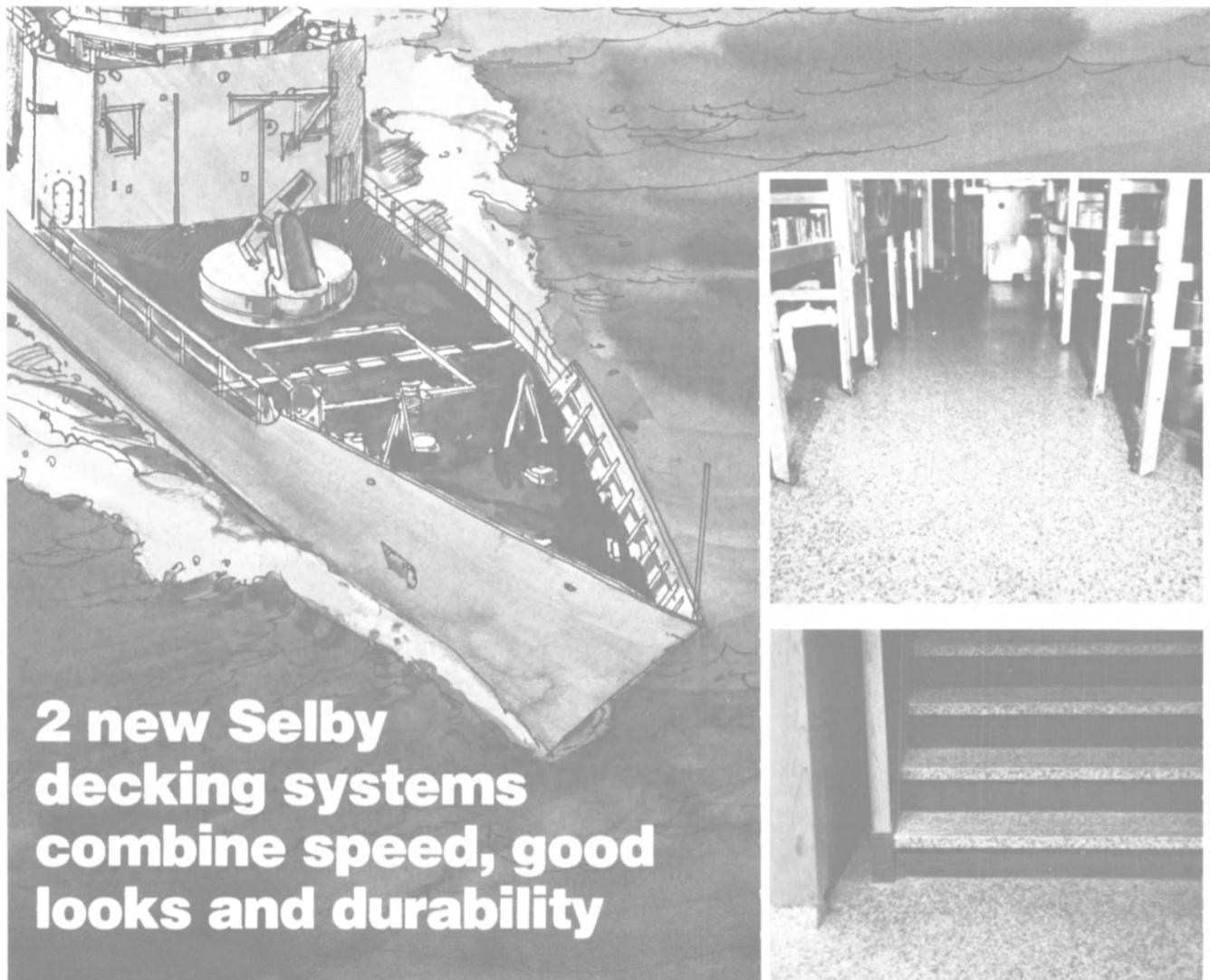
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OTC '81

(continued from page 52)

to order copies of either the 1981 Proceedings (four-volume set) and/or the Proceedings Index, contact the Offshore Technology Conference at 6200 North Cen-

tral Expressway, Dallas, Texas 75206.

Sets of Proceedings from previous Conferences and past editions of the indexes—listing subjects and authors for papers presented at the 1969-80 Conferences—can be obtained at the same address.

Food Service

The Astrodomain provides the

OTC registrant with many choices of food at one of the many snack stands, or at a sit-down meal in one of four restaurants. A Houston restaurant guide will be available at all registration areas in each of the three buildings.

Post-Conference Education

Four OTC sponsoring societies will offer continuing education

programs on Friday and Saturday, May 8-9. Registration and additional information on all courses may be obtained from the contact person listed for each course. These are:

1. American Society of Civil Engineers. Course title: Arctic Offshore Engineering. Contact: Patricia Irmen, manager, Continuing Education Services, ASCE, 345 East 47th Street, New York, N.Y. 10017.

2. American Society of Mechanical Engineers. Course title: Compliance Requirements for ANSI/ASME Surface and Subsurface Safety Valves Used in Offshore Oil and Gas Operations Including Code Procedures, Repairs, and Remanufacturing. Contact: Joy Collier, administrator, ASME, Professional Development Program/OTC, 345 East 47th street, New York, N.Y. 10017.

3. Society of Exploration Geophysicists. Course title: The Application of Synthetic Sonic Logs to the Development of Offshore Hydrocarbon Reservoirs. Contact: Robin Dixon, continuing education coordinator, SEG, P.O. Box 3098, Tulsa, OK 74101.

4. Institute of Electrical and Electronics Engineers. Course title: Basic Project Management—Planning, Scheduling and Control. Contact: Carolyn A. Yankoski, IEEE, 445 Hoes Lane, Piscataway, N.J. 08854.

OTC Program Committee

The Program Committee for OTC '81 consisted of: Daniel G. Godfrey, program chairman, Shell Development Co.; Arthur O. Beall Jr. (AAPG), Conoco Inc.; Gale L. Hubred (AIChE), Chevron Research Co.; James E. Dailey (ASCE), Brown & Root, Inc.; Norman A. Nelson (ASME), N.L. Rig Equipment; Glen N. Williams (IEEE), Texas A&M U.; Comdr. Don D. Wells (MTS), Naval Electronics System Command; Margaret Welch (SEG), Exxon Production Research Co.; John W. Padan (SME), NOAA, Office of Marine Materials; James Magill (SNAME), Diamond M Co.; Carroll D. Hudson (SPE), ARCO Oil and Gas Co., and John A. Straatmann (TMS), Climax Molybdenum Co.

Twin Disc extends marine transmission line for engines up to 3617 kW (4850 bhp).

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These larger, coaxial (inline) marine transmissions are designated Models MGN-650BZ, MGN-1000AZ, MGN-1600AZ, MGN-2200AZ and MGN-3200AZ. In addition, special designs and other NICO models are available in production quantities to meet specific installation and application requirements.

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The MGN-Z Series, like all Twin Disc Marine Transmissions, are backed by Twin Disc's warranty program with Approved Renewal Parts available from Twin Disc. For more information on the new coaxial MGN-Z Series contact Twin Disc, Incorporated, Racine, WI 53403, U.S.A. Telephone (414) 634-1981, Telex 264432.

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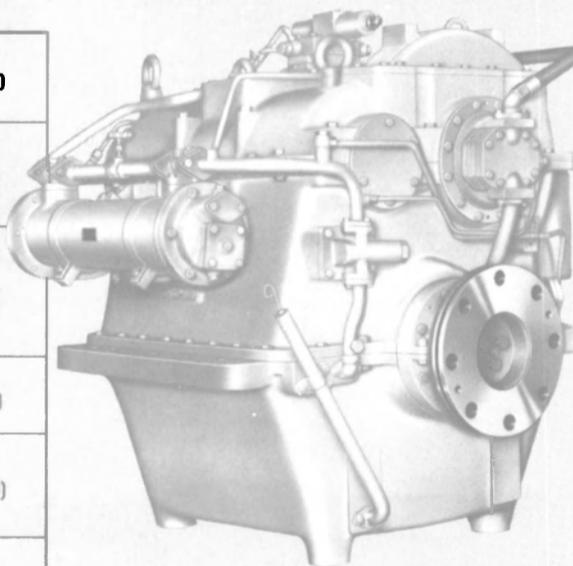


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MGN-1000AZ	3.0:1 4.0:1 5.0:1 6.0:1 7.0:1 8.0:1 9.0:1	700-1800	634-1119 (850-1500)
MGN-1600AZ	3.0:1 4.0:1 5.0:1	700-1700	1119-1641 (1500-2200)
MGN-2200Z	3.0:1 3.5:1 4.0:1 4.5:1 5.0:1	700-1600	1491-2237 (2000-3000)
MGN-3200Z	3.0:1 4.0:1 5.0:1	700-1400	2610-3617 (3500-4850)

* depending on ratio, type of duty, input speed and survey society classification requirements. Certification certificates available from ABS, LRS and other major survey societies.



Model MGN-650BZ

OTC '81

Technical Program

Monday Morning

9:30 a.m. to 12:00 noon

- Floating Structure Response

OTC

3950 Wave Drift Force on a Floating Structure in Shallow Water

(continued on page 56)

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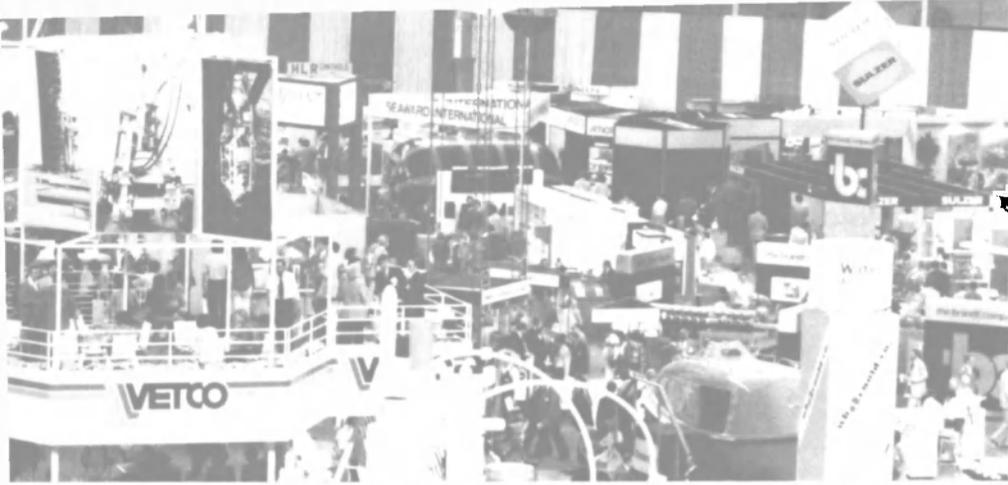
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OTC '81

Technical Program Monday Morning

• Floating Structure Response (continued from page 54)

- 3951 Mean and Low Frequency Wave Forces on Semi-Submersibles
- 3952 Dynamic Response of Semi-Submersibles
- 3953 The Response of Floating Platforms to Extreme Sea States
- 3954 Prediction of the Manoeuvring Char-

acteristics of a Semi-Submersible Drilling Rig
3955 Steep Wave Effects on Large Offshore Structures

• Offshore Processing

- OTC
- 3956 Offshore Liquefaction of Associated Gas—A Suitable Process for the North Sea
 - 3957 Development of Seabed Dry One Atmosphere Modules for Processing Hydrocarbons from Deep Water, Marginal and Sub-Ice Reservoirs
 - 3958 Buchan Development Project—Conversion of a Drilling Rig into a Floating Production Platform
 - 3959 Bargemounted Petrochemical Plants for the Production of Methanol and Ammonia
 - 3960 A Technical and Economic Evaluation of the Utilization of Offshore Natural Gas Reserves (50 to 150 mmscf)
 - 3961 Transferring LNG from a North Sea Floating Process Terminal to a Shuttle Carrier—Evaluation by Hybrid Computer Simulation

• Fatigue Considerations in Offshore Systems

- OTC
- 3962 Fatigue of Welded Structural Steel in Sea Water
 - 3963 Investigation of Fatigue Data Obtained from Tests of Traverse Butt Welded Specimens
 - 3964 Fatigue Strength of Overlapping Tubular N-Joints
 - 3965 Hybrid Time-Frequency Domain Fatigue Analysis for Deep-Water Platforms
 - 3966 The Use of Full Scale Measurements to Improve Fatigue Predictions

• Platform Installation

- OTC
- 3967 Fabrication to Installation of a Santa Barbara Channel Jacket
 - 3968 Maximum Pile Driving Stress Comparison
 - 3969 Stress History Approach to Analysis of Soil Resistance to Pile Driving
 - 3970 Calculation of Module Reactions in Accordance with API RP2A Clause 2.23
 - 3971 Hook-up of Very Heavy Jack-Up Platform Bodies—Motions, Dynamic Forces and Impacts Occurring and Their Effective Control by Interacting Dynamic
 - 3972 Structural Design Considerations for Temporary Seafloor Support of Jacket Structures

• Soil Wave Interaction and Seafloor Instability

- OTC
- 3973 Correlation of Field Measurements with Elastic Theory of Seafloor Response to Surface Waves
 - 3974 Storm-Induced Bottom Sediment Motions—SEASWAB II Results
 - 3975 Evaluation of Seafloor Stability
 - 3976 Hindcasting Evaluation of Slope Stability in the Baltimore Canyon Trough Area
 - 3977 Ocean Wave Spectrum Transformation Due to Sea-Seabed Interactions
 - 3978 Factors Contributing to the Initiation of Slope Instability, Mississippi Delta

• Structural Analysis and Design

- OTC
- 3979 Capabilities and Limitations of Inelastic Seismic Analyses of Braced Offshore Structures
 - 3980 Wrinkling Stress of Platform Jackets
 - 3981 Residual Strength and Stiffness of Damaged Steel Bracing Members
 - 3982 Design of Ring Stiffened Tubulars Under Combined Loading

• Trenching Systems

- OTC
- 3983 TM 402—A New Operating Cable And Pipe Burying System
 - 3984 Pipeline Trenching Firth of Forth Estuary
 - 3985 Control System for an Intelligent Underwater Trencher
 - 3986 Location Finding of Offshore Submarine Cables
 - 3987 Buried Submarine Cable Grapple

Monday Afternoon

2:30 p.m. to 5:00 p.m.

The 1981 OTC General Session, "Offshore Oil and Gas Operations—Assess-

(continued on page 58)



Ship Doctors



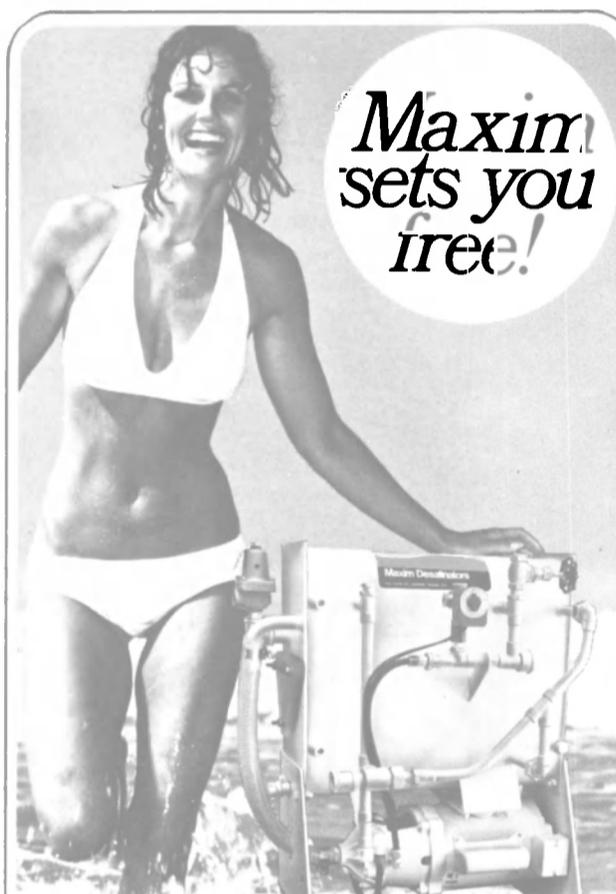
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OTC '81

Technical Program Monday Afternoon

• General Session

(continued from page 56)

ment for the 1970's and Forecast for the 1980's."

Tuesday Morning

9:30 a.m. to 12:00 noon

• Wave Forces and Hydroelastic Response

- OTC
3988 A Critical Assessment of Morison's Equation
3989 Hydrodynamic Coefficients for Macro-Roughnesses
3990 Consistent Drag and Added Mass Coefficients from Full Scale Data
3991 Vortex-Induced Vibrations of a Flexible Cylinder Near a Plane Boundary in Steady Flow
3992 Hydroelastic Response of Smooth and Rough Cylinders in Oscillatory Flow

• Undersea Vehicles

- OTC
3993 A Closed Cycle Pressure Control System
4167 Manned Submarines and Remotely Operated Equipment as Construction Tools for Advanced Offshore Projects
3995 SCARAB
3996 Limitations of Diver Alternative Systems
3997 Grondin NE Experimental Station—Diverless Experiments

• Wire and Synthetic Rope

- OTC
3998 Axial Fatigue Testing of AL-6X Stainless Steel Wire in Natural Seawater
3999 Fatigue Behavior of Large-Diameter Wire Ropes
4000 The Behaviour of Wire Ropes in Tension
4001 Improved Wire Rope Endurance Life with Nylon Sheaves
4002 Non-Hazardous Synthetic Mooring Line
4003 Dynamic Behaviour of Synthetic Ropes

• Drilling and Production Practices

- OTC
4004 Hydraulic Fluids for BOP Control Systems
4005 Computerized Gas Lift Control
4006 Simultaneous Activities Offshore Norway: A Review of Practices and Results
4007 A Completion Method for High Pressure, Corrosive, Offshore Gas Wells
4008 The Variable Bore Ram—Present and Future
4009 BOP Recovery in 3,000-Foot Water Depth

• SPECIAL SESSION—Deep Ocean Manganese Nodule Mining: Outlook for the 1980's

• Terminals—Experience and Design

- OTC
4010 Five Years of Operations Optimizing at Saudi Arabia's Ju'Aymah SPM Buoy Export Terminal
4011 Petromin Offshore Terminal Design for Exporting 1.6 Million Barrels of Crude Oil Per Day
4012 Design, Installation and Field Operations of Offshore Tandem Loading System-Nido Field, Offshore Philippines
4013 Evaluating Terminal Loading Efficiency
4014 Fulmar, The First North Sea SALM/VLCC Storage System
4015 SPM Hose Test Program

• Seafloor Surveying and Mapping

- OTC
4016 A Real Time Bathymetry Digitizer
4017 Multi-Frequency Sonar Survey of the U.S. Atlantic Continental Slope and Rise
4018 Computer Rectification and Mosaicking of Side-Looking Sonar Images
4019 A Self Boring Pressuremeter for Deep Sea Soils Investigations
4020 High Precision Near Shore Seafloor Positioning

• Geophysical Data Processing

- OTC
4021 Field Processing of Shallow Seismic Data
4022 Physical Modeling at the Seismic Acoustic Laboratory: An Aid for Production Geophysicists
4023 Detailed Analysis of Geophysical Indicators Associated with Shallow Gas Accumulations
4024 Location and Evaluation of Engineering Hazards with Seismic Data
4025 Seismic Source Decomposition
4026 Estimation of Dispersion in Laboratory and Marine Reflection Data

Tuesday Afternoon 2:30 p.m. to 5:00 p.m.

• Diving, Salvage, and Repair Operations I

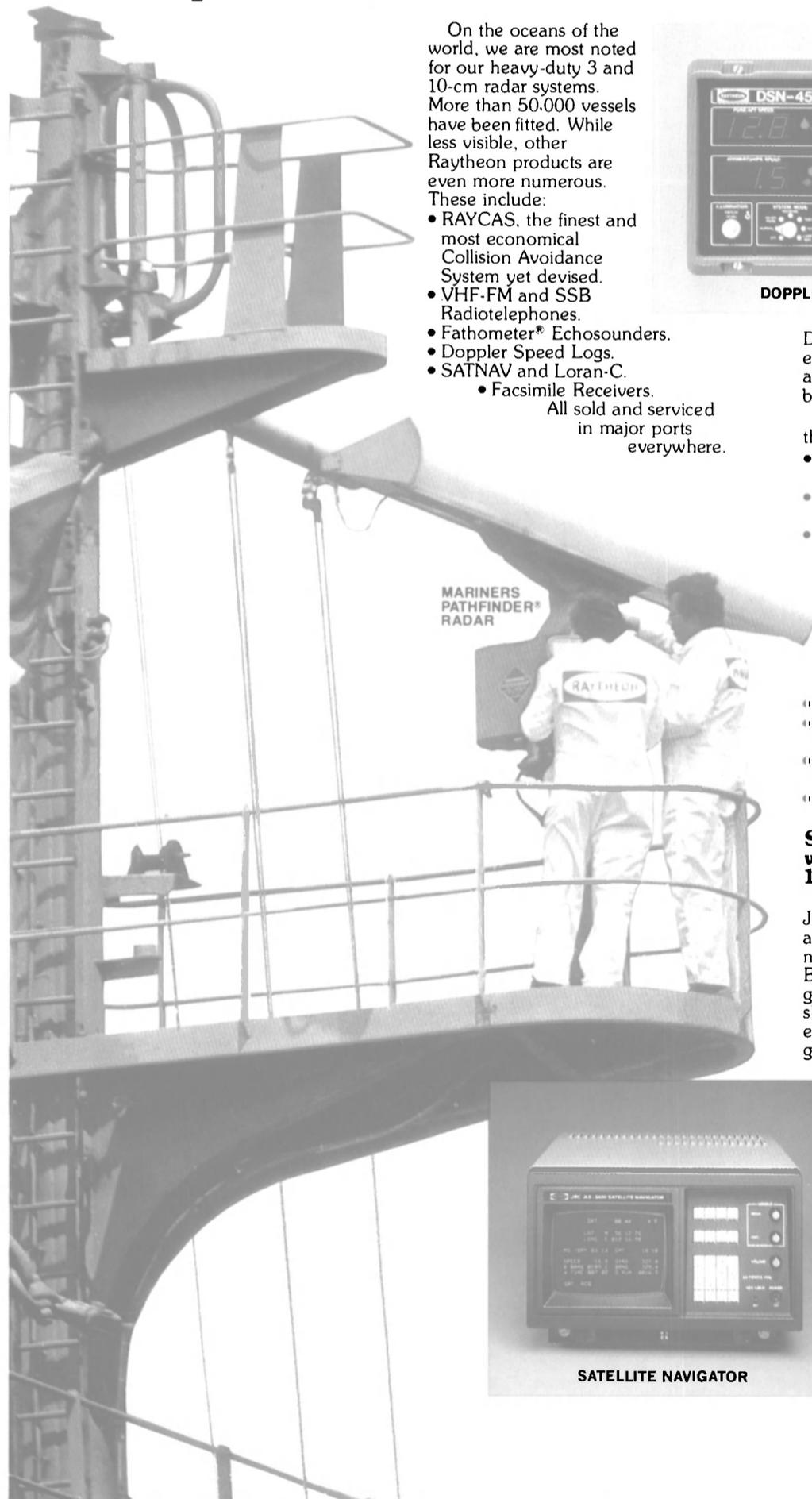
- OTC
4027 The Uprighting and Preservation of the Alexander L. Kielland—Project Implementation
4028 No. 2 Fuel Cargo Recovery from Sunken Tanker
4029 Automatic Deep Water Pipeline Repair System
4030 Underwater Inspections: Credibility and Technology

4031 Development of a Depth Independent Closed Cycle Diesel Engine

• Materials and Fabrication Procedures for Offshore Structures

- OTC
4032 Spun Steel Pipes for the Offshore Industry
4033 Heavy Wall HSLA Steel Pipes and Heavy Section HSLA Steel Plates for Jack-Up Rigs
4034 Fracture Toughness of Some Materials Used in Fabricating Fixed Offshore Structures
4035 Deformation Capacity of Steel Tubes in Deep Water

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SATELLITE NAVIGATOR

- 4036 Fabrication and Serviceability of Offshore Structures
 4037 Development and Application of a High Speed Automatic Field Welding Method for Pipeline

• Subsea Production Systems

- OTC
 4038 Experience with Subsea Well Control Systems
 4039 Subsea Cable Systems Developed for Subsea Completions
 4040 Space Age Pipelining—Murchison Field
 4041 Dorada Field Production System: A

- Solution to Individual Permanent Vertical Access to Several Wells From a Semi-Submersible
 4042 The Dorado Field Production Risers
 4043 The Insert Tree Completion System

• Potential Worldwide Offshore Oil & Gas Reserves

- OTC
 4044 The Sotong Field, Offshore Malaysia—Example of a Subtle Hydrocarbon Trap
 4045 Reserves Estimation from Seismic and Geologic Data by Computer Applications of Multiple Regression Analysis

- 4046 Impact of Federal Policies on Undiscovered Oil and Gas in the Gulf of Mexico
 4047 Potential Worldwide Offshore Oil & Gas Reserves—Where and How Much—A Panel Discussion

• Mooring and Anchoring

- OTC
 4048 Performance of Conventional Anchors
 4049 Development of Absolutely-Roll-Stable Anchors
 4050 Deep Water High-Capacity Moorings
 4051 Non-Linear Response Analysis of An-

- chorage Systems for Compliant Deep Water Platforms
 4052 Self-Protected, Long-Life Deep Sea Mooring Cable
 4053 Dynamic Behavior and Tension of Oscillating Mooring Chain

• Navigation and Data Display

- OTC
 4054 Underwater Navigation with a Narrow Beam Tracking Transducer
 4055 Navigation Control for Pearl River Mouth Basin Seismic Survey in the People's Republic of China
 4056 Case Histories of Loran C Radionavigation Usage for Oil Exploration Activities Offshore Newfoundland
 4057 An Acoustic System for Pipeline Profile Measurements
 4058 Marine Pipeline Inspection by Tracking

• Environmental Considerations

- OTC
 4059 Environmental Impact of Offshore Brine Disposal Associated with Petroleum Storage Activities
 4060 Oil Spill Contingency Planning to Minimize Impacts from a Major Oil Well
 4061 Environmental Monitoring of Three Exploratory Oil and Gas Wells Drilled Near the East Flower Garden Bank
 4062 Effects of Sea-and-Land Breeze System on Oil Trajectory Near the Coast
 4063 Environmental Studies for Oilspill Trajectory Modeling in the Southeastern U.S. Outer Continental Shelf Leasing Area
 4064 On the Resistance Time of Oil Mixed into the Water Column by Breaking Waves

Wednesday Morning

9:30 a.m. to 12:00 noon

• Offshore Pipelines II

- OTC
 4065 Impact-Response Behaviour of Offshore Pipelines
 4066 Trawl Gear Interaction with Flexible Pipelines
 4067 Movements of Submarine Pipelines Close to Platforms
 4068 Pipeline Performance History in the Gulf of Mexico
 4069 A Survey of Pipelines in The North Sea—Incidents During Installation, Testing, and Operation

• Tension Leg Platforms—Design and Analysis

- OTC
 4070 The Static Offset in Waves of Tension Leg Platforms
 4071 Parametric Response of TLP Anchor Lines—Theoretical and Numerical Analyses
 4072 An Integrated Motion and Structural Analysis System for Tension Leg Platforms
 4073 Motions and Leg Tensions of Tension Leg Platforms
 4074 The Wave Induced Motions of a Tension Leg Platform in Deep Water
 4075 Dynamic Stability of the Tension Leg Platform

• Ice and Arctic Activities

- OTC
 4076 Controlling Iceberg Roll/Stability During Towing Around Drillships
 4077 Iceberg Detection for Canadian Frontier Production
 4078 Iceberg Draft Measurement Using a Remote Control Tethered Submersible
 4079 An Investigation of the Acoustic Emission and Deformation Response of Finite Ice Plates
 4080 Design of Ice Roads in the Southern Beaufort Sea

• Geophysical Data Acquisition

- OTC
 4081 Ocean Bottom Seismometer—An Electronic Perspective
 4082 Deep-Towed Seismic System Design for Operation at Ocean Depths Up to 6000m
 4038 New Frontiers in Geophysical Data Acquisition—A Panel Discussion

• Diving, Salvage, and Repair Operations II

- OTC
 4084 Seawater Hydraulic Systems for Underwater Equipment

(continued on page 61)

◀ Write 311 on Reader Service Card

so much in so many places.

Radio facsimile receivers feature push-button station selection and high-contrast 12-inch recording.

Raytheon gives you a choice. The RAYFAX 300 has 8 interchangeable push-button channels with a separate recorder. The RAYFAX 1200 offers 16 interchangeable push-button channels with a built-in recorder that operates unattended with automatic picture start-stop. Both units provide:

- Onboard recording of World Meteorological Organization weather charts, fishery charts, daily news for mariners, etc.
- High-quality 12-inch wide reproduction on odorless, dust-free aluminized paper.
- Long-life recording system with self-adjusting pens.
- Advanced solid-state circuitry.
- Simple operation.

The RAYFAX 300 Recorder is available separately for vessels equipped with a suitable wide-band receiver.



RADIO FACSIMILE RECEIVER

Two Loran-C's with U.S.C.G. approved accuracy. One also a chronometer. One with options for steering, Lat/Long, and course/speed readouts.

Just turn a selector of the RAYNAV 3000 to "T". The upper readout becomes a chronometer accurate to 2 seconds a month... the lower readout a push-button stop-watch.

Our RAYNAV 6000 has optional plug-in boards for steering a computed course to a selected destination, and for direct Lat/Long and course/speed readouts.

Both use mini-computers for optimum Loran-C accuracy. Both offer:

- Precise third-cycle matching.
- Initial fixes accurate within 500 yards, repeated fixes within 50 feet.
- Simultaneous tracking of multiple secondaries for verification of primary fixes.
- Turn-on self-testing.
- Continuous monitoring of Loran-C signal quality and strength.
- Manual cycle matching for extended groundwave and nighttime skywave coverage.
- Provision for remote indicators, plotters, etc.

Fathometer® Recorder sounds to 1370 fathoms with 6 overlapping ranges.



FATHOMETER® RECORDER

Designed for large, ocean-going vessels, the R-8220 sounds at 24 kHz with 600 watts of power... provides very precise recordings of underwater topography down to 1370 fathoms. Features include:

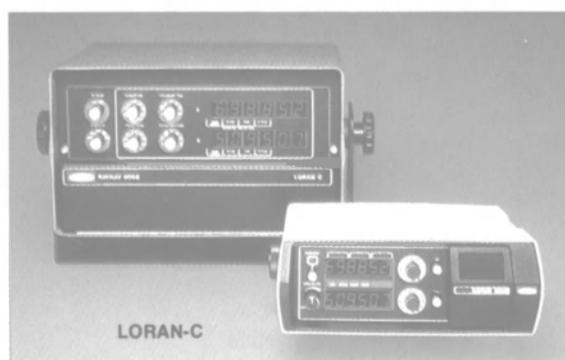
- 6 over-lapping ranges of 0-110, 100-210, 200-310, 300-400, 0-720, and 650-1370 fathoms.
 - 7-inch calibrated recording paper.
 - Fool-proof magnetic keying.
 - Electronic fix marker.
 - Automatic time-varied gain to eliminate unwanted echoes near surface.
- The R-8220 is completely self-contained except for hull-mounted transducer.

Fathometer® Digital Sounder goes to 500 feet or 240 fathoms with adjustable depth alarm.

A proven navigational sounder, the DE-740 uses special signal processing to eliminate false bottom readings from schools of fish, thermal gradients, etc.

- Large, easy-to-read LED display.
- 1.5 to 500-foot and 0.2 to 240-fathom ranges.
- 1% sounding accuracy.
- Bottom alarm adjustable in 1-foot or 1-fathom increments down to 299 feet or 240 fathoms.

Designed for console or bulkhead mounting, the DE-740 is supplied with a remote equipment cabinet and a hull-mounted transducer.



LORAN-C



FATHOMETER® DIGITAL SOUNDER

Tough "specs" assure dependable operation in the harsh marine environment.

Raytheon products are designed and built to the toughest specifications in the industry. In onboard use and in the laboratory they have proven immune to voltage irregularities, temperature extremes in a corrosive salt vapor atmosphere, excessive shock and vibration. Maintenance, if required, is fast and easy.



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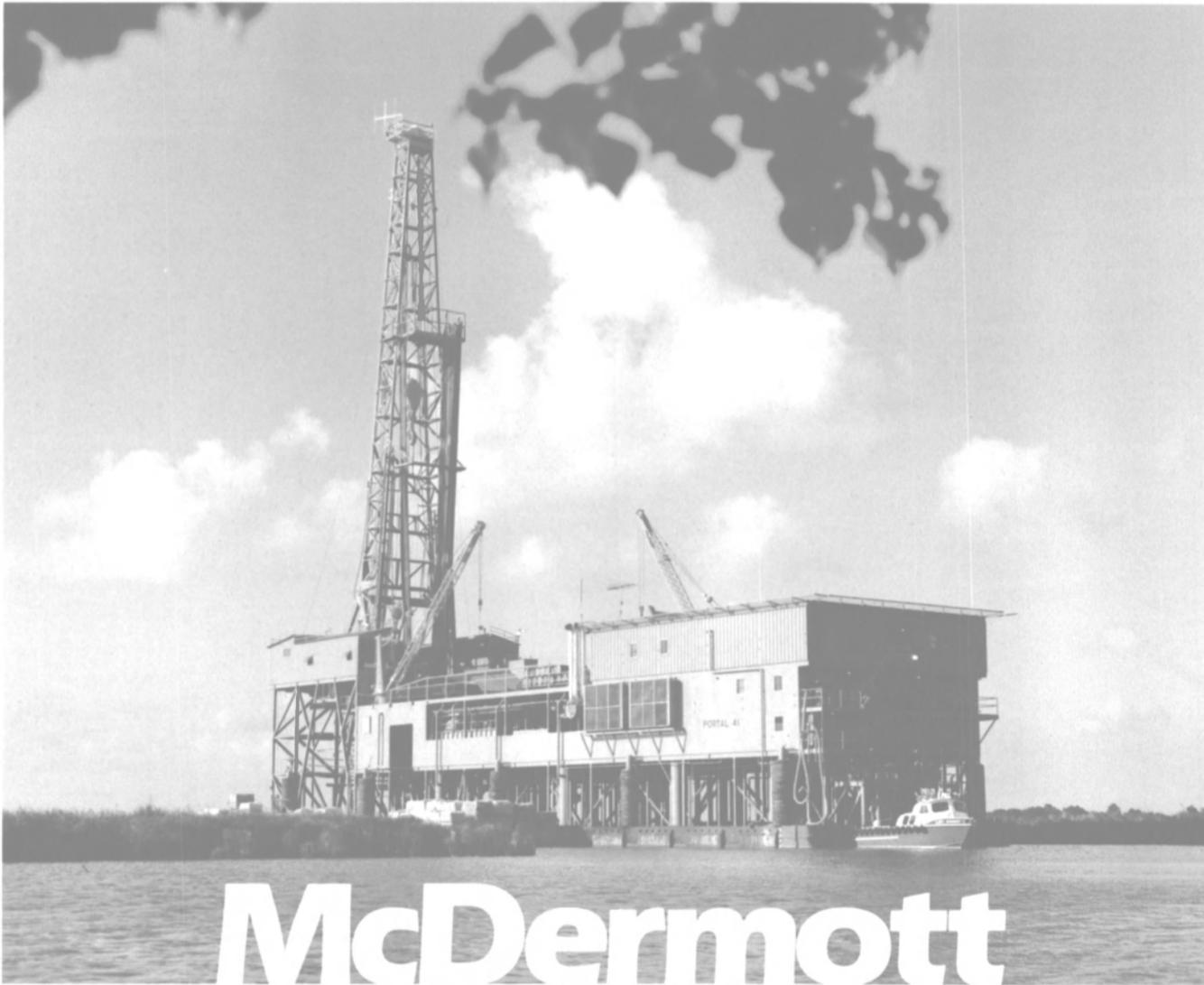
vanguard of shipyards. Prime locations like Morgan City and New Iberia, Louisiana, and Gulfport, Mississippi, provide economical, sophisticated underroof construction with direct access to the waters of the world. At McDermott Shipyards, we do more than build a great tug.

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OTC '81

Technical Program Wednesday Morning

• Diving, Salvage, and Repair Operations II

(continued from page 59)

- 4085 Record Trinx Dive to 2,132 ft. Without Incapacitating High Pressure Nervous Syndrome
- 4086 Sub-Ergometer — An Equipment for Estimating the Work Load on Divers in Open Waters
- 4087 The Latest Diving Support Vessel, Model Tests and Dynamic Positioning for North of 62nd Parallel
- 4088 A New Generation of Diving Support Vessels
- 4089 Snap Loads and Bending Fatigue in Diving Bell Handling Systems

• Ocean Mining I

OTC

- 4090 Infrastructure Requirements for a Manganese Nodule Processing Industry on the Island of Hawaii
- 4091 Automatic Position Control of a 300,000 Tons Ship During Deep Ocean Mining
- 4092 Dynamic Vertical Stretching Oscillation of Deep Ocean Mining Pipe
- 4093 Computer Simulation of Deep Sea Mining Manoeuvres
- 4094 An Advanced Design Deep Sea Mining System

Wednesday Afternoon

2:30 p.m. to 5:00 p.m.

• Geophysical Interpretation

OTC

- 4095 3D Reflection Synthetic Seismograms
- 4096 2D Migration Effects of 3D Data
- 4097 Drillability Profiles Derived from 3D Seismic Surveys
- 4098 Seismic Stratigraphic Characteristics of Upper Louisiana Continental Slope — An Area East of Green Canyon
- 4099 The Determination of Grain Characteristics, Contacts and Packing by Shear Velocity
- 4100 A Study on Estimating the Relief of Magnetic Basement

• Offshore Pipelines I

OTC

- 4101 A New Welding Concept for Pipelines: Electron Beam Welding
- 4102 Electron Beam Weldability for Deep Sea Pipelines
- 4103 Flash Butt Welding for Large Diameter Pipes
- 4104 Probabilistic Fatigue Analysis of Offshore Pipelines During the Laying Operation
- 4105 Predictive Simulations Matched by As-Laid Parameters of Sicily Channel Sealine Project

• Tubular Members and Joints

OTC

- 4106 Double-Skin Construction of Large Pressure Vessels for Subsea Systems
- 4107 External Pressure Tests of Ring Stiffened Fabricated Steel Cylinders
- 4108 Experimental Study on the Effect of Axial Tension Load on the Collapse Strength of Oil Well Casing
- 4109 BP Magnus Platform Internally Stiffened Bracing Node Studies
- 4110 Novel Underwater Strengthening System for Tubular Joints

• Design and Analysis of Arctic Structures

OTC

- 4111 Resistance of Concrete Walls in High Concentrated Ice Loads
- 4112 Slope Protection for Artificial Exploration Islands Off Prudhoe Bay
- 4113 A Steel Production Structure for the Alaskan Beaufort Sea
- 4114 Erosion Prediction for Exploration and Production Structure in the Arctic
- 4115 Ice Force Prediction Using a Limited Driving Force Approach

• Marine Geology and Geotechnical Engineering

OTC

- 4116 Blowout Craters on the Continental Shelf of the Gulf of Mexico

- 4117 Geologic Hazards and Constraints; Federal OCS Oil and Gas Lease Sale 53, Central and Northern California
- 4118 Environmental Geology of Shelikof Strait; OSC Sale Area 60, Alaska
- 4119 Geologic Mapping for Offshore Engineering, Mississippi Delta
- 4120 A Pressurized Core Barrel for Sampling Gas-Charged Marine Sediments
- 4121 Geotechnical Analysis of a Submarine Slump, Eureka, California

• Wind and Wave Forces

OTC

- 4122 Wind Tunnel Tests of Inclined Rough Circular Cylinders

- 4123 Mobile Offshore Platform Wind Loads
- 4124 Wind Overturning Effects Obtained from Wind Tunnel Tests with Various Semisubmersible Models
- 4125 Wind Tunnel Model Testing Techniques for Offshore Gas/Oil Production Platforms
- 4126 The Development and Proposed Use of a Wave Force Measurement System
- 4127 Analysis of the Uncertainties in the Sea Loading of Offshore Steel Structures

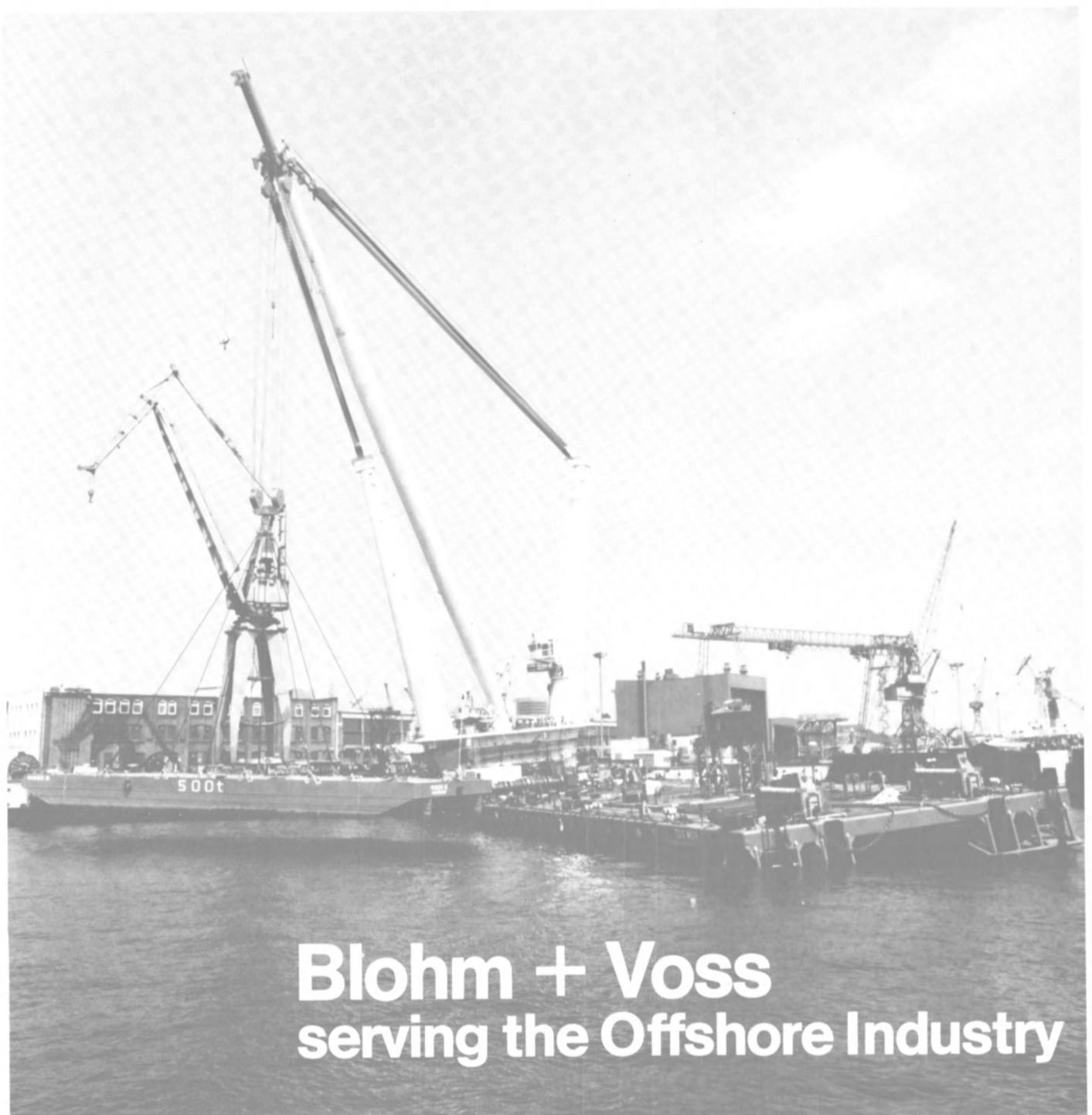
• Ocean Mining II

OTC

- 4128 Offshore Processing of Metalliferous

- Sediments in the Red Sea
- 4129 Comparison Between Galapagos and Gorda Spreading Centers
- 4130 An Electric Rock Core Drill for Deep Ocean Use
- 4131 Hard Mineral Resources Around the U.S. Continental Margin
- 4132 Analysis of Physical and Mechanical Properties of Deepsea Sediments from Potential Manganese Nodule Mining Areas in The North Central Pacific
- 4133 Acoustic Sounding for Manganese Nodules

(continued on page 62)



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April 1, 1981



OTC '81

Technical Program

(continued from page 61)

Thursday Morning
9:30 a.m. to 12:00 noon

- Ship Collisions and Structural Monitoring

OTC
4134 Collisions Between Ships and Offshore

Platforms
4135 New Non-Linear Methods for Estimation of Collision Resistance of Mobile Offshore Units
4136 The Behavior of Steel Offshore Structures Under Accidental Collisions
4137 Measured Vibrational Behavior of a Gulf of Mexico Platform

- Field Development and Economics

OTC
4138 An Offshore Development Planning Model Incorporating Risk Analysis
4139 The Planning and Management of the Nido Reef Complex Oil Field Development

opment Philippines
4140 The Beta Field Development Project
4141 Offshore Quartering Study — A Five Year Projection Into an Expanding Gulf of Mexico Operations
4142 Availability and Pricing of Insurance for Offshore Operations

- Foundation Performance

OTC
4143 Foundation Performance of Mat-Supported Jack-Up Rigs in Soft Soil Areas
4144 Prediction of Jack-Up Rig Footing Penetration
4145 Scour About Jack-Up Rig Spud Cans
4146 Observed Settlements of Five North Sea Gravity Platforms
4147 Evaluation of Concepts for Guyed Tower Foundations
4148 Use of the Normalized Soil Parameters (NSP) Concept in Gulf of Mexico Offshore Foundation Design
4149 Model Studies of Long Piles in Clay

- Corrosion Control/Cathodic Protection of Offshore Production Systems

OTC
4150 Sulfide Stress Cracking Resistance of Nitrogen-Strengthened Stainless Steels
4151 High Performance Stainless Steels for Improved Offshore Production Economy
4152 Fatigue Properties of Stainless Weld Cladding on Low Alloy Steel
4153 The Development of Corrosion

Resistant Tubing
4154 The Effects of Water Depth on Cathodic Protection of Steel in Sea Water
4155 The Development and Trials of an Antifouling System Involving the Controlled Release of Copper

- Satellite Data Collection

OTC
4156 The Use of a Real Time Weather and Wave Measurement Program to Assist in Offshore Operations
4157 The Continuing Evolution of Transit Satellite Based Geodetic Positioning and Survey Navigation Capabilities
4158 A New Passive Technique for Offshore Navigation and Positioning
4159 Navstar Applications to Offshore Operations
4160 MARISAT-to-INMARSAT Transition

- Towing of Offshore Structures

OTC
4161 A Quasi-Static Approach for Transportation Analysis of Offshore Platforms
4162 Reliability Analysis of Offshore Structures in Towing Operation
4163 Fatigue Considerations for Ocean Towing
4164 Towing Resistance Estimation of Offshore Construction Barges
4165 Analytical and Model Test Study of Platform Jacket Tow in Waves
4166 An Experimental Study of the Parameters Affecting the Drag of Barges in Waves

OTC '81

Exhibitors' List

A partial list of marine and offshore exhibitors at OTC '81

Exhibitor	Booth	Exhibitor	Booth
A-Z International Tool Company	3711	Al George, Inc.	9617
ABEX/Denison	9312	Albany International	7319
ABM/McDaniel Controls, Inc.	6212	ALCO Power Inc.	4627
ACMI-Industrial Division	7329	Alexander Industries Inc.	4119
Aeroquip Corporation	6321	Alexandra Towing Co. Ltd.	3347, 3351
AFC, Inc.	3752	Alfa-Laval, Inc.	3589
AGA Navigation Aids	1375	Allen-Bradley and Integrated Power Systems Corporation	2387
AGIP (ENI Group)	7125		
AIRCO Cryogenics, Div. of AIRCO, Inc.	6224		

(continued on page 67)

These companies are using davit-launched inflatables provided by J. H. Menge & Co.

Diamond M. Company, Houston
Bethlehem Steel Corp., Beaumont, Singapore
Marathon LeTourneau Offshore Co., Houston
Reading & Bates
Chiles Drilling Company, Houston
J. Ray McDermott, Morgan City
Southern Shipbuilding Co., Slidell, La.
North American Trailing Co.
Levingston Shipbuilding Co., Orange, Texas
Cleveland Tanker Corp. Tidelands Ltd.
Dixilyn-Field Drilling Co.
Broughton Offshore Co.
Penrod, Singapore



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Davit launched inflatable systems help to satisfy the 200% life saving regulation. These systems provide immediate, safe evacuation from dangerous circumstances at sea. You get fully equipped inflatable rafts with built-in suspension slings, a single arm davit with two speed winch and the unique specially designed automatic release gear. All 50, 40, 25 and 20 man systems are U.S. Coast Guard approved.

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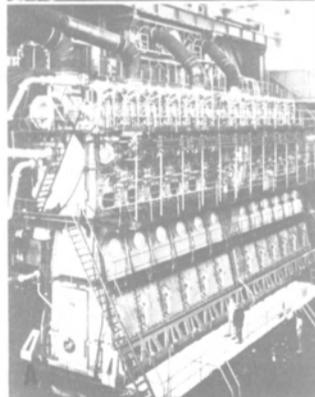
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1 used to install more than 8,000 marine main propulsion systems . . . with cumulative in-service hours exceeding 175 million.

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ment and broken hold-down bolts . . . leading to severe damage to crankshafts, crankcases and bearings.

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7 installation time for even the largest marine main propulsion diesels is measured in hours . . . not weeks.

8 also proven in worldwide service under a complete range of auxiliary machinery.

Clockwise from lower left: (A) 25,000 hp, 12-cylinder B&W marine engine, weighing 1400 tons, is typical of engines installed on CHOCKFAST. Typical marine installations include (B) Indiana Harbor, (C) Apache, (D) M.V. Columbia, (E) M.S. Rodin, (F) G.R. Moir, (G) Golden Med, (H) Concordia, (I) Tor Britannia, (J) Viking Piper, (K) Coopeatun I., (L) Jamie A. Baxter and (M) M.S. Lisita.

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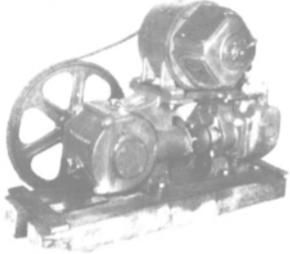
Our interest is general. Please send New CHOCKFAST® Bulletin 631.

Are you familiar with CHOCKFAST?
 Yes No Some knowledge

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PUMPS

WORTHINGTON 2 1/2"x2" SANITARY & FLUSHING PUMP — 20 GPM — 80 LBS

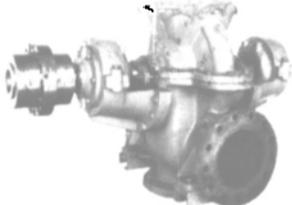


Motor driven type KAA — 1 1/2" suction — 1" discharge. MOTOR: 2 HP — 230 VDC. Can also be furnished with A.C. motor if desired.

UNUSED 5"x4" — 500 GPM @ 20 PSI — 1800 RPM WEIL GENERAL CIRCULATOR SERVICE PUMP

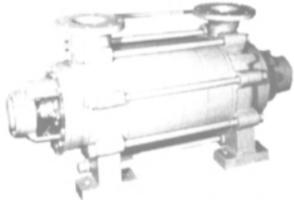
With totally enclosed explosion-proof motor. Bronze pump — horizontally split case — flooded submergence test pressure 300 PSI. MOTOR: Continental 10 HP — 440/3/60 — 1800 RPM — fan cooled — totally enclosed — horizontal — self-ventilated — EXPLOSION-PROOF. Unit 60" long — 24" flange to flange.

2000 GPM @ 75' BRONZE PUMPS



8X8 — 2000 GPM @ 75' — 1750 RPM — requires 50 HP 440/3/60 1750 RPM motor — frame 445-S. Pumps are ball-bearing split case centrifugals with cast iron driplip base. Very good condition.

UNUSED NIJUIS FIRE PUMP — PUMP ONLY



HID-5125250 — 531 GPM @ 323' head @ 1800 RPM

6X5 BRONZE GARDNER-DENVER PUMP

Split case type D — 1000 GPM — 125 lbs — 281' @ 1800 RPM. Requires 100 HP diesel drive. Suction lift 15 to 25' — 10 1/2" diameter flange. 6" Suction 5" Discharge.

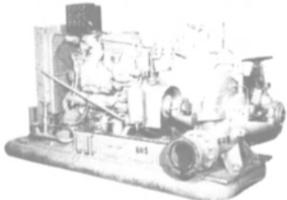
"EUREKA" DUPLEX DOUBLE-ACTING RECIPROCATING BILGE PUMP 500 GPM — 100' HEAD

Motor driven — pump operates at 320 RPM. MOTOR: 15 HP — 440/3/60 1750 RPM. DIMENSIONS: 5'9" high — 3' wide — 4' deep. Ex-M.V. Globtic Sun.

NIJUIS 3510 GPM DIESEL DRIVEN FIRE PUMP

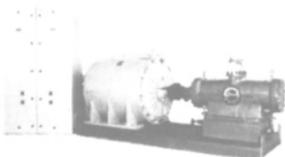
3510 GPM @ 350' head — 161.7 PSI. Pump is 10X8 — factory new — horizontally split case. ENGINE: GM 6V-71 or 8-V-71. Can furnish with heat exchanger & radiator.

GARDNER-DENVER 6"X5" BRONZE CENTRIFUGAL FIRE OR JETTING PUMP



Driven by GM 3-71 diesel engine. PUMP: 1000 GPM @ 150 PSI/1500 GPM @ 100 PSI — 1750/2000 RPM. Maximum head 175 PSI. Self-contained fuel tank in base. Automatic self-priming optional.

NEW UNUSED — 700 GPM — 150 PSI DELAVAL ROTARY PUMP



6X8 — 700 GPM @ 150 PSI — 1150 RPM — with 4-speed motor & control 100/75/50/37.5 HP — 440/3/60 — 1200/900/600/450 RPM. With Cutler-Hammer controller.

UNUSED BRONZE 2000 GPM @ 337' HEAD FIRE OR HIGH PRESSURE SERVICE PUMP



Mfg by Frederick Iron & Steel — 8" side discharge; — 8" bottom suction — model 8DSU-SPL. MOTOR: Crocker Wheeler — 250 HP — 240 volts DC — 1900 RPM — 102 7/8" O.A.L. — 34 1/2" wide — 37" high.

NEW UNUSED KINNEY 20 GPM FUEL OIL SERVICE PUMP

Vertical — 50 PSI — with 2" inlet & outlet. MOTOR: 2 HP — 440/3/60 860 RPM — with starter. For fuel oil service, etc.

NEW UNUSED SUMP OR LOW PRESSURE DRAIN PUMPS



Bronze — 40 GPM @ 40 PSI. 2" Discharge — single impeller — CW rotation — 32" from deck plate to base. Complete with flotation equipment. Totally enclosed 5 HP 440/3/60 1725 RPM motor. Repair parts for motor & pump included.

CARVER CHILLED WATER SERVICE PUMP 160 GPM — 57 PSI



For air conditioning or water circulation. 160 GPM @ 57 PSI — 110 ft. head. Closed coupled — 10 HP 440/3/60/3500 RPM.

500 GPM FIRE SERVICE PUMP



Mfg. by Buffalo. Bronze — 500 GPM @ 100 Lbs. — 5X4 — 30 HP/240 DC — 105 amps — 1750 RPM.

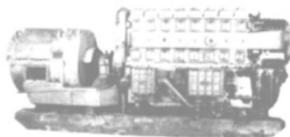
PASSENGER/CRUISE SHIP SELF PRIMING NEW WORTHINGTON VERTICAL SUBMERSIBLE BILGE PUMP



FOR EMERGENCY USE ON PASSENGER SHIPS, ETC. PUMP: JAS — 264 GPM — 171' head — two 6" inlets — one 5" outlet. MOTOR: 40 HP — 230 volts DC — 149 amps. COMPLETE WITH NASH — SELF PRIMING PUMP ATTACHED.

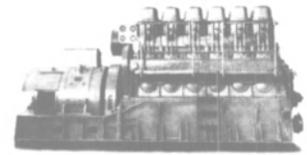
DIESEL GENERATOR SETS

290KW GM 8-268A DIESEL GENERATOR SET



120/240 VDC—1250 amps—shunt wound. ENGINE: GM 8-268A — 8 cyl — 6 1/2"X7 — 1200 RPM — good condition.

300KW BALDWIN DIESEL GENERATOR SET

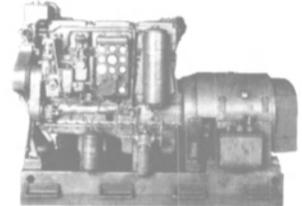


300KW — 120/240 VDC — 1250 amps — stab. shunt — 450 RPM. Baldwin diesel model VO. Ex C-1MAVO1.

100KW GBD8 DIESEL GENERATORS

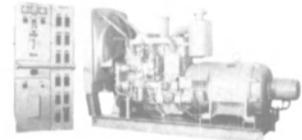
From LST vessels. 120/240 VDC — 417 amps — stab shunt — 1200 RPM — Delco generator — self-excited. ENGINE: Superior GBD-8 — 8 cyl — 5 1/2"X7 — 150 HP — 30 volt electric starting. Reconditioned to ABS. Dry weight 10,000 lbs. — OAL 124" — 65 11/16" high — 42" wide. Height necessary to pull piston 68". Fuel consumption 0.620 lbs/hr.

60 KW CUMMINS DIESEL GEN. SETS



60KW — 120 volts — 500 amps DC generators. 6-Cyl. model H Cummins diesel engine.

75 KW CUMMINS DIESEL GENERATOR SET



75KW — 93.8 KVA — 440/3/60 — 1200 RPM — electric starting. Cummins 6-cyl engine with free-standing switchgear.

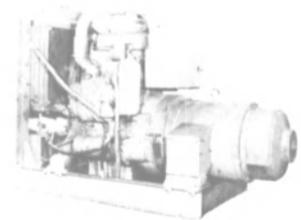
GM-4-71-T TURBO-CHARGED 100 KW DIESEL GENERATOR SET RADIATOR COOLED 1800 RPM



12 wire — all voltages possible — 100 KW 440/220/3/60. With switchgear. Has protective cabinet.

GM 8-268A 200 KW A.C. DIESEL GENERATOR SETS ENGINE: 8-268A — 6 1/2" bore — 7" stroke — 1200 RPM — driving Westinghouse generator — 200 KW — 440 volts — 3-phase — 60 cycle — 321 amps — 80% PF @ 1200 RPM. Switchgear available.

20KW 2-71 DIESEL GENERATOR SETS TEST RUN 1 HOUR



220/3/60 — 1200 RPM — Electric Machinery Co. or Delco. Brushless — will demonstrate running. (Also have 20KW sets with 220/440/3/60 — with brushes — 1200 RPM — Delco. Weight 2200 lbs.)

KNOWN 'ROUND THE WORLD

THE BOSTON

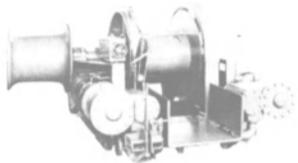
313 E. BALTIMORE

Marine Warehouse (301)

GM 3-268A 100 KW DIESEL GENERATOR SETS
 ENGINE: GM 3-268A — 6½X7 — 1200 RPM — 80% PF — electric starting. GENERATOR: 100 KW — 440/3/60/1200 RPM — 161 amps. Dripproof — open — self-ventilated. (Class A insulation stator — class B insulation on field). EXCITATION: 2 KW DC unit — 9' 1¾" long — 37" wide.

WINCHES

STEAM MOORING WINCHES

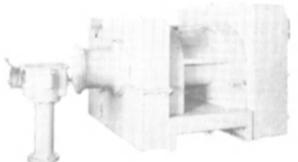


12" X 14" — AUTOMATIC TENSIONING with foot brake & declutchable gypsy head 20,000 LBS @ 100 FPM — FIRST LATER ALSO HANDLES 16,000 @ 150 FPM OR 50,000 @ 8 FPM.

Drum will show 1500 ft or 1½" wire in 9 layers. Steam inlet 3½" — 4" exhaust — 171 PSI working pressure. BASE DIMENSIONS: 6' X 6' 3½" — overall 8' 4½" wide x 9' long. Mfg by Friedrich Kocks.

ALL UNITS CAN BE DEMONSTRATED RUNNING

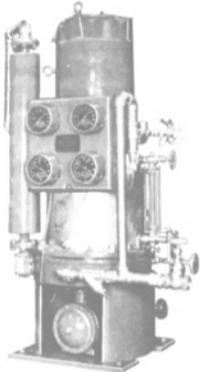
MODEL U1 UNIT WINCHES



7450 Lbs. @ 223 FPM. G.E. 50 HP Motor — 230 VDC. With controls and master switch.

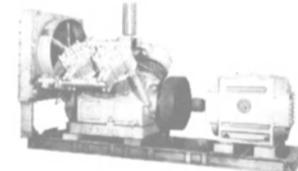
AIR COMPRESSORS

NASH MULTI-PHASE CONTROL AIR COMPRESSOR 50 CFM — 100 PSI



Model MV-673. Continuous pressure maintained by pressure control valve. Complete with motor, heat exchanger, separator, silencer, pressure control valve, water seal pressure control valve. CAPACITY: 50 CFM @ 100 PSI — 3500 RPM. Motor 27 HP — 440/3/60. Cooling water flow 35 GPM — relief valve set for 110 PSI. Vertical configuration. Pressure switch: on 80 PSIG — off 100 PSIG. Just removed from AT&T Vessel "Long Lines". Excellent condition.

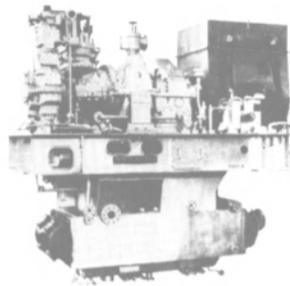
MARINE SHIPBOARD AIR COMPRESSOR V-TYPE — TS-22820



160 CFM @ 125 lbs — two stage 870 RPM — 8X8¼X8¾ — air cooled — with intercooler. Direct — connected air compressor #2261021. MOTOR: 50 HP 440/3/60 — mfg by U.S. Motor. AIR COMPRESSOR: Mfg by Air Pumps Ltd. Excellent condition — formerly used on AT&T Vessel "Long Lines" and removed only because they needed a larger unit. Complete with inter- and after-cooler. Very good condition.

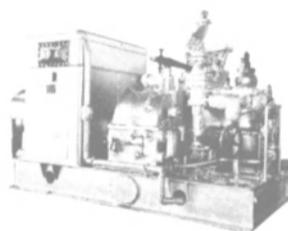
TURBO GENERATORS STEAM TURBINE — GEARS

1000 KW DELAVAL ALLIS-CHALMERS GEARED TURBO GENERATORS



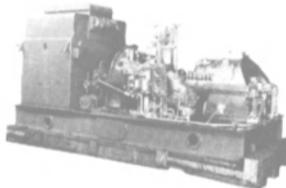
DeLaval turbine 1442 HP — 10019 RPM — class GJN — 9-stage — 1050 PSI — 950° TT. GEAR: 10019/12000. GENERATOR: Allis-Chalmers 1000 KW — 450/3/60/1200 — static excitation. Complete with condenser & switchgear optional. Send for brochure.

750 KW G.E. 7-STAGE TURBINE



450/3/60/1200 RPM — type FN3-FN24 — 10033 RPM. GEAR: 10033/1200 RPM. GENERATOR: type ATL — 6-pole — 450/3/60/1200 RPM — 0.80PF. EXCITER: 10KW 120 volts DC. Steam inlet 2½" — 125% load — 2 hour normal steam condition. Normal steam condition 525 lbs/825°TT — 1 lb absolute back pressure at turbine exhaust flange. Steam flow 100% load 7870 lbs. OAL 11' 4½" — OAW 6' ½" — OAH 6' 4". Total weight 24,500 lbs.

MARINER CLASS TURBINE & GEAR ONLY



G.E. 700KW DRV618-MR73 — 10938/1200 RPM 850 PSI — 850°TT — GEI-90755 CONDENSING. Complete with rotor bearings, diaphragms, packing, etc. Gear complete — type S — 432 — Form B — 10938/1200 RPM.

TURBINE & GEAR ONLY — NON-CONDENSING

G.E. 700KW DRV318-MR1 — 10938/1200 RPM — 850 PSI — 850°TT — 24 PSIG exhaust pressure. Rotor, diaphragms, packings, bearings available.

AUXILIARY TURBO GENERATORS ROTORS ETC.

● 400KW DELAVAL ROTOR — 7-STAGE — CLASS CD — 5910 RPM

835 lb W.P. — 840°TT — ex-Esso: Gloucester — Dallas Class — some Beth Sparrows Point & Quincy vessels, & Newport News Hulls 499-504 — in Book 820.

● 750KW DELAVAL ROTOR — 7-STAGE — CLASS G.J.

9823 — 585/865# steam pressure

● GEARS

Class KD — 9283/1200 — ex-City Service "Alton Jones" type vessels

GE ROTOR

NEW

750 KW

Type FN-3-FN24 — 7-stage — 10033 RPM

WESTINGHOUSE

NEW

1250 KW

540# — 825°TT — 8050 RPM

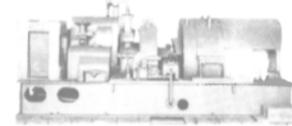
● FOR G.E. T2 VESSELS

G.E. DORV-325M — 5654 RPM — T2 tanker

● WESTINGHOUSE 538KW

5010 RPM — T2 vessel

TURBINE & GEAR ONLY



New DeLaval type H.D. Turbine — #245204 — gear type KDC — 730 HP — 440# — 740°TT — 9977 RPM — with reduction gear output 1200 RPM. Turbine serial #245204.

G.E. 300KW TURBO GENERATOR & GEAR



G.E. 300KW generator & 40KW D.C. exciter — 450/3/60/1200 RPM — ex USN D.E. vessel. TURBINE: DORV-325N — 4873 RPM — 400# — 50°F superheat.

300KW WESTINGHOUSE — LOW PRESSURE TURBINE & GEAR ONLY

Condensing or non-condensing designed for 300KW — 5286 RPM/1200 RPM on gear. CAPACITY: 300KW Normal 250 psi — 0°superheat — 25" vacuum 180KW — 250 psi — 0°superheat — 3 psi back pressure 300KW — 200 psi — 0°superheat — 25" vacuum. Steam/hour 6463 lbs — 100% load — steam/KW hr. — 20.88.

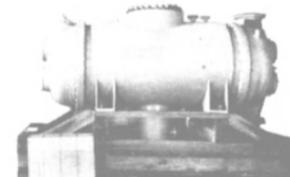
TURBO GENERATOR SET NEW — 200KW A.C. — 40KW D.C.



Ex USN — turbine type DN — 5-stage — 10012 RPM. GEAR: s-155 — single helical. GENERATOR: 200KW — 450/3/60/1200 RPM. Steam conditions: 540# — superheat 197°/208°.

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ON METALS CO.

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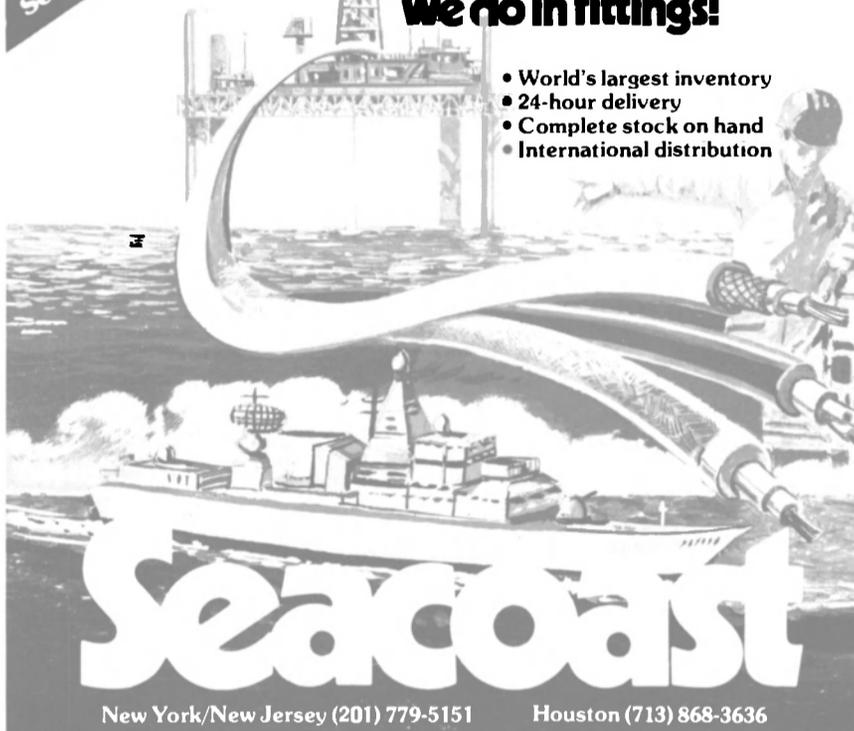
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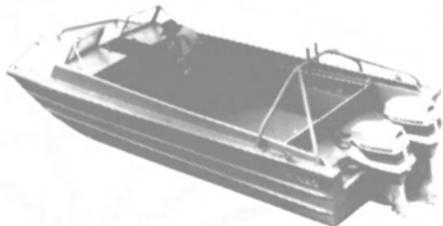
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C. E. Miller Corporation	9712	Centrilift, Inc.	6538	Cleveland City Forge Company	6516
C.F.E.M. (Compagnie Francaise D'Entreprises Metalliques)	2133, 2233	Centrilift-Hughes, Inc.	2305	Climax Lubricants & Equipment Company	4056
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Cam-Lok Division, Empire Products, Inc.	3796	Chartres, Corp.	4254	Colt Industries, Quincy Compressor Division	6106
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Cameron Iron Works, Inc.	2401, 9402	Chemgrate Corporation	1173	Columbian Division, Trico Industries, Inc.	4044
Canoean Resources Ltd./Formerly Lockheed Petroleum Services Ltd.	1247	Chesson Oil Company	6501		
Carboline Company	1813	Chicago Bridge & Iron Company	2711		
		Christensen	1531, 1538		
		Chromalloy Petroleum Service Group	4138		
		Chromium Corporation	6548		

(continued on page 70)

OTC '81

List Of Exhibitors

(continued from page 62)

Exhibitor	Booth
Alsthom Atlantique	2133, 2233
Amarillo Gear Company	6512
American Aero, Inc.	1433
American Bureau of Shipping	3564
American Coldset Corp.	3605
Amhoist American Hoist & Derrick Company	4833
Ameron, Protective Coatings Division	1156
AMETEK, Inc.	4418
AMF Tuboscope, Inc.	1431
Amsterdam Offshore Port	1475
Anchoring International, Inc.	2862
Andrews Bearing Corporation, Subsidiary of MPB Corporation	6510
Anixter Bros., Inc.	2692
Appleton Marine, Division of Appleton Machine Co.	2689
Aqua-Chem	2005
Aqua-Dyne Inc.	4040
Aquatic Equipment and Engineering, Inc.	6316
Aquila Favco Cranes Ltd.	9739
Aramco Services Company	6648
ARCO Solar, Inc.	9137
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ASEA	2275
Associated Fabricators, Inc.	6316
Ateliers et Chantiers de Bretagne (A.C.B.)	2133, 2233
Atlas Copco	1375
Dresser Atlas, Div. of Dresser Industries, Inc.	2503, 9201
The Atwood Group, Inc.	9535
Atwood Oceanics, Inc.	4757
Automatic Power, Inc.	2713
Avco Industrial Engine Operation	3275
Avicon Corporation	7302
Avon Inflatables Ltd.	3347, 3351
Avondale Shipyards, Inc., A Sub. of Ogden Corporation	3283
Aydin Controls	6745
B & W Incorporated	4527
Baker Oil Tools Company	3307
Baldt Incorporated	2698
Bass Oil Ltd.	4012
Baylor Company	4372
B.C. Manufacturing Co., Inc.	9805
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Bekaert Steel Wire Corporation	3547
Best Industries, Inc.	3688
Best-Hughes, Inc.	2305
Bethlehem Steel Corporation	2001
BF Goodrich Company	4115
BG Products Inc.	9340
Birdwell Division, Seismograph Service Corp.	3584
BJ-Hughes, Inc., Services Division	2305
BJ-Hughes Inc., Service Division	4407
BK Products, Inc.	1375
Blackburn Marine Supply Company	3684
Blue Water Marine Supply, Inc.	2749
Boeing Vertol Company	4144
Boele's Shipyards & Engineering Co. Ltd.	1473
Boston Insulated Wire & Cable Co.	2740
Bowen Tools, Inc. A Big Three Industry	4307
Braden Winch Co., Div. of Paccar Inc.	4034
Bridgestone/Lord Kinematics	3762
Brinkerhoff Signal, Inc.	3319
Brisam, Inc.	4313
Brissonneau et Lotz Marine	2133, 2233
British Hovercraft Corporation Ltd.	3347, 3351
British Petroleum Limited	3347, 3351
British Ropes Ltd.	3347, 3351
British Shipbuilders	3347, 3351
British Steel Corporation	3347, 3351
Brown & Root, Inc.	3401
Brown Oil Tools, Inc.	3813
Brown Oil Tools, Inc.	2305
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The first coal-fired steamships in two decades will be powered by C-E designed boilers. Naturally.

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C-E modified a proven marine boiler design to permit coal-firing via a spreader stoker. But we retained the conservative furnace rating, superheater design with vertical arrangement and wide tube spacing, and in-line main bank tubes that have been the hallmark of our oil-fired boilers.

Economical coal-fired marine boilers are expected to appear in increasing numbers on the world's oceans in the 80's. Many countries, eager to lessen their dependence on oil as the major source of energy, are planning a significant number of new coal-fired electric generating stations. C-E is ready with the technology and the know-how needed to build the new marine boilers for the coal-fired steamships that will provide economical coal transport for these new stations.

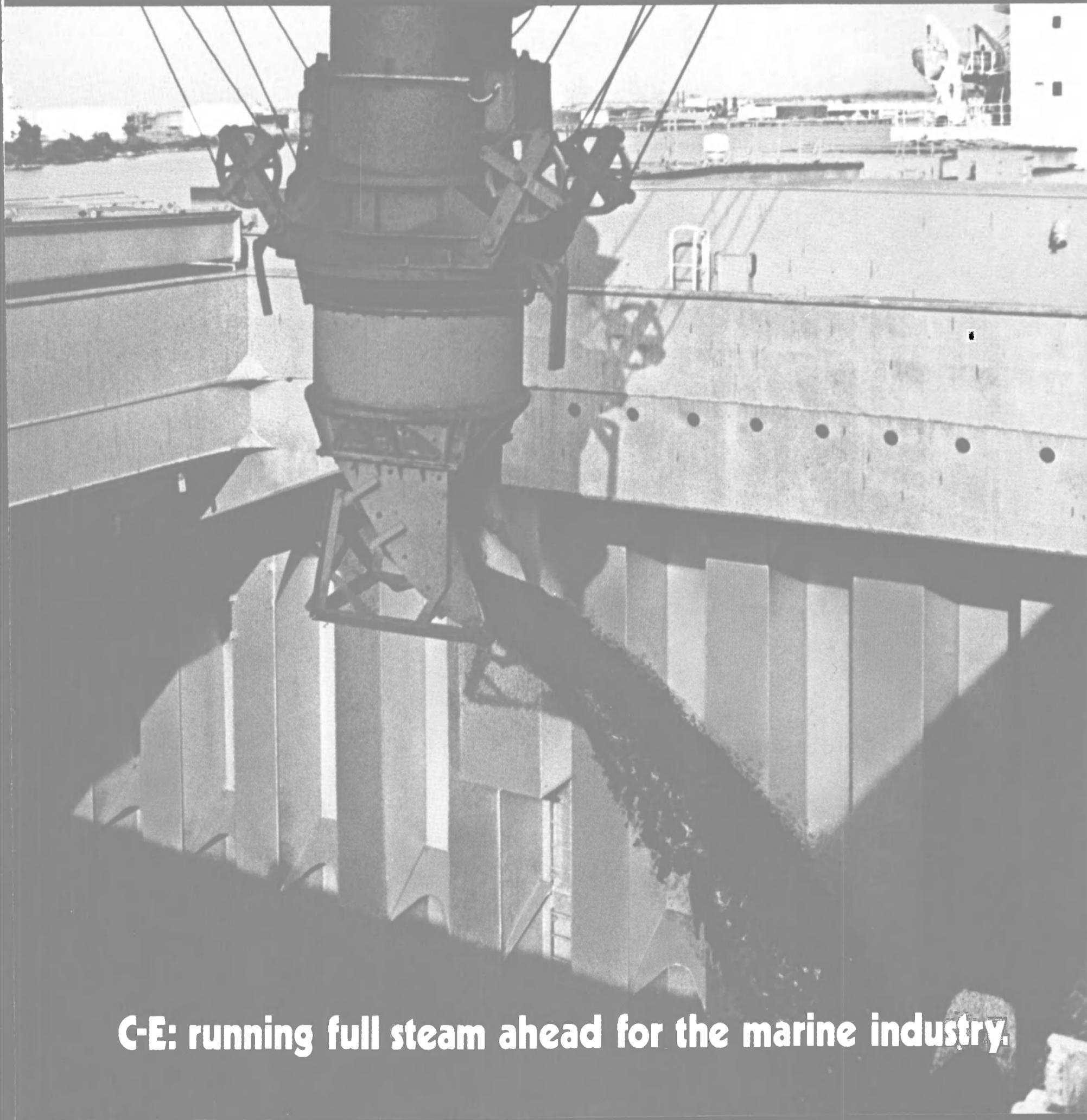
For more about the C-E marine boiler that's returning coal to the high seas, contact C-E Marine Power Systems, Combustion Engineering, Inc., Windsor, CT, U.S.A. 06095.

**CE POWER
SYSTEMS**

COMBUSTION ENGINEERING, INC.

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THE HIGH SEAS.



C-E: running full steam ahead for the marine industry.

OTC '81

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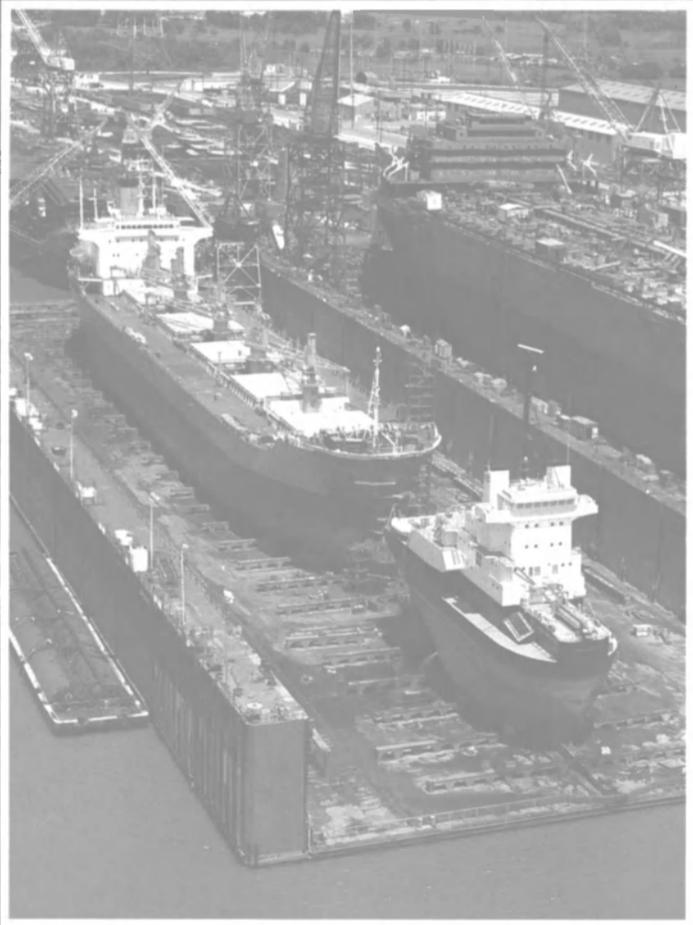
(continued from page 67)

Exhibitor	Booth
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Combustion Engineering Inc.	4425
Completion Technology Company	6134
Compressor Engineering Corporation	7228
Comsat	4141

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Continental EMSCO, An LTV Company	4229	Custom Cable Company	2851
Contract Manufacturing, A Company of CMI Corporation	9727	D & W International, Inc.	9638
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Control Flow, Inc.	4016	DAMCO-Offshore	1473
Crawford Fitting Co.	2742	Daniel Industries, Inc.	2479
Cromemco, Inc.	6342	Daspit Bros. Marine Divers, Inc.	2849
		The David Taylor Naval Ship R&D Center	7023
		Davie Shipbuilding Ltd.	6841
		De Groot International Contractors B.V.	1473

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Delta Mud, Division of Chromalloy	4138
DEMCO, A Division of Cooper Industries, Inc.	3619
Derrick Equipment Company, Div. of Derrick Manufacturing	6751
Derrick Service International	4372
Detector Electronics Corporation	1177
Di-Chem Magcobar Operation, Div. of Dresser Industries, Inc.	2503, 9201
The DiaLog Company	2640
Digitran, Inc.	3779
Disco International	7234
Dorbyl Marine (Pty.) Ltd.	6314
Dorman Long Swan Hunter (Pty.) Ltd.	2854
DOTCO Fishing Tools	2854
Dover Corp./Norris Div.	4025
Dowell Division of Dow Chemical U.S.A.	4655
Dowell Schlumberger Corporation	2313
Draco Spring Mfg.	9503
Dresser Industries, Inc.	4033
Dreyfus Supply & Machinery Corporation	2503, 9201
Drilco, Div. of Smith International	2698
Drilling & Service Limited	2405
Drilling Tools, Inc.	3347, 3351
Dunlop Limited	3319
Dyna-Drill, Div. of Smith International	3347, 3351
E.T.P.M.	2405
Eagle Mud Service, Inc.	2133, 2233
Earl & Wright	4629
Eaton Corporation, Engineered Polymer Products Division	1401
Eckel Manufacturing Company, Inc.	2764
EDO Western Corporation	3763
Elder International	1549
Electro-Motive Division, General Motors Corporation	9529, 9542
Electronic Systems Division	6324
Emerson & Cuming	4964, 9711
W.R. Grace & Co.	4217
Endeco (Environmental Devices Corp.)	4217
Enerpac	7202
Engelhard Industries Div.	6201
Engine Equipment Mfg. Co., Inc.	2585
Engineered Steel, Inc., Marine Crane Division	9730
Engineering Service Associates	3692
Engineering Specialties, Inc.	4363
Environmental Elements Corp. (Sub. Koppers Co., Inc.)	7229
Ergon, Inc.	1632
Esco, Inc./Dow Corning Corporation	1540
Esgard, Inc.	2880
Eureka Chemical Company	3773
Evans & Sutherland	2858
Everpure, Inc.	3793
Farr Oil Tool, Inc.	2780
Federal Republic of Germany	1169
Federal Signal Corporation	1755, 1773
Fibergrate Corporation	7345
Fine Tubes Limited	2365
Finsider	3347, 3351
Fisher Controls Company	4150
Fishing Tools, Inc.	4953
Flakt Limited	3319
Flexitall Gasket Company Inc.	3347, 3351
Flexservice	7301
Flo Trend Systems, Inc.	2133, 2233
Flocon Products, Inc.	6851
Flop petrol Schlumberger	4016
Flow Products Division	9519
Daniel Industries, Inc.	2479
GH Fluid Services	2359, 9625
Fluor Corporation	3607
FMC Corporation	1403
Foley Drilling Tools, Inc.	7465
GH-Foster	2359, 9625
Foster Marine Div.	6318
Foster Refrigerator Corp.	2233
French Exhibitions Inc.	2133, 2233
G.E.P.	6110
GAF Corporation	7128
Gai-Tronics Corporation	2847
The Galigher Co., Div. of Baker International Corp.	3347, 3351
Gall Thomson Maritime Ltd.	2359, 9625
Galveston-Houston Company	1209
Gardner-Denver Cooper Industries	3255
The Garrett Corporation	6700
Gas pumps, Inc.	1149
Gates Rubber Company	3137
L. F. Gaubert & Co., Inc.	3247
Gearhart Industries	2133, 2233
Gem Hersent	4138
Gemoco, Division of Chromalloy	1263
General Electric Company	3644
Geophysical Research Corporation	3347, 3351
George Wimpey Ltd.	7134
Geoservices	4964, 9711
Geosource Inc.	1475
Geveke Motoren en Grondverzet B.V.	3531
Global Marine Inc.	4964, 9711
Geostructures	4246
Goodall Rubber Company	3271
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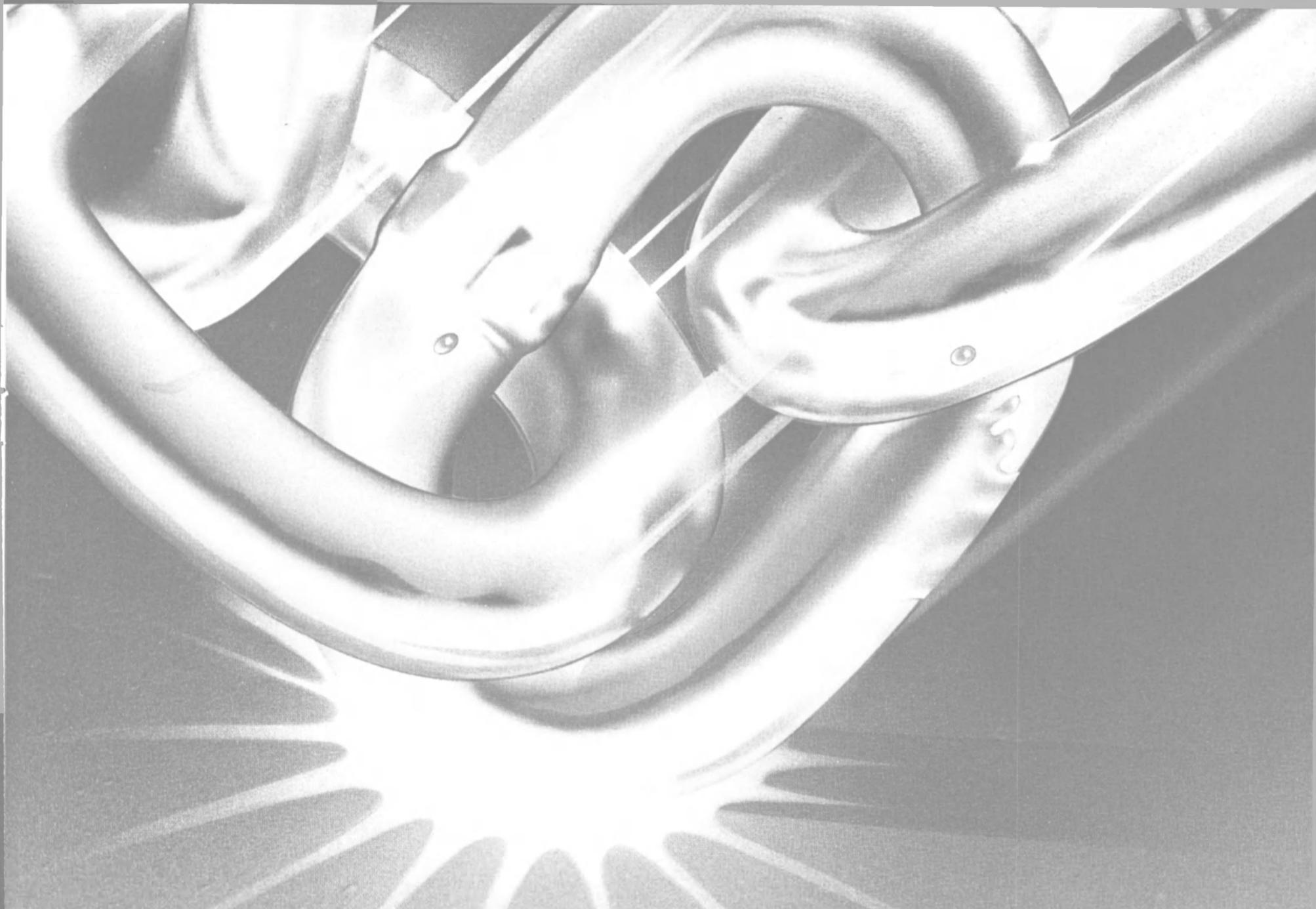


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(continued on page 72)

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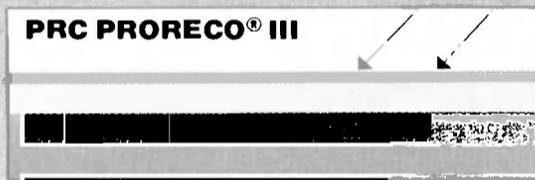
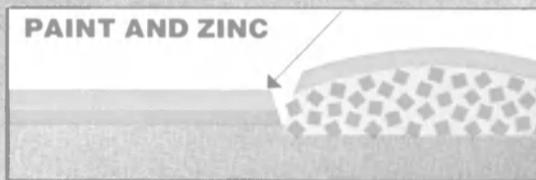


Before a coating can protect your deck, it has to protect itself.

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

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

The PRC PRORECO® III system can virtually eliminate both on-going maintenance and major replacement costs. Unlike other coatings on the market, the resilient PRORECO® III system protects against abrasion and impact as well as corrosion. It does this with three layers: a corrosion inhibitive



primer which does not sacrifice itself as do the zinc primer systems; an abrasion resistant base coat;

and a flexible non-skid for crew safety.

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

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

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



The PRORECO® III Deck Coating System



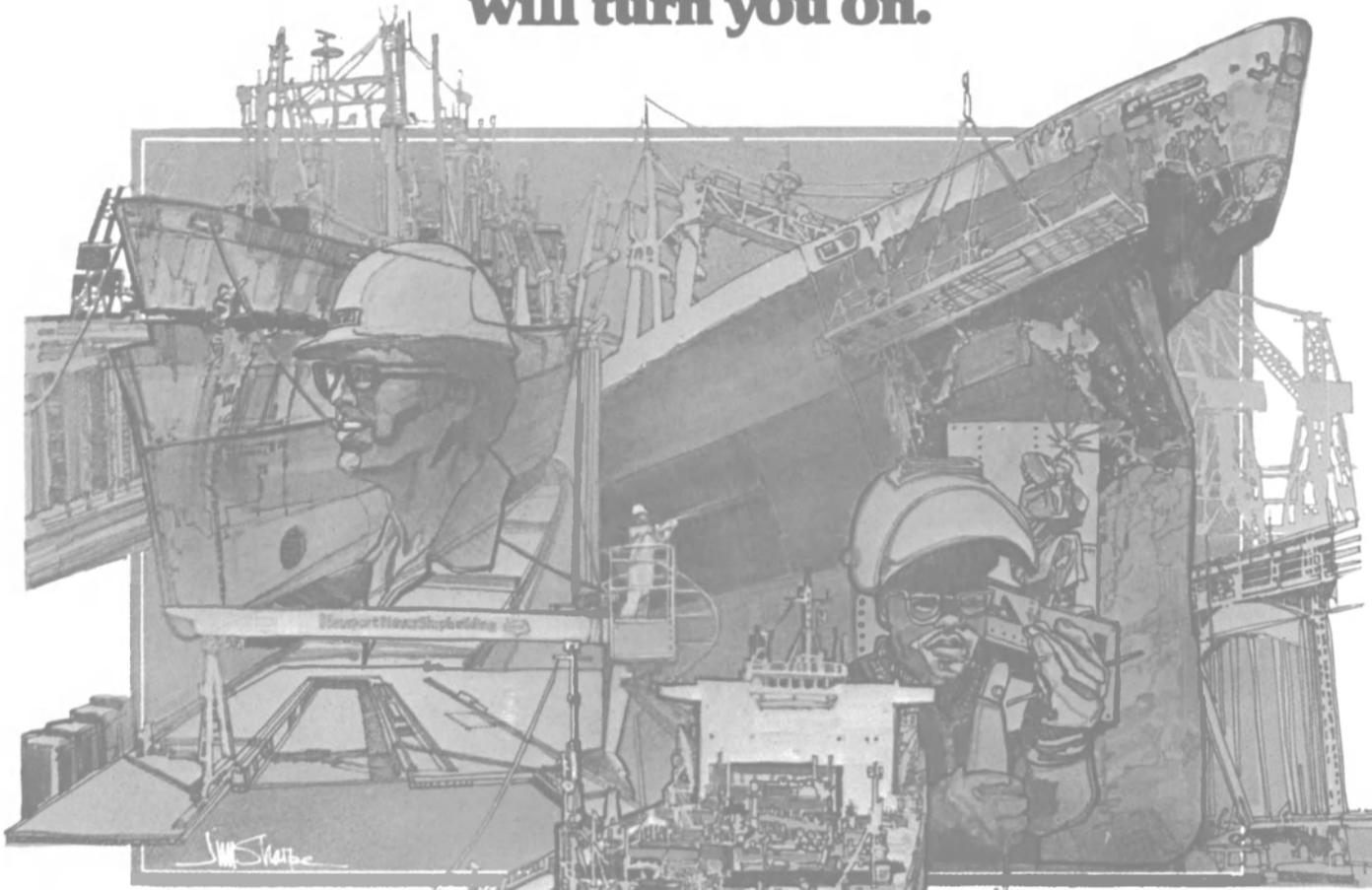
OTC '81

List Of Exhibitors

(continued from page 70)

Exhibitor	Booth
Gotco International, Inc.	2000
GP Elliott Electronic Systems	3347, 3351
Grant Oil Tool Company	4357
Gray Tool Company	4944
Greer Hydraulics	2642, 9628
Griffin-Woodhouse	2280

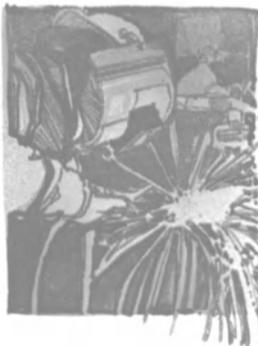
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It takes complete facilities.

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Because we can perform all repair services ourselves, we maintain complete control. This minimum depen-



dence on outside sources contributes to our excellent record for quick turnaround and on-time delivery.

That's a major reason we do more cruise ship business than any other U.S. yard. We can handle unexpected repairs

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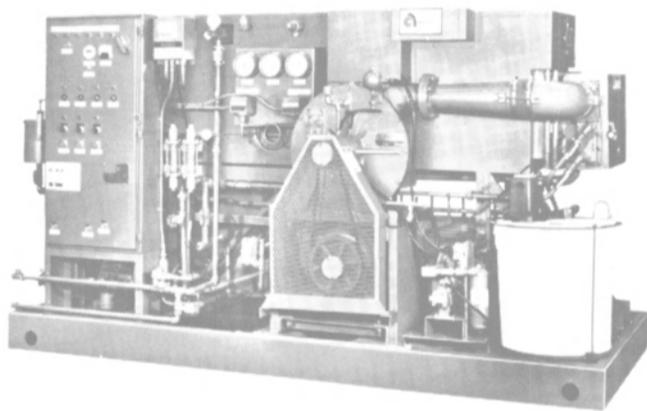
Exhibitor	Booth
Grundy Environmental Systems, Inc.	2758
Guiberson, Div. of Dresser Industries, Inc.	2503, 9201
Gulf Electroquip, Inc.	9605
Gulf Radiotelephone and Electronics, Inc.	3655
Gulfco Industries, Inc.	6409
Gulfport Shipbuilding Company	1709
Hagglunds	2275
Halliburton Company	3401
Halliburton Services	3401
Halter Marine Inc.	6401
Hamanaka Chain Mfg. Co. Ltd.	2280
Hamblin Oilfield (Services) Ltd.	6549
Harco Corporation	2688
Harris Corporation	3689
RF Communications Division	4475
Harrisburg, Inc.	4008
The Harshaw Chemical Co.	4008
Hawkins & Tipson Ropemakers Ltd.	3347, 3351
HBI Industries	1137
H.C.G. B.V. Offshore Division	1475
Heerema Engineering Service	1473
Hempel's Marine Paints, Inc.	4347
Hercules Energy Corporation	9103
Division LSB Industries Amex	3347, 3351
Hewlett-Packard	4145
Hill Graham Controls Ltd.	4661
Hilman, Inc.	2591
Hitachi Zosen	1573, 1673
Hitachi Zosen International, S.A.	1573, 1673
Hitachi Zosen U.S.A., Ltd.	1573, 1673
Holland Repair & Services B.V.	1473
Honeywell	2333
The Hotsy Corporation	1697
Houston Systems Manufacturing Co.	2669
Howe-Baker Engineers, Inc.	4050
Hughes Tool Company	2305
Humphrey, Inc.	1542
The Hunt Company	9320
Hutchison-Hayes International, Inc.	4447
Hydradyne Hydraulics	9825
Hydranautics	1741
Hydril	3901, 9502
Hydro Manufacturing & Sales	7305
Hydro Products	3561
Hydrodynamics Corporation	6845
Hydrodynamics, Incorporated	2635
Hyundai Heavy Industries Co., Ltd./Hyundai Corporation	6735
IDECO, Div. of Dresser Industries, Inc.	2503, 9201
IMCO	3401
IMCO Services, A Division of Halliburton Company	3811
IMODCO, A Unit of AMCA international Corporation	4268
Ingersoll-Rand Company	2375, 9614
INMARSAT, A Division of COMSAT Instrumentation Services	4141
Division, Daniel Industries, Inc.	2479
Intercontinental Ropes, Inc.	4030
International Grating Inc.	9624
International Paint Company, Inc.	2676
International Tool Company, Inc.	2678
International Underwater Contractors, Inc. (IUC)	2285
Interocean Systems, Inc.	1555
Interstate Electronics Corporation	2869
Ishikawajima-Harima Heavy Industries Co., Ltd.	1573, 1673
Italian Steel Finsider Group	4150
ITT	3673, 3674
Ivy Electronics, Inc.	7029
TRW J. H. Williams	2335
Jackson Marine Corp.	3401
Japan Ocean Industries Association	1573, 1673
JMR Instruments, Inc.	7323
John Wood Group Engineering	3347, 3351
Johnson Division, UOP Inc.	2878
Johnston-MACCO	1405
Division of Schlumberger	2763
Jordan Valve Richards International	4509
Joy Manufacturing Company	4509
Petroleum Equipment Group	1573, 1673
Kawasaki Heavy Industries, Ltd.	1573, 1673
Kawasaki Heavy Industries, Ltd.	9632
Kawasaki Steel Corporation	1573, 1673
Kelco Oil Field Products	1597
Kemlon Products	6102
Kendavis Industries International, Inc.	4475
Keystone Engineering/Affiliate	6102
Klampon Corporation	6528
Kobe, Inc.	1113
Kobelt J. Manufacturing Co. Ltd.	3598
The Kongsberg Group	2298
Koomey Inc.	6517
Krupp Atlas Elektronik/Division of Krupp International Inc.	4250
Lamarche Mfg. Company	2657
Lantana Boatyard, Inc.	2685
Lanzagorta International, Inc.	4360
Lasalle Marine, Inc.	9724
TRW Lawrence Cable	2335
Lebus International, Inc.	3742
Levingston Shipbuilding Company	1709
Linnenbank International, Inc.	2280
Lister Diesels Inc.	6302
Ljusne Chain Company	3261
Lockheed Corporation	1711

(continued on page 74)

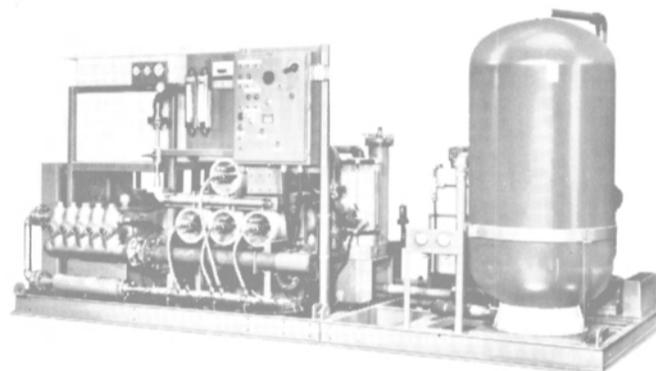
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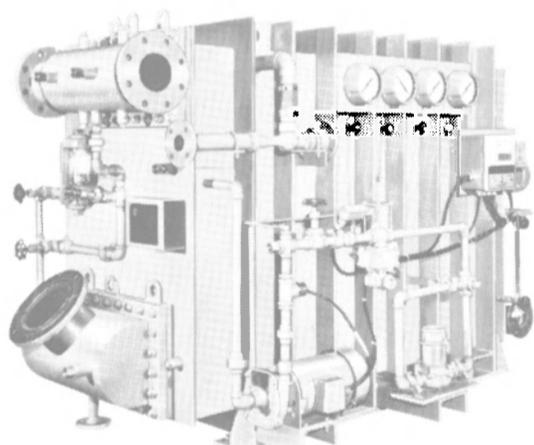
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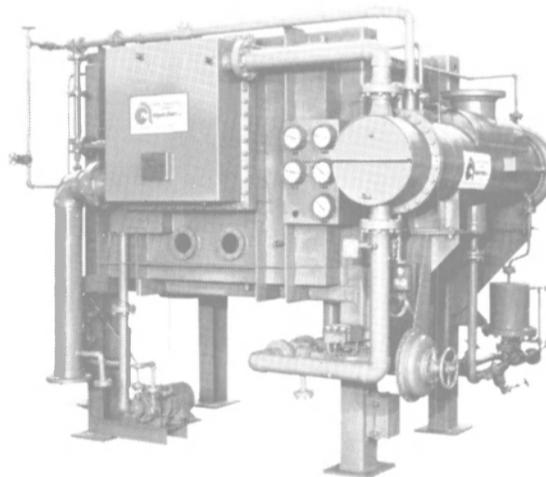
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WT81-120

OTC '81

List Of Exhibitors

(continued from page 72)

Exhibitor	Booth
Lone Star Screw Co.	
Protective Coatings Inc.	7353
Lorac Service Corporation	3584
Lord Kinematics/Bridgestone	3762
Lufkin Industries, Inc.	4366
Lynn International, Inc.	1141

Exhibitor	Booth
M & J Valve Division Daniel Industries, Inc.	2479
Magcobar, Div. of Dresser Industries, Inc.	2503, 9201
Magnavox Advanced Products & Systems Co.	1738
Malta Drydocks	2854
Mammoet Transport B.V.	1475
Mampaey Marine Engineering	2749
Manitowoc Engineering Co.	3423
Marathon LeTourneau Offshore Company	2403
Marcon B.V. Marine Consultants	1475
Marine & Industrial Electric Company	3138

Exhibitor	Booth
Marine Concrete Structures, Inc.	2762
Marine Moisture Control Company, Inc.	2890
Marsh Instrument Company A Unit of General Signal	3659
Martin-Black Offshore, Inc.	4032
Martin-Decker	1605
Matcote Company, Inc.	4737
Matra Offshore	6553
McAuto-McDonnell Douglas Automation Company	3746
McDermott Incorporated	1811
McEvoy Oilfield Equipment Company	2901
McMillan Equipment Company	6140

Exhibitor	Booth
Mechanical Equipment Company, Inc. (MECO)	2295
J. H. Menge & Company, Inc.	3734
Messina Incorporated	4023
Micoperi	6128
Midland Marine Corporation	2854
TRW Mission Manufacturing Co.	2335
Mitsubishi Heavy Industries, Ltd.	1573, 1673
Mitsui & Co., Ltd.	1573, 1673
Mitsui Engineering & Shipbuilding Co., Ltd.	1573, 1673
Mitsui Ocean Development & Engineering Co., Ltd.	1573, 1673
MOM Offshore Ltd.	3347, 3351
Monark Boat Company	4625
Morrison-Knudsen Company, Inc.	4209
Motorola Communications & Electronics, Inc.	1901
Frank W. Murphy Mfr., Inc.	7109
Mustang Power Products, Inc.	9642
Nance Industries, Inc.	3560
Napko Industrial Marine & Pipe Coatings Divisions	4027
National Marine Service Incorporated/ Products Division	2637
National Offshore Supply Co., Inc.	7101
National Supply Company	1503
NDT Systems, Inc.	6542
Neddrill (Nederland) B.V.	1473
Nedlloyd Group	1473
Nelson Electric, A Unit of General Signal	2888
New Mar Oil Services Ltd.	3347, 3351
Newpark Shipbuilding & Repair	4629
Newport News Shipbuilding	6831
Nippon Chain & Anchors Co.	2280
Nippon Kokan K.K.	1573, 1673
Nippon Steel Corporation	1573, 1673
NL Petroleum Services	2111, 3501
Nohab Diesel	1375
North American Turbine Corp.	2298
Norwalk-Turbo, Inc.	6234
The Export Council of Norway	2433, 2449
NRP/Hose Products	2575
The O'Brien Corp.	4027
D. G. O'Brien, Inc.	4410
OBI-Hughes, Inc.	3739
OBI-Hughes, Inc.	2305
Ocean Drilling & Exploration Company	1355
Oceaneering International, Inc.	2381
Odom Offshore Surveys, Inc.	4410
Offshore Logistics, Inc.	9238
Offshore Navigation, Inc.	2839
Offshore Safety/Survival Div.	2749
Offshore Supplies Office	3347, 3351
Offshore Supply Association Limited	3553
Offshore Technology Corporation	2870
Oil Tool Div.	4964, 9711
Omnipure	2280
Oncor Corporation	9411
Orbit Valve International, Inc.	1903
Osprey Electronics Ltd.	3347, 3351
Otis Engineering Corp. A Halliburton Company	3401
Pacific Roller Die Company, Inc.	6565
Par Industries, Inc.	4372
Parker Hannifin Corporation Seal Group	4006
Parker Industry Corporation	4018
Pauluhn Electric Mfg. Co., Inc.	2633
Peabody International Corp.	2769
Peck-O-Matic, Inc.	3740
Peerless Mfg. Co.	4014
Pengo Industries, Inc.	3737
Penrod Drilling Company	2709
Perforaciones Maritimas Mexicanas S.A.	2784
Perry Equipment Corporation	6120
Perry Oceanographics, Inc.	4719
Pettibone Corporation	9321
Petty Ray Geophysical	4964, 9711
Philadelphia Gear Corporation	6305
Philadelphia Resins Corporation	4725
Phillips Petroleum Company	3640
Phoenix Products Co., Inc.	2264
The Pipe Line Development Co. (PLIDCO)	1900
TRW Pleuger	2335
Posi-Seal International, Inc.	3572
Power Systems Operation	4961, 9711
Preformed Marine	6132
Premium Threading Service A Division of Otis Engineering	7244
Pressure Control, Inc.	9110
Priestman Brothers Ltd.	3347, 3351
Prince Valve, Inc.	3774
Production Specialties Division Daniel Industries, Inc.	2479
Products Research & Chemical Corporation (PRC)	6124
Progress Equipment Company, Inc.	4058
Pump & Equipment Division Daniel Industries, Inc.	2479
Pyramid Manufacturing Company	4258
Pyramid Rig Services, Inc.	4258
Q.V.M. Inc., Quality Valve and Machine Works Inc.	1908
Quanex - Pipe Specialties	7135
Quincy Compressor Division of Colt Industries	6106
Radar Devices, Inc.	3635
Ramtek Corporation	6901
Ratcliff Hoist Company	6208

(continued on page 76)

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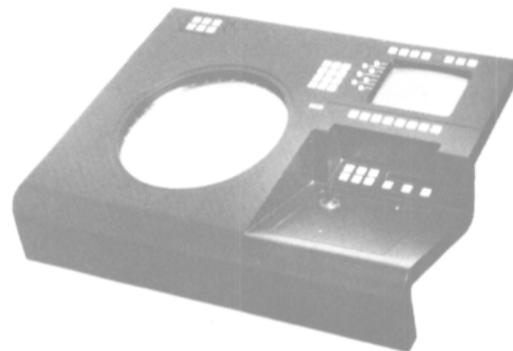
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OTC '81

List Of Exhibitors

(continued from page 74)

Exhibitor	Booth
Raymond International Inc.	3539
Raytheon Company	3585
RCA Avionics	6601
Reading & Bates Corporation	1331
REAMCO, Inc.	4543
Red Fox Industries, Inc.	3933

Exhibitor	Booth
TRW Reda Pump Co.	2335
Regan Offshore International, Inc.	2311
C. A. Richards & Associates, Inc.	4410
Rig-A-Lite Company, Inc.	4475
Rigging International Europe Ltd.	3347, 3351
Riley-Beard	2811
Rockwell International Flow Control Division	2797, 9317
Rolls Royce Ltd.	3347, 3351
Ross Hill Controls Corporation	4661
Rowan Companies Inc.	3552
RSV Offshore	1475
Ruston Gas Turbines Ltd.	3347, 3351
S & N Pump Co.	2649
S.E.M.T. Pielstick	2133, 2233

Exhibitor	Booth
S.M.F. International (Creusot Loire Groupe)	2133, 2233
Safety Service & Supply Co., Inc.	4254
Sahara Oilfield Services Ltd., S.A.	4313
Saipem (ENI Group)	7125
Samson	2280
Samson Ocean Systems, Inc.	3660
Santa Fe International Corporation	3713
Saut du Tarn Ball Valve Co.	6900
Schlumberger	1405
Schlumberger Offshore Services	1405
Schottel of America, Inc.	4031
Schramm, Inc.	9720
Schumacher Company, Inc.	1737
Scientific Drilling Controls	2743
SD Marine Ltd.	3347, 3351

Exhibitor	Booth
SDC Products Group	1532
Sea Data Corporation	6746
Sea Tank Co.	2133, 2233
Seacoast Electric	4049
Seaforth Maritime Ltd.	3347, 3351
Seahorse, Inc.	3319
Seal-Tite Mfg. Co.	6310
Seaward International, Inc.	4221
Sedco Drilling Division	1401
Sedco Energy Corporation	1401
Sedco, Inc.	1401
Sedco-Hamilton Production Services	1401
Selby, Battersby & Co., A Sub. of Quaker Chemical Corp.	2667
Sembawang Engineering (Pte.) Ltd.	2854
Sembawang Shipyard Ltd.	2854
Sepco Industries Inc.	1731
Serck Audco Valves International	3347, 3351
Servco, Div. of Smith International	2405
SHIPCO, Inc.	7116
Sigma Enterprises, Inc.	4021
Signal Oilfield Service, Inc.	3319
Single Buoy Moorings Inc.	3211
Skagit Corporation	4647
SKF Steel	1375
Skinner Bros. Co., Inc.	3642
The Skytop Brewster Company	4035
Smit International	1457
Smit International Marine Services	1457
Smit International (Americas) Inc.	1457
Smit International Ocean Towing and Salvage Co.	1457
Smit International Transport	1457
Smit Lloyd B.V.	1457
Smit Tak International Salvage Company	1457
Smit-Lloyd	1457
Smith International, Inc.	2405
Smith Meter Operation	4964, 9711
Smith Tool, Div. of Smith International	2405
Snampromgetti (ENI Group)	7125
Snap-On Tools Corporation	7137
Societe Alsacienne de Const. Mecaniques de Mulhouse	2133, 2233
The Society of Naval Architects and Marine Engineers	1115
Society of Petroleum Engineers of AIME	4000, 4001
SOPEC, Inc.	3267
Solar Turbines International	1501
Solus Ocean Systems, Inc.	3759
Sound Powered Telephone Co. Ltd.	3347, 3351
Southern Spring Mfg. Inc.	6522
Span Instruments Inc.	4215
Spearhead Group	3347, 3351
Special Products Division of Otis Engineering Corporation	7242
Specialties Company and Copper State Rubber Co.	4005
Specific Equipment Company	2754
Sperry Marine Systems	3693
Sperry-Sun, Inc.	4525
St. Louis Ship Div. of Pott Industries Inc.	1175
Stal-Laval, Inc.	2275
Standco Industries, Inc.	2495
The Stanwick Corporation	2581
State Boat Corporation	3548
Stewart & Stevenson Services, Inc.	3511
Stork Werkspoor Diesel B.V.	1475
Sturm Machine Company Division of Chromalloy	4138
Sub-Sea Systems, Inc.	1734
TRW Subsea Petroleum Systems Inc.	2335
Sullair Corp.	7247
Sulzer Brothers, Ltd	4565
Sumitomo Corporation	1573, 1673
Sumitomo Heavy Industries, Ltd.	1573, 1673
Sumitomo Metal Industries, Ltd.	1573, 1673
Sumitomo Ocean Development & Engineering Co., Ltd.	1573, 1673
Superior Division Trico Industries, Inc.	4044
Swan Hunter (Trinidad) Ltd.	2854
Swedish Chain Sales Corp.	3261
Swedyards Development Corp.	1375
TAM International, Inc.	2675
Taylor Diving & Salvage Co.	3401
Taylor Oil Tools	3534
TBW Industries, Inc.	1435
Tech-Carbides, Inc.	9439
Tejas Controls, Inc.	3639
Teleco Oilfield Services Inc.	6334
Teledyne Inc.	1307
Tellurometer	4363
Tellurometer - U.S.A.	4363
Tetra Tech, Inc.	3561
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Thomson CSF	2133, 2233
GH-Thornhill Craver	2359, 9625
Thrust Hydraulics Division of Otis Engineering	7149

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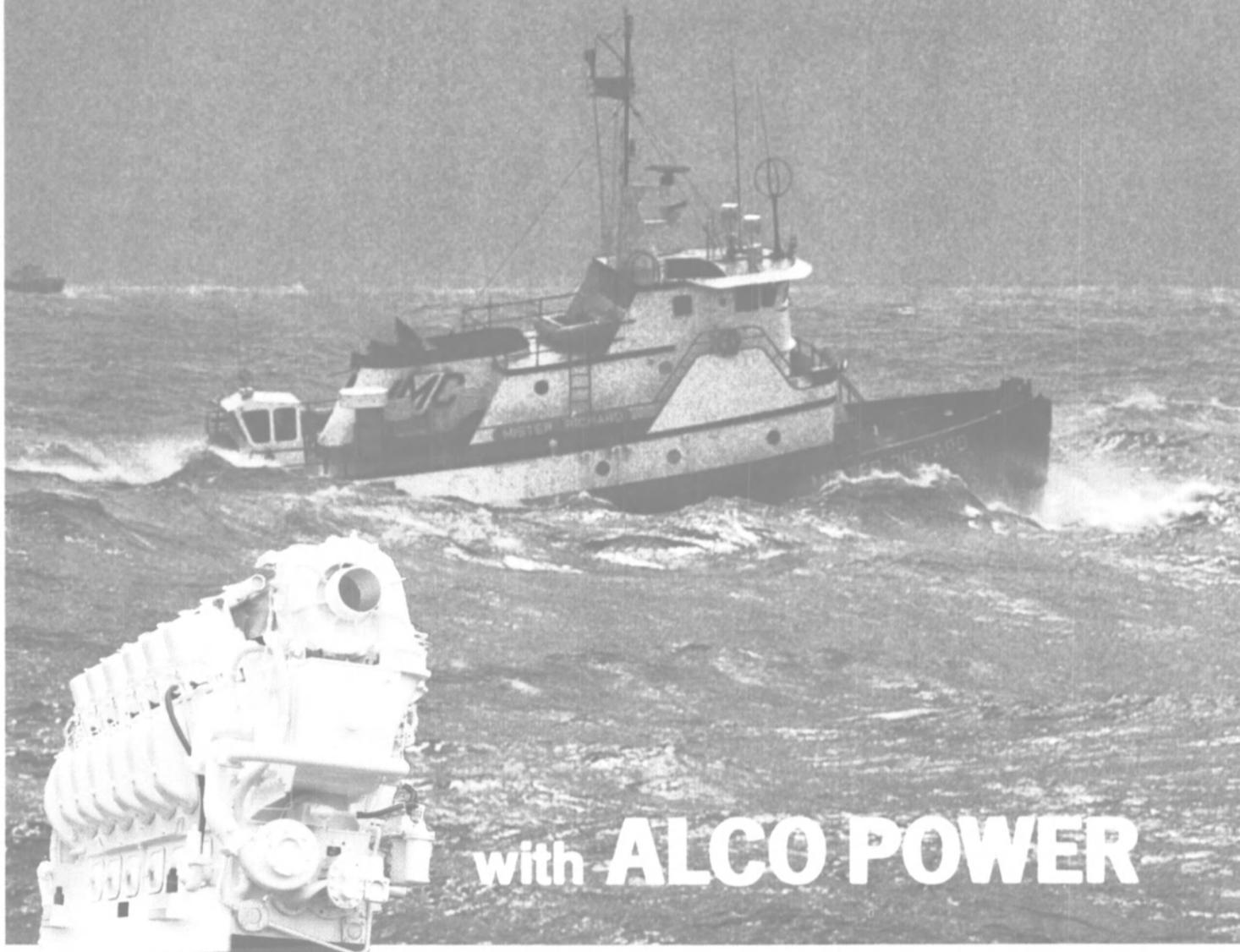
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List Of Exhibitors

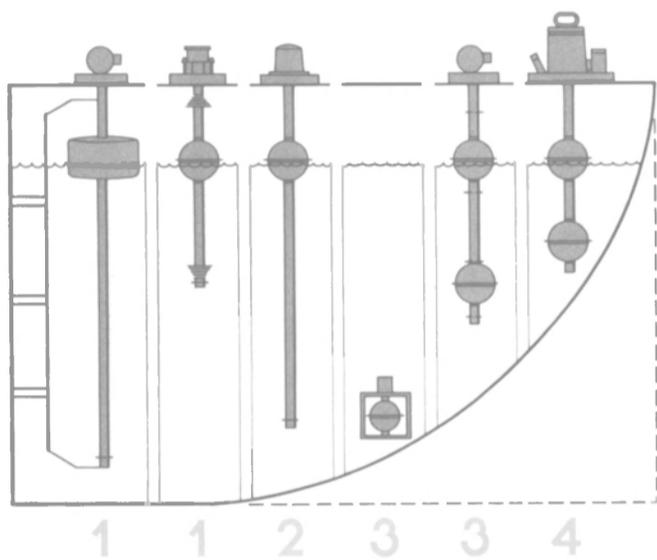
(continued from page 76)

Exhibitor	Booth
Tideland Signal Corporation	4547
Tidewater Marine Service, Inc.	4011
TK Valve & Manufacturing, Inc.	2121
The Torrington Company	1159
Trans-Tow Limited	6505

Exhibitor	Booth	Exhibitor	Booth
Transamerica Delaval Inc./ Gems Sensors Division	4838	Unit Crane & Shovel Corp.	3631
Tri-Flo Industries International, Inc.	9715	United States Coast Guard	6202
TRW Inc.	2335	United States Gypsum Company	6817
GH-TTE	2359, 9625	The United States Navy	7023
Tungsten Carbide Mfg. Div. of Smith International	2405	United States Steel	3637
Turbomeca	2133, 2233	United Technologies Corporation	4112, 9333
Turmeric, Ltd.	3593	Universal Joint Service, Inc.	3698
Twin Disc, Incorporated	3147	Universal Metals & Machinery, Inc.	3131
UDI Group Ltd.	3347, 3351	Valve Control Company	3901, 9502
Union Carbide Corporation, Linde Division	4054	D. Van Beest	2749
Union Wire Rope	1503	Van Leeuwen Pipe & Tube	1473
Uniroyal, Inc.	2857	Vector Cable Co.	1405
		Verolme Dock and Shipbuilding Company B.V.	2854

Exhibitor	Booth
Vetco Offshore Inc., A Sub. of Combustion Engineering, Inc.	4425
Vicinay International Company, Inc.	2634
Victoria Machine Works	2863
Vrijhof Ankers B.V.	1475
Vulcan Iron Works Inc.	1740
W-K-M Division, ACF Industries, Incorporated	4208
W. L. Gore & Associates, Inc.	9443
W.B. Arnold Co., Inc.	4846
W.B. Arnold Co., Inc.	3261
WABCO - American Standard	2379
Wanlass Technologies, Inc.	9712
Warren Automatic Tool Company	2697
Washington Chain & Supply, Incorporated	2698
Watercraft America, Inc.	4846
Waukesha Engine, Div. of Dresser Industries, Inc.	2503, 9201
Weatherby Engineering Co. Protexa	2784
Weatherford International	1433
Well Control, Inc. A Thermotics Company	2733
Western Company of North America	3636
Western Gear Corporation	1539
Wilson Walton International Ltd.	3347, 3351
Wheatley-Flow Control Operation	4964, 9711
Whico Atlas Company	6500
Whittaker Corporation Survival Systems Division	2211
Widder Corporation	2363
Wijsmuller B.V.	1475
Wilson & Hayes, Inc.	1636
Wm. B. Wilson Mfg. Co.	6217
Womack Machine Supply Co.	2775
Woolley Tool & Mfg. Company Division of Chromalloy	4138
The Yokohama Rubber Co., Ltd.	1573, 1673
York Division, Borg-Warner Corp.	4860
Zapata Corporation	4561

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1. Safe, accurate, continuous tank level indication.
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3. Level switches for alarm or automatic system control.
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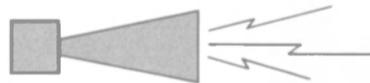


New U.S. Coast Guard regulations have created a need for reliable, closed loading monitoring of liquid level and independent safety alarm systems. As a leading supplier of intrinsically-safe liquid level sensors, GEMS can provide various solutions to these 'closed-loading' problems.

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4. Self-Checking multi-level switch provides system integrity before loading.
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European Economic Council represented.

For application information, call toll-free (800) 243-3177.

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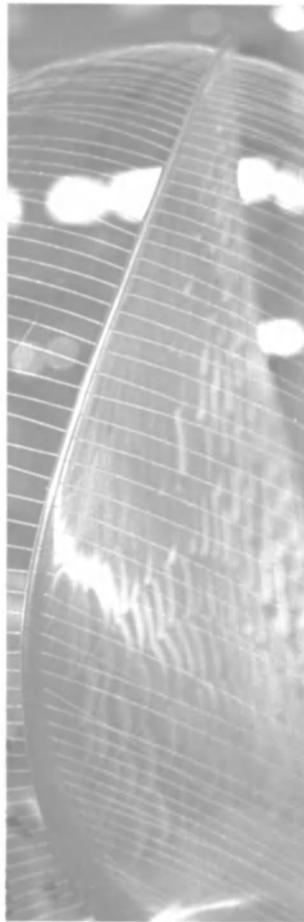
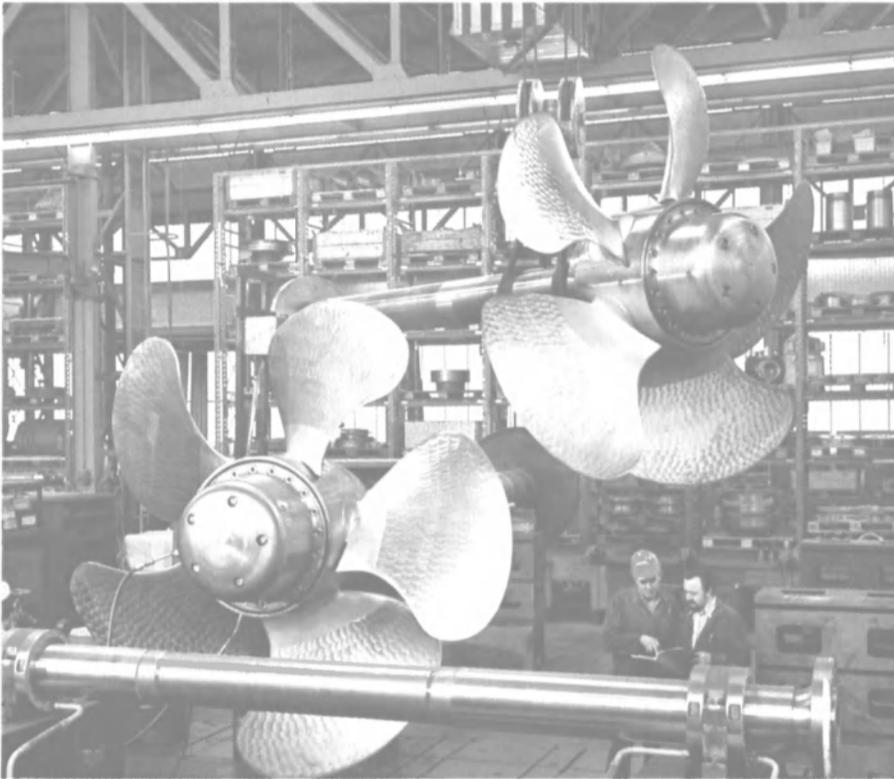
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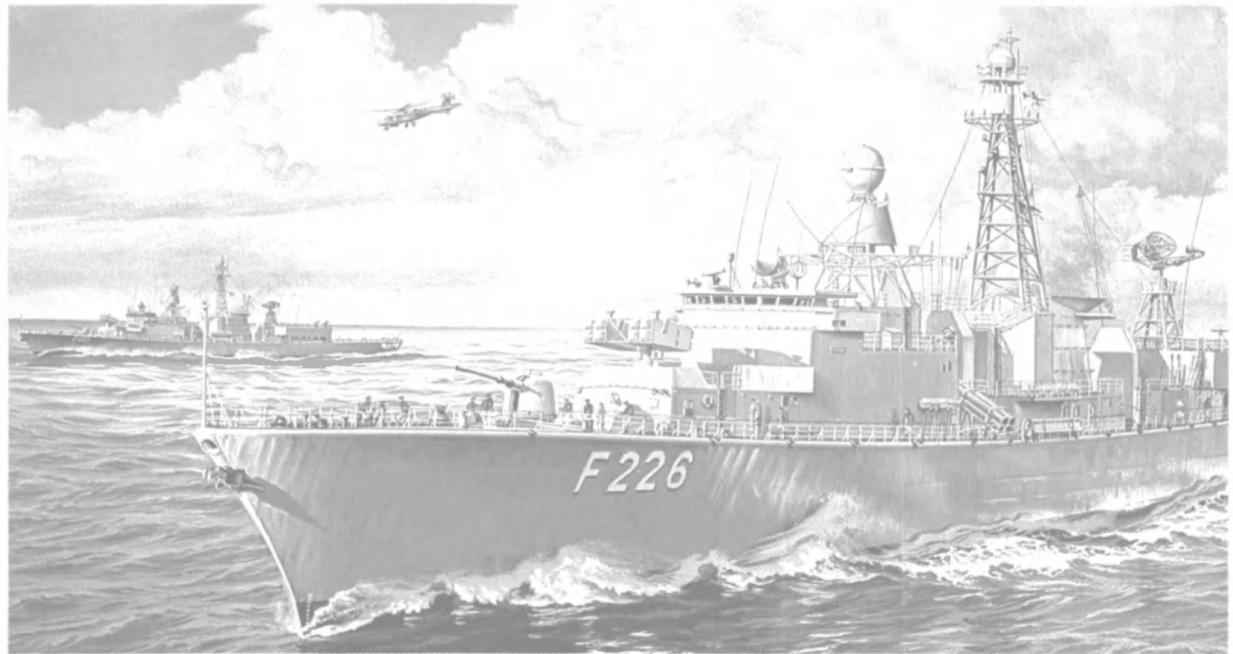
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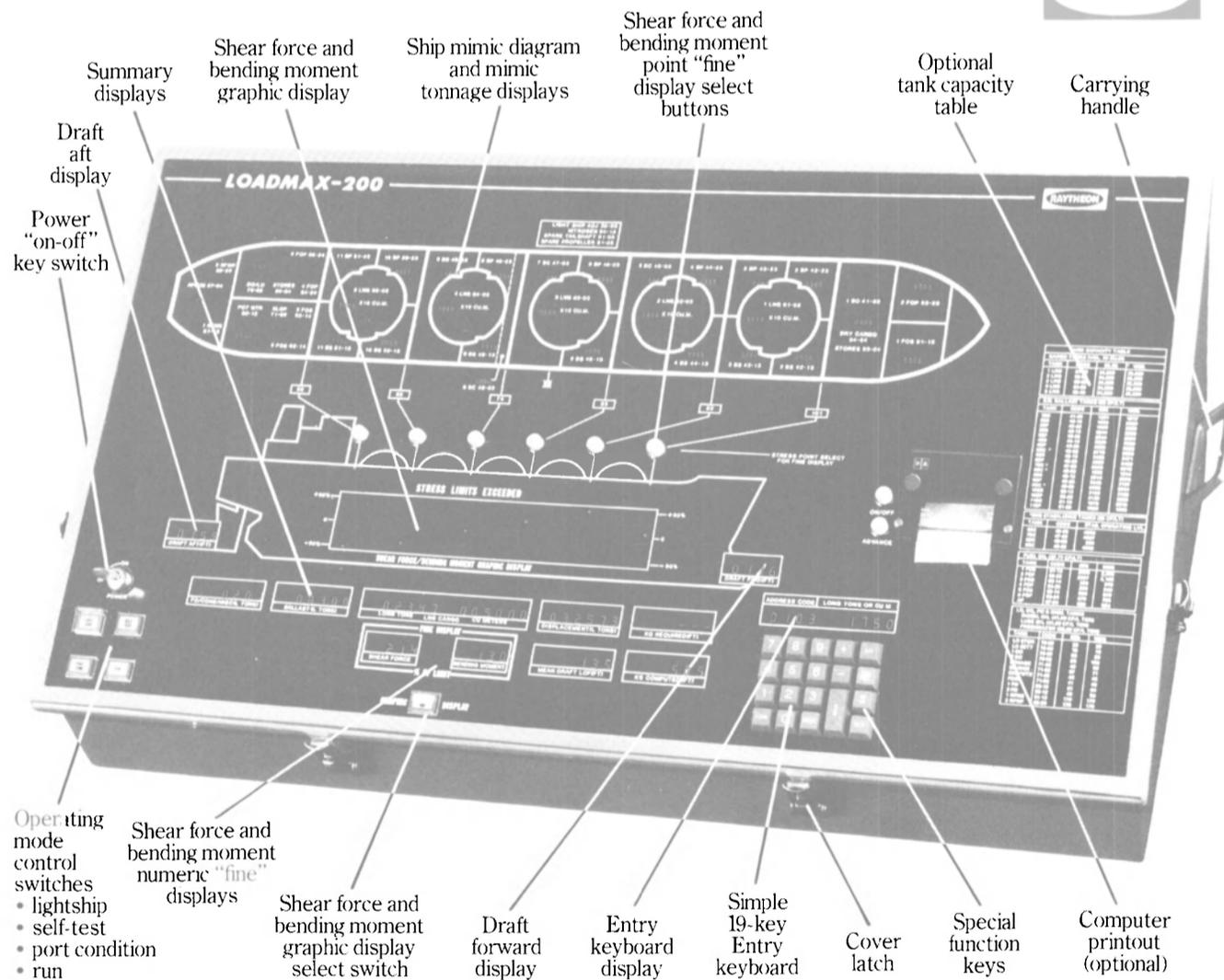
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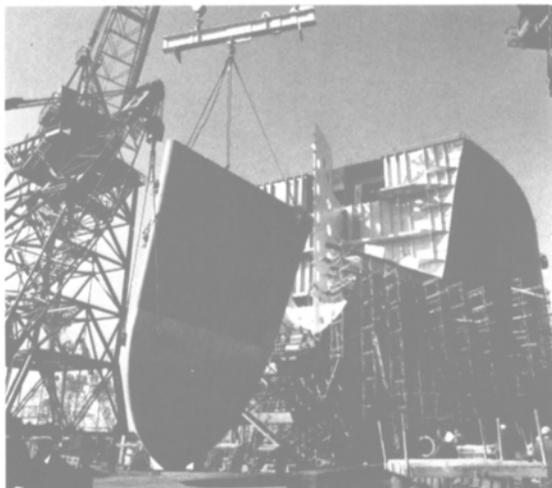


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Its fuel-efficient GE power plant came aboard with over 50 million hours of proven service.

The fuel-efficient General Electric Diesel Engine brings an enviable reputation of excellent performance in propulsion, drilling, and auxiliary power service to the drilling industry.

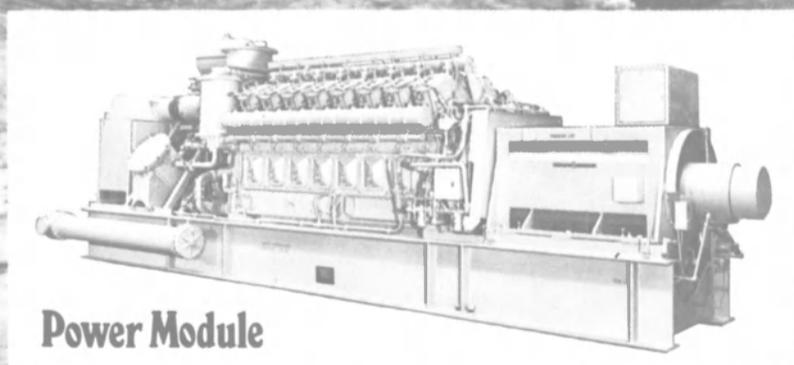
This engine's record for dependable service, based on more than 6000 engines in operation worldwide, is verified daily in the tough tasks being accomplished by that industry.

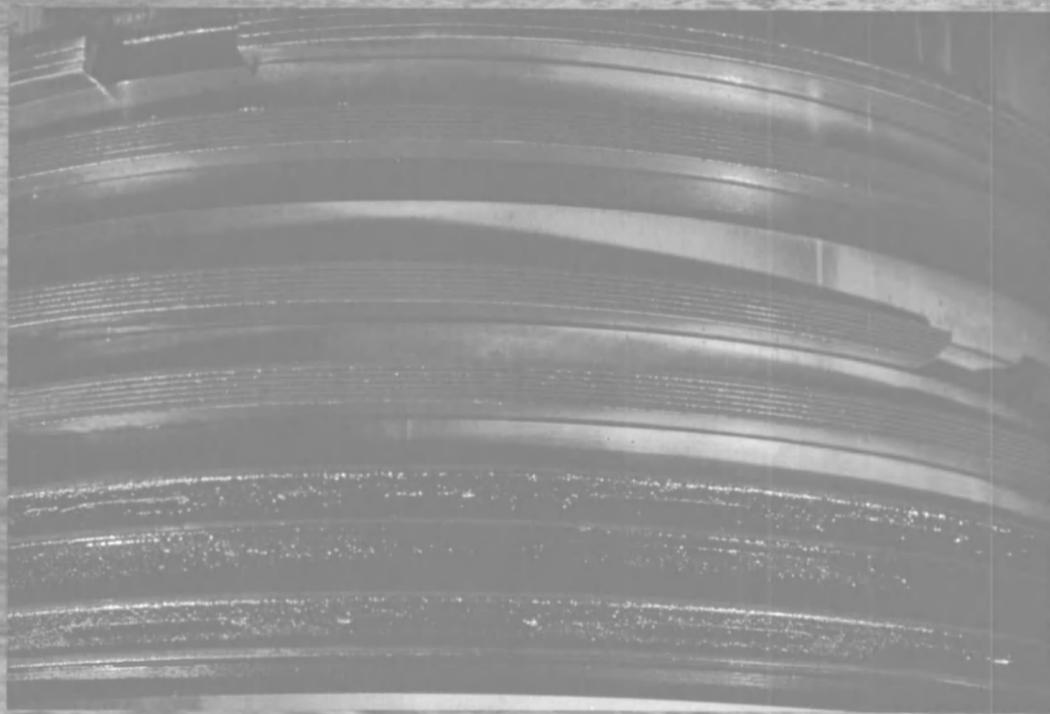
The GE Engine has earned its reputation with design concepts that significantly contribute to outstanding reliability, maintainability, and fuel economy.

Inherent fuel efficiency of General Electric's four-stroke-cycle engine has been enhanced over the past 17 years with improvements to critical components such as the intercooler, exhaust system, pistons and liners, and the turbocharger. General Electric believes that the present configuration of this marine power plant represents the latest state-of-the-art in fuel efficiency and can produce up to 22% savings in fuel over a two-stroke Roots-blown engine and up to 10% over a two-stroke turbocharged engine.

Contact your GE representative at OTC or write Manager, Diesel Power Products, 2901 East Lake Rd., Erie, Pennsylvania 16531.

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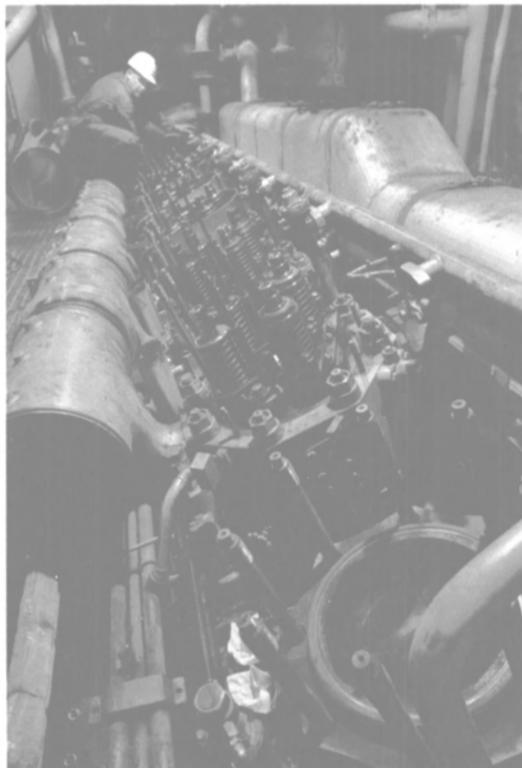
This catug's Colt-Pielstick Diesels ran over 17,400 hours on high sulfur fuel, and the pistons and rings look great.

Two Colt-Pielstick PC 2 V-14 engines are the main power units on the M/V SEABULK MAGNACHEM, an ultra modern 39,900 ton integrated tug/barge owned by Hvide Shipping Company of Port Everglades, Florida.

When the vessel was commissioned, Gulftow[®] Special 30 was chosen as the lubricating oil. Since the engines use fuel with a sulfur content as high as 1.9%, with a viscosity of 1121 SSU at 100° F and vanadium at 32 PPM, sodium at 38 PPM, that's tough duty for any oil. Gulftow Special 30 stood the test.

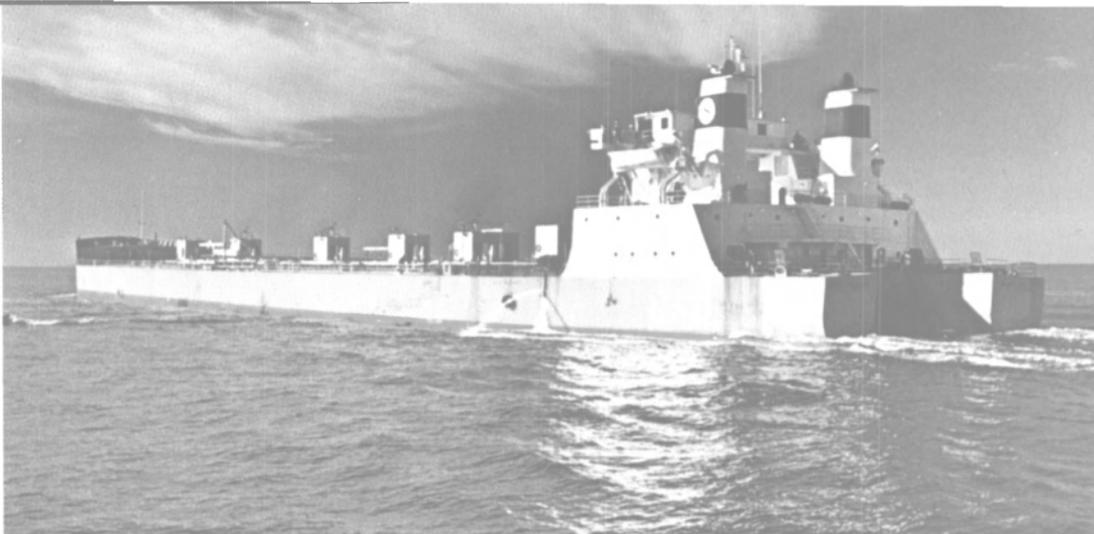
(Left) The M/V SEABULK MAGNACHEM in port at Mobile, Ala. for drydocking and overhaul of engines.

(Inset left) After 17,800 hours of operation, lubricated with Gulftow Special 30, this piston from the port engine shows no detectable wear. All rings were completely free.



The port engine during overhaul and inspection.

The MAGNACHEM was able to run 7,800 hours beyond the recommended 10,000 hour overhaul point on the port engine, and 7,400 hours beyond it on the



The M/V SEABULK MAGNACHEM, and her sister ship the M/V SEABULK CHALLENGER (above) are 39,000 ton integrated tug/barge combinations, transporting bulk liquids between U.S. Gulf and Atlantic Coast ports.

starboard. And when the engines were torn down and inspected, the piston skirts were clean and smooth, with no scoring, and all rings were completely free.

Hvide carefully considered the demands these conditions would place on an oil before choosing Gulftow Special 30. They chose it for stability, long life and superior protection in the tough marine environment.

Careful lubricant selection is only part of Hvide's meticulous maintenance program. They constantly monitor the performance of this vessel's engines on sophisticated monitoring consoles reading in both the engine room and on the bridge. And they use Gulf-Check tests on a regular basis to keep aware of oil and engine condition. It's this complete maintenance program that allows Hvide to get such long and economical service from its machinery.

In addition to using Gulftow Special 30 in the Pielstick Diesels, the M/V SEABULK MAGNACHEM

also uses Gulftow 193, Gulf Harmony[®] 68 AW, Gulf Harmony 46 AW, Gulf E.P. Lubricant HD 220, Gulfcrown[®] Grease E.P. No. 2 and Gulflube[®] Motor Oil XHD 10W/30 to meet other lubricant requirements.

Talk to your Gulf pro or Gulf Marine Distributor about Gulf lubricants for marine service. Or, for a brochure on "Gulf Inland and Coastal Marine Lubricants," write to Gulf Oil Corporation, P.O. Box 1563, Houston, Texas 77001.



Close inspection of the piston skirts found them clean and smooth, with no scoring.



Ask the pro from Gulf.

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Ridgon And Almerico Named Managers At Gulf Fleet Marine

Gulf Fleet Marine Corporation, headquartered in New Orleans, has announced two management appointments. **Larry Ridgon** has been named manager of the Gulf Coast Supply Boat Division. He assumes management responsibil-

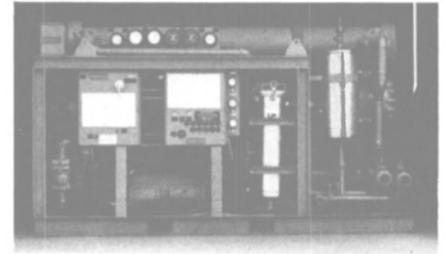
ities for the company's supply and towing supply vessels operating in the Gulf of Mexico. Mr. **Ridgon** has served as administrative manager for Gulf Fleet's operations in Egypt, and most recently was corporate controller.

Vincent Almerico has been appointed manager of engineering and maintenance, and will have responsibility for Gulf Fleet's new construction and major vessel

modification program as well as the preventive maintenance and repair program. He joined Gulf Fleet as manager of new construction.

Gulf Fleet Marine Corporation, one of the Houston Natural Gas Corporation group of companies, operates more than 100 vessels in support of the offshore petroleum and offshore construction industry.

Bailey Delivers Two 60-Ton Water Chilling Units To Navy



Bailey Refrigeration Company recently announced the completion of two 60-ton water chilling plants for a U.S. Naval activity (one unit shown above). Each plant, designed and constructed by Bailey, is a complete air-conditioning package on a portable steel base, requiring only a single electric connection, seawater cooling connections, and chilled water connections.

The chilling plants were subjected to a full eight-hour operational test in Bailey Refrigeration's Brooklyn, N.Y., facility on a Marine Pax tester, designed and built by Bailey. The test included capacity verification, using National Bureau of Standards certified thermometers and flow meters, and sound level monitoring, with NBS-certified sound level metering.

The Marine Pax tester was specifically designed to allow testing of chilled water and direct expansion air-conditioning systems up to 75-tons capacity. Bailey anticipates using the tester for military and commercial marine air-conditioning system testing and for service engineer training.

Canadian Pacific To Buy One-Third Share In Dart Containerline

Canadian Pacific intends to purchase a one-third share in Dart Containerline Company Limited, it was announced recently. The proposed share purchase will provide Canadian Pacific with an opportunity to participate in the large and growing volume of trade between the United States and Western Europe to complement its Canada-Europe service now being operated by CP Ships. The other shareholders of Dart Containerline are Compagnie Maritime Belge S.A. and the C.Y. Tung Group.

Dart Containerline Company Limited now operates a container service between the East Coast of Canada and the U.S., and the U.K. and Continental Europe with several ports of call on each side of the Atlantic. Future operations of Dart Containerline Company Limited will be confined to traffic moving between the U.S. and Europe. A new company — Dart Canada — in which Canadian Pacific does not hold an interest, will operate container services between Canada and Europe.

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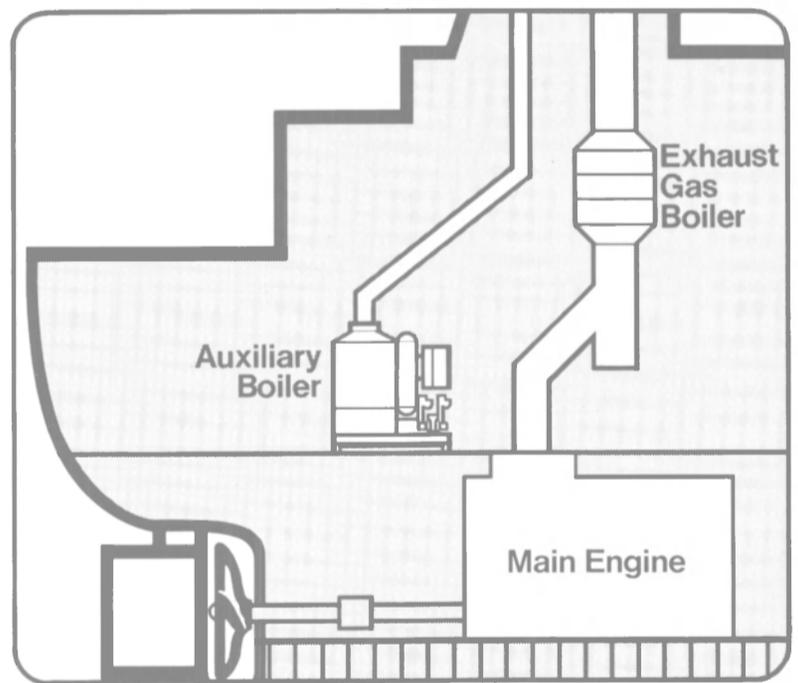
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If fuel economy, dependability and compactness are among your requirements when you specify marine auxiliary boilers, you should investigate Clayton Steam Generators and Waste Heat Boilers.

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The list of design features is highlighted by the fuel saving capabilities of our units. We deliver 80-85% efficiency within a range of 20-100% of rated load. In addition, our fast start-up response yields a full head of steam in just a few minutes from a cold start, saving more fuel.

Because of our many years of experience in the international market, Clayton is able to provide uniformly high quality equipment in addition to sales and service throughout the world. We welcome the opportunity to quote on your next maritime project.



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New Brochure On Arc Welding Available From Westinghouse Electric

The industrial equipment division of the Westinghouse Electric Corporation, Sykesville, Md., has published new literature on its Fab-Master 450 and 650 constant voltage arc welding systems.

These systems are designed for gas metal arc welding (GMAW), flux cored arc welding (FCAW), and submerged arc welding on aluminum, low alloys, and stainless steels. Fab-Master systems also are suitable for carbon arc cutting and gouging.

Power supplies are all solid-state to provide high-quality application results and consistent

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Fab-Master wire drive and controls include all solid-state control circuits, high torque drive motors, and modular design for a broad range of applications and

installation flexibility. The controls may be readily remoted for operator convenience.

For a free copy of the new four-color brochure,

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New Hydraulic Crane Announced By Unit Crane —Literature Available

A new hydraulic marine crane, the Unit Mariner Model 480-H, is announced by the Unit Crane & Shovel Corporation. Having an API rated capacity of 42,400 pounds, the maximum lift capacity at a 15-foot radius is 67,000 pounds.

The 45-foot standard tubular steel boom can be extended with optional inserts to lengths through 100 feet. The main load hoist, auxiliary, and optional high-speed hoist are available with 1/2-inch or 3/4-inch wire rope, including nonrotating and spin-resistant. And open loop hydraulic system is said to be simple to maintain, run cool, and powered by a diesel or electric prime mover. Hydraulic controls in the enclosed operator's cab provide fast response for all functions, including 360-degree rotation.

For free illustrated literature and detailed specification,

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Freed Named Marketing Manager GE's DC Motor And Generator Department



Charles A. Freed

Charles A. Freed has been appointed manager-marketing for General Electric Company's DC Motor and Generator (DCM&G) Department, which is headquartered in Erie, Pa., with additional manufacturing facilities in Dothan, Ala. and East Stroudsburg, Pa. The Department is the world's leading supplier of industrial DC motors and generators, ranging from 1 hp to 3,500 hp.

Mr. Freed joined the General Electric Company in 1968. He held several positions in design and sales engineering, and in 1978 joined the DCM&G Department as manager-industrial sales.

As manager-marketing, he will be responsible for the formulation and execution of all marketing and sales policies in diverse DC motor markets, including marine and defense.

The competition hopes you don't read this.

Tracor's Satellite/Omega navigation system combines the accurate, all weather, worldwide satellite fixes of Transit with the continuous position fixing capability of Omega. The 60 second Omega fix is updated automatically to agree with the position provided by each good satellite fix. Between satellite fixes, Omega inputs are used to enhance automatically the dead reckoning of the satellite navigator. Warning alerts are lighted whenever Omega or Transit experience an anomaly or if the preset range limit between the Satellite/Omega position and the satellite only DR position is exceeded.

Our competition hopes you don't discover Tracor's Integrated system is comprised of two stand-alone systems providing total redundancy. There is no shared hardware.

They hope you don't discover Tracor's Satellite Navigator II is type approved by

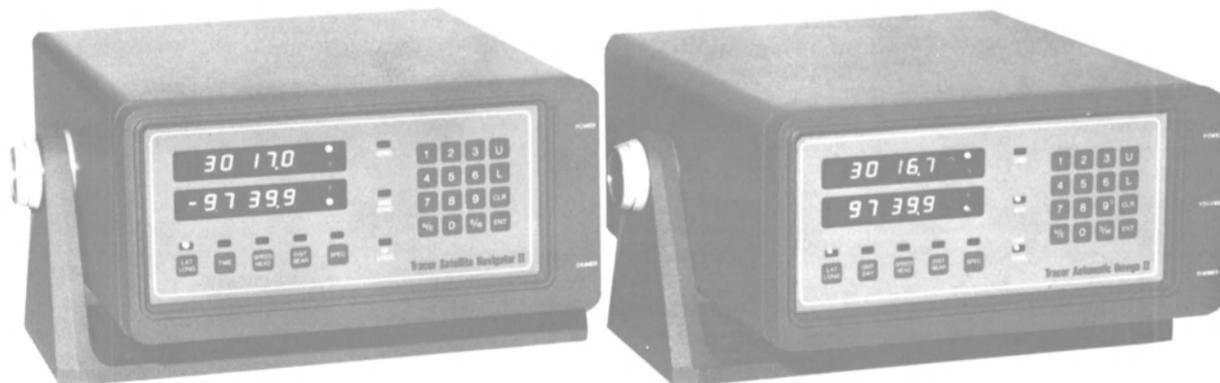
DNV, DHI, Swiss PTT, and the Norwegian Maritime Directorate.

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They hope you don't discover Tracor's worldwide service network which provides factory trained personnel in more than 70 major shipping ports supported by factory consigned spare parts.

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Lemonides Named Hellenic Accounts Sales Manager For Farboil Company



Capt. Andreas Lemonides

Capt. Andreas Lemonides has joined the Marine Division of Farboil Company as sales manager of Hellenic Accounts for New York, the United Kingdom, and Greece it was announced by Joseph F. Harrington, vice president of sales. He will be based at Farboil's office at 11 Broadway, New York City.

Captain Lemonides previously held various managerial positions with steamship companies in New York and Philadelphia. He achieved the rank of Master Mariner in 1968. Farboil, a Beatrice Chemical Company, division of Beatrice Foods Company, produces and markets worldwide a full line of protective coatings for deepwater and inland waterway shipping.

Honeywell ELAC Introduces Survey/Sediment Sounder —Literature Available

Honeywell ELAC, Kiel, West Germany, a subsidiary of Honeywell Inc., Minneapolis, has introduced a survey/sediment sounder. The new, single-frequency unit, LAZ 721, can be used for inland and offshore surveys, exploration for oil, gas, and minerals, dredging operations, and for pipeline and cable laying.

The LAZ 721 utilizes a patented signal processor, LV 159, termed "Contrast Amplifier" to increase the dynamic range of the recorder to more than 30 dB. This provides greater ability to record both very strong and very weak echoes. The object resolution is greatly increased, the radial length of recorded echoes no longer depends on the radiated pulse length, but on the structural details of the reflecting object, thus the differentiating effect of the signal processor avoids "target distortions." The Contrast Amplifier provides outstanding bottom discrimination, distinction between hard and soft ground, mud/silt layers and even sedimentation.

For a free brochure on the new LAZ 721 unit,

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Brown And Symon Named To Board Of Liberian Shipowners' Council

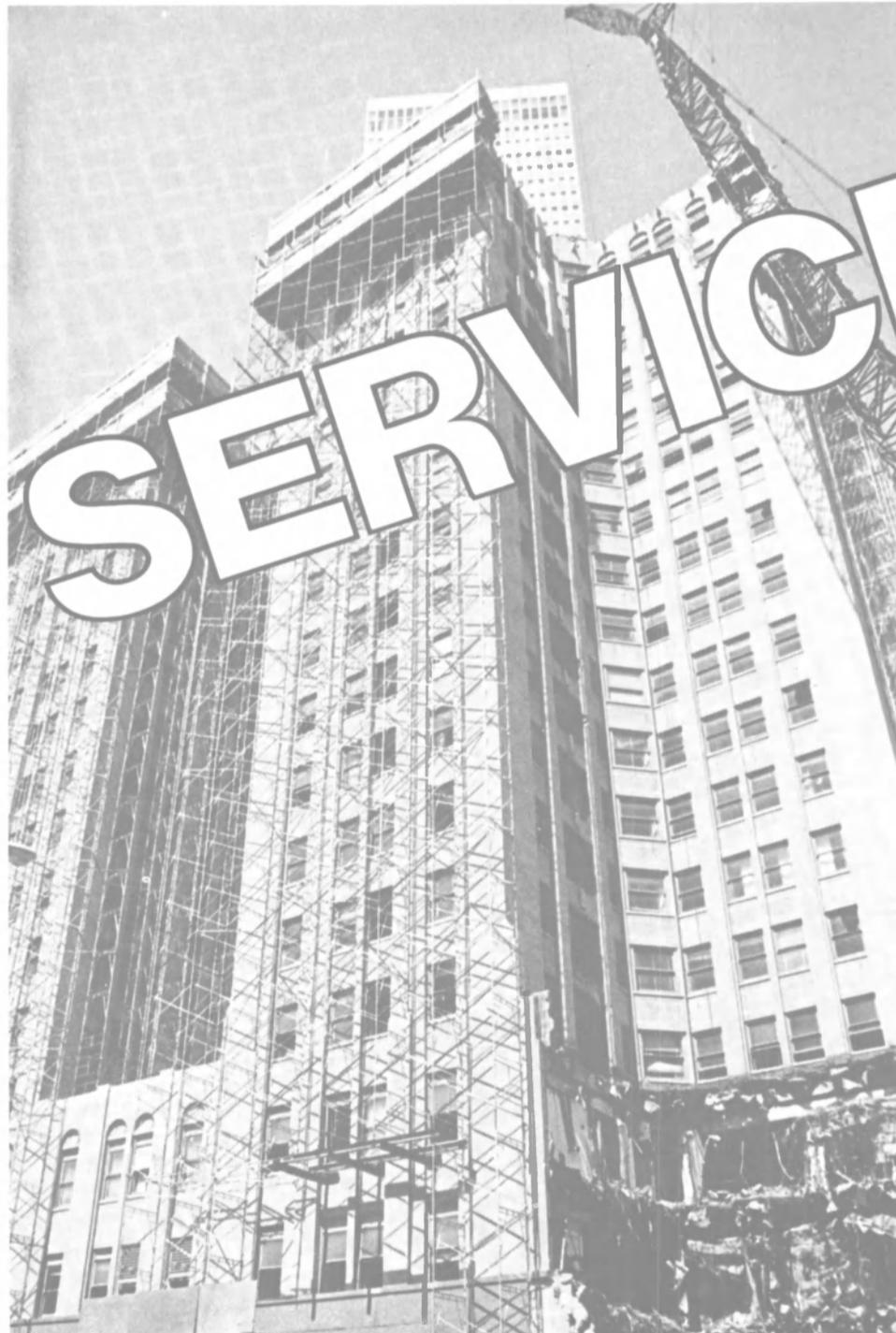
The Liberian Shipowners' Council has elected Grady C. Brown as chairman of the board of directors for a two-year term, and Stanley Symon as vice chairman for a one-year term. Mr. Brown

is vice president, operations and technical, of Conoco Shipping Company in Houston, and has been on the board of the LSC since 1976, serving for the past two years as chairman of the Labor Committee.

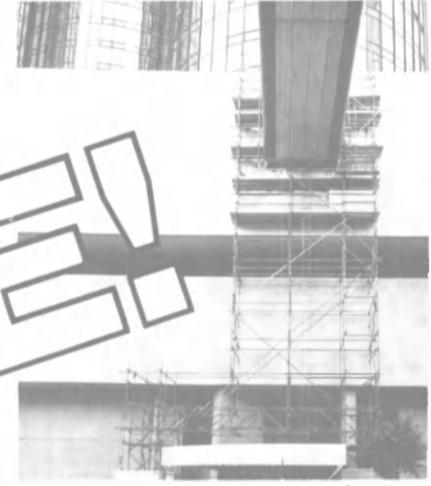
Mr. Symon is currently senior vice president for Stolt-Nielsen, Inc., and general manager of its Ship Management Department,

with responsibility for a fleet of 27 ships, most of which are modern parcel chemical carriers.

Stolt-Nielsen being a Norwegian corporation, and Conoco being a major U.S. oil company, the appointments reflect both the international nature of the Liberian Shipowners' Council members and the mix of oil majors and independent owners.



Contractor: Cleveland Wrecking Company, Cleveland, Ohio. for Medical Arts Building, Dallas, Texas



Contractor: Bonaventure Hotel, Los Angeles, Ca. for Bonaventure Hotel, Los Angeles, Ca.



Contractor: Crouch-Walker Corp., Chicago, Ill. for Gould Center East Tower, Rolling Meadows, Ill.



Contractor: Orange Gate Construction Inc., Fort Lee, N.J., for Century Center Co-op, Fort Lee, N.J.

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Patent's Gold Medal® Suspended Scaffolding is easily adjustable to proper working height with a long reputation for safety. At The Gould Center it's shown used for exterior masonry.

Our famous Cable Climber,® fitted with a platform scaffold, supports a work crew for exterior finishing at the Century Center Co-op in Fort Lee, N.J.

For more information on any of these products, call your nearest Patent Branch or our headquarters at 800-526-0442...in New Jersey call (201) 461-8700. TWX: 710-991-9589.

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HUDSHIP's First 85-Foot Towboat Delivered To Energy Transport

Hudson Shipbuilders (HUDSHIP) of Pascagoula, Miss., recently delivered its first 85-foot towboat, the Virginia Cole (shown above), to Energy Transport Services, Inc. of New Orleans. Al-

though HUDSHIP builds a stock 70-foot towboat, of which several have been delivered, this is its first of the larger model that will be stock offering for customers looking for a medium-size, yet more powerful pushboat.

The boat was designed by Oliver Bryant, a Mississippi Gulf Coast naval architect, whom Ralston Cole, president and owner of Energy Transport, terms one of the best workboat designers in the country. Mr. Bryant, who is an independent consultant, has had a long association with HUDSHIP and continues to work with and for them.

The Virginia Cole will push petroleum barges for the Energy Transport fleet, operating between Galveston, Texas, and New Orleans. Because she will be in open water on Galveston Bay, and the

rest of the time in either congested waters in the Intracoastal Canal or on the turbulent lower Mississippi River, special design considerations were made. These include a foot higher sheer, and rudder and steering capacities beyond those of most 85-footers. Her higher sheer will allow her to run in heavy weather in the open bay waters, and when she's in a narrow canal or fast-flowing river, her 7½-foot rudders give her greater maneuvering power.

Her engines are eight-cylinder GM Electro-Motive Diesel units turning 88 by 78-inch, stainless-steel Kahlenberg propellers. The 8-inch shafts are hot-rolled steel with Sturm chrome liners. They transmit their power through Twin Disc model MGN 100 AZ reverse reduction gears with a 4:1 ratio.

Decca's David Parkinson Appointed Regional Vice President Of NMEA

ITT Decca Marine, Inc. of Palm Coast, Fla., has announced that David Parkinson has been appointed regional vice president (Southeast) of the National Marine Electronics Association (NMEA). His responsibilities include the coordination of all NMEA activities in the Southeast United States and the U.S. Virgin Islands.

Mr. Parkinson has held various positions for the past seven years with ITT Decca Marine, including New York sales manager, and is



David Parkinson

presently Southeast Area sales manager. Prior to arriving in the U.S. 10 years ago, Mr. Parkinson was a practicing lawyer in London, England.



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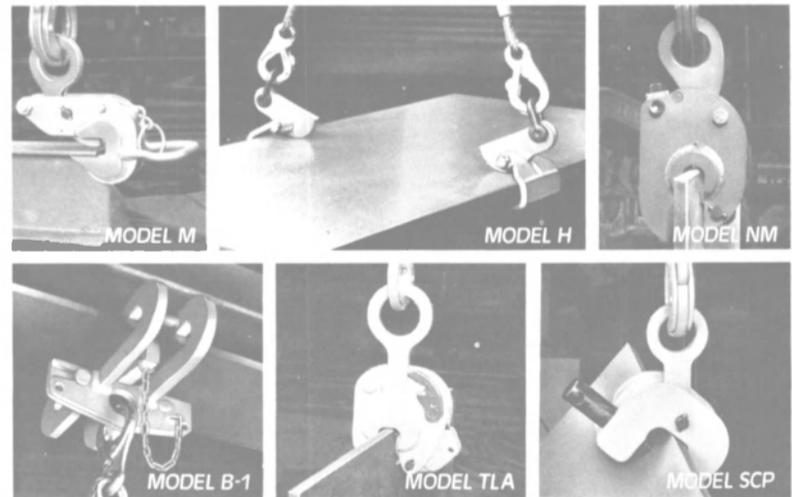


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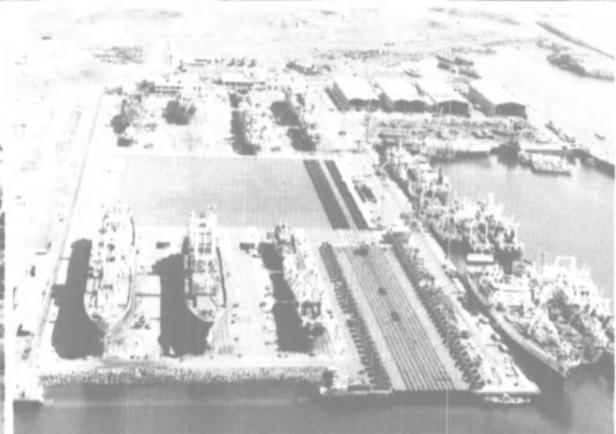
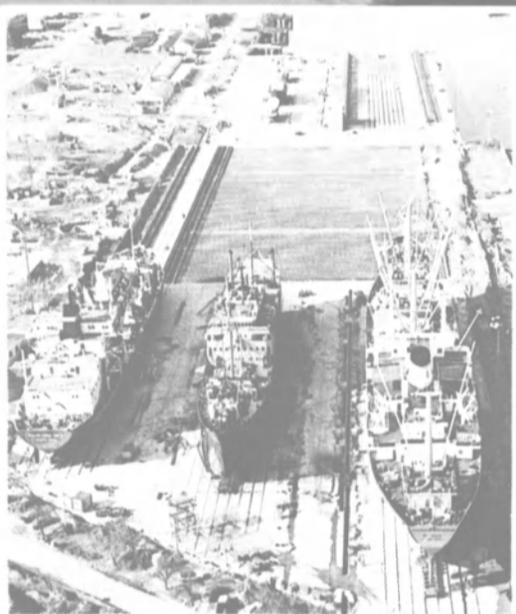
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Cargoship Cabo Corrientes (43,600 DWT) on Syncrolift platform, in large photo, waiting to be moved to work berth via transfer system. The bow extends 108' beyond sea end of platform.

Photo above on left shows ships in transfer area/work berths at Tandanor, Buenos Aires, with platform free to service the next vessel. Middle photo is close-up of side transfer rail system on which vessels were moved from Syncrolift to work berths. Photo on right shows 16 vessels in work berths at Astilleros Canarios, S.A., Las Palmas, Canary Islands. Note Syncrolift ready to lift a 17th vessel.

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Advanced Marine Enterprises Announces Corporate Changes And Move To New Facilities

The corporate structure of Advanced Marine Enterprises, Inc. has been modified to improve response to customer requirements and facilitate diversification of services. The company is currently pursuing opportunities in

the areas of energy transfer and transportation and computer services, as well as continuing to expand its naval architecture and marine engineering services to commercial customers, particularly in detail design. The corporate restructuring includes the establishment of The Rand Group Inc., a holding company, and a separate Computer Services Division. The former branch offices in Virginia Beach and San Diego

are now also operated as separate divisions.

Robert Martin has been appointed director of the new Computer Services Division, which will provide computer services to other divisions as well as develop an expanded customer base in the government and commercial sectors. He joins Advanced Marine from Data General Corporation in Orlando, Fla., where he managed the Orlando Data-Center Facility



Robert Martin

for sales, engineering, and customer use. He has extensive experience in systems engineering in data communications, operating systems, and scientific language support.

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Capt. Jerome O'Brien

Capt. Jerome O'Brien, USN (ret.), and Capt. Philip Lyons, USN (ret.), have joined the company's Washington Division as managers responsible for technical supervision of major programs with NAVSEA and commercial customers.

Mr. O'Brien has been assigned as program manager reporting to Otto Jons, vice president, engineering, heading the Production Division. Mr. O'Brien's responsibilities will include product development, quality control, and training. He is a veteran submarine officer with 29 years of experience in undersea and anti-submarine warfare.



Capt. Philip Lyons

Mr. Lyons has been assigned as program manager reporting to Jay Dor, vice president, operations. Prior to joining Advanced Marine in November 1980, Mr. Lyons served as an engineering duty officer in the U.S. Navy. His last assignment was NAVSEA associate comptroller for ship programs.

Advanced Marine has consolidated numerous Washington Area offices and now occupies new, expanded corporate facilities at 1725 Jefferson Davis Highway in Arlington, Va.

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The Seabulk engineers were successful in combining the efficient hull form of a ship, with the desirable wide beam, shallow draft characteristics of an ocean-going barge. They utilized a twin hull or "catamaran" tug, which permitted twin screw propulsion with widely separated, large diameter, slow turning wheels. This unique patented design surmounted the inherent problems associated with a conventional ITB tug's single hull, twin screw configuration. Problems such as poor efficiency, severe vibration, cavitation and very high stresses between tug and barge were eliminated. The CATUG system provides minimal resistance, increased stability and high propulsive efficiency, resulting in the most successful of all ITB designs. The CATUG has, without incident, easily weathered 100 knot winds and forty foot seas, validating its exceptional sea worthiness.

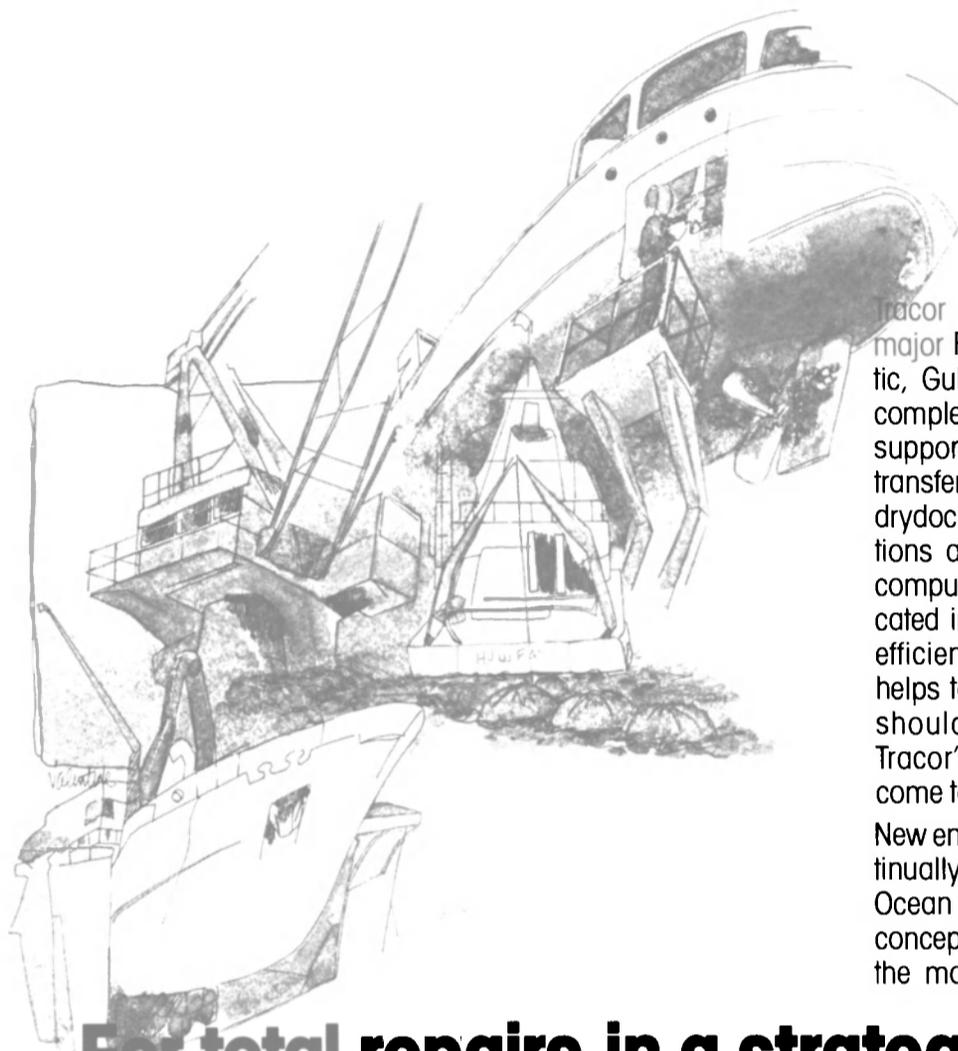
A twelve vessel CATUG fleet totaling 500,000 DWT will be in service by next year, thereby documenting its wide acceptance by the maritime industry. At Hvide, innovation is not the product or promise of a simply stated lab theory, but a firm commitment to find a better solution to a specific problem. HSI's expertise with ships, tugs and barges, chemical and petroleum tankers, conventional bulk carriers, self unloading dry cargo vessels, as well as liquid and dry bulk terminal design and operation, have contributed to Hvide's role as a leader in the marine transportation industry. The success of the CATUG project is indicative of HSI's commitment to utilize their ingenuity, imagination and capital to pioneer better transportation methods.



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GD-Quincy Yard To Build \$61-Million RO/RO Ship For Waterman Steamship

The Quincy (Mass.) shipbuilding division of General Dynamics Corporation has received a \$61-million contract from Sun Ship Inc., Chester, Pa., to construct a roll-on/roll-off (RO/RO) ship for Waterman Steamship Corporation of New York City. Sun had originally contracted with Waterman and the Maritime Administration for construction of three RO/ROs.

Other newbuilding contracts at the Massachusetts yard include a \$60-million, coal-fired bulk coal carrier for New England Electric, and three oceangoing tank barges for Coastwise Shipping.

Winding down its new ship construction operations, Sun Ship recently contracted with Bath Iron Works in Bath, Maine, for construction of a \$65-million dredge for the U.S. Army Corps of Engineers, and a \$25-million bulk sugar barge for California & Hawaii Sugar Company. Sun's newbuilding orderbook now contains one products tanker for Sun Transport, and two additional RO/RO ships for Waterman.

Zapata Marine Service Announces Assignments In Its Marketing Group

Zapata Marine Service's senior vice president-marketing, **Curtis L. Taylor**, recently announced several new assignments within the company's marketing group. **Paul W. Hendrie** has been named Zapata Marine's vice president-sales, and will assume overall responsibility for the company's marketing efforts in Europe, Africa, and Southeast Asia. He joined Zapata Marine as technical sales director in 1977, and has served in several marketing capacities since that time. Reporting to Mr. Hendrie are **James C. Bonney**, sales manager-Far East; **Jane Emerson-Evans**, sales manager-Europe and the Mediterranean; **Keith Gregory**, sales manager-Africa; and **I. Rory Jonzen**, sales manager-U.K. Mr. Hendrie and those sales managers are based in Great Yarmouth, England, except for Mr. Bonney, who is based in Singapore.

Before transferring to Singapore, Mr. Bonney was Zapata Marine's sales manager-Western Hemisphere for three years in Houston. He joined the company in 1974. Assuming the duties of sales manager-Western Hemisphere is **Roger M. Sykes**. He joined Zapata Marine's marketing department in 1974, and has served as the company's sales manager-Central and South America for the past year. He is based in Houston and reports to Mr. Taylor. Zapata Marine Service, a subsidiary of Houston-based Zapata Corporation, operates a fleet of 75 oilfield supply vessels worldwide.

United Seamen's Service And AMMLA Elect T.J. Smith Board Chairman

Thomas J. Smith, former president and chief executive officer of Farrell Lines, has been elected chairman of the board of directors of United Seamen's Service and its affiliate, the American Merchant Marine Library Association. He fills the positions left vacant by the recent death of **James C. Kellogg III**.

Mr. Smith has a long and distinguished career in the American shipping industry. He retired from Farrell Lines last year, relinquishing his position as vice chairman of

the board but remained a director. He began his career as a member of the International Longshoremen's Association. In 1942, he joined Farrell Lines as a pier superintendent. Mr. Smith rose through the ranks of the company, becoming president in 1968, chief executive officer in 1970, and vice chairman in 1979.

New Brochure Describes History And Products Of Sulzer Bros., Inc.

A four-color, 22-page brochure, "Sulzer in the USA," is now available describing the company's 40 years of operation in the United States. Established in 1940, Sulzer Bros. is a subsidiary of Sulzer Brothers Limited of Winterthur, Switzerland. Within four decades, the U.S. company has built a rep-

utation for the marketing of high-quality, energy-efficient machinery, including slow- and medium-speed diesel engines, turbocompressors, reciprocating compressors, and hydroelectric turbines.

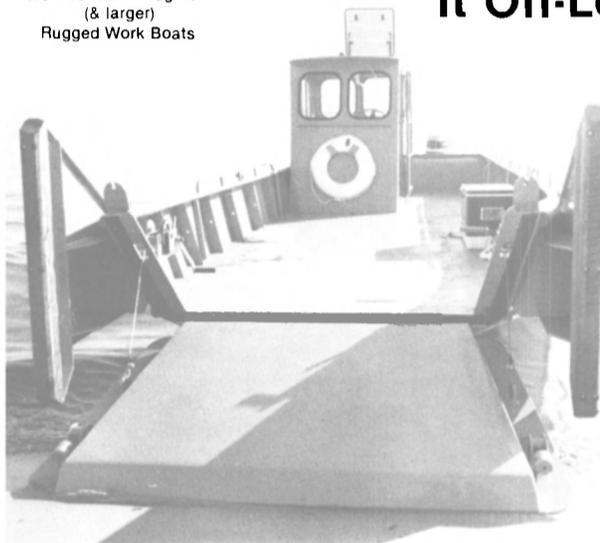
Sulzer is best known in the maritime world for its marine propulsion engines. Each year, roughly 40 percent of the diesel propulsion installed in merchant ships is Sulzer. The first slow-speed Sulzer diesels constructed in the U.S. by Allis-Chalmers will be installed in the three big container-ships under construction at Avondale Shipyards for American President Lines.

Sulzer Bros. is headquartered in New York City, and principal sales and service offices are located in Houston, San Francisco, and Spartanburg, S.C.

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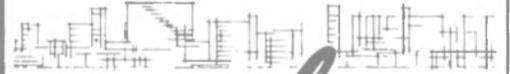
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April 1, 1981

**Denyer Succeeds Nelson As
Managing Director Of
Butterworth Systems (UK)**

W.L. (Lynn) Nelson, managing director of Butterworth Systems (UK) Ltd., has retired after 33 years of service with that company. Succeeding him as managing director is Derek C. Denyer, who was appointed to the board of directors of Butterworth Systems (UK) Ltd. in November 1980. He will also become a vice president of Butterworth Systems Inc., the company's U.S.-based affiliate. Mr. Denyer assumed his new responsibilities on April 1, immediately following Mr. Nelson's retirement.

Mr. Nelson began his 33-year association with Butterworth Systems (UK) Ltd. (then J.G. Edminston & Co.) as head of engineering in 1947. Appointed director and joint general manager in 1963, he assumed the



Derek C. Denyer

W.L. Nelson

position of managing director in 1967. In April 1979, he was appointed to the position of vice president of Butterworth Systems Inc., with the responsibility for coordinating continental European marketing operations. Additionally, he was named to the American company's management committee.

Mr. Denyer held a variety of senior appointments with Esso Petroleum before joining Butterworth Systems (UK) Ltd. During his association with Esso, Mr. Denyer was involved in the fields of operations, engineering, and marketing. His last position with that company was manager, distributor and heating sales. The USA and U.K.-based Butterworth Systems companies manufacture and market specialized tank cleaning equipment, underwater hull cleaning equipment, oil/water separators, and high-pressure water jetting equipment.

**Bailey-Shannon Seeks
Title XI On Drill Rigs
To Cost \$20 Million**

Bailey Shannon Limited I, a subsidiary of Bailey-Shannon Drilling Company, Inc., Houston, has applied to the Maritime Administration for a Title XI guarantee to aid in financing the construction of two jack-up, mat-supported drilling rigs. These rigs, which will be operated on the U.S. Gulf Coast, are to be built by General Dynamics Corporation at Charleston, S.C.

If approved, Title XI financing would cover \$15,176,000 or 75 percent of the estimated actual cost of \$20,235,000. Deliveries are scheduled for October and November 1981.

**Advanced Studies Center
Dedicated At Maine
Maritime Academy**

Maine Maritime Academy's newest facility, the Center for Advanced Maritime Studies (CAMS) and Conference Center, was dedicated in recent formal ceremonies in Castine. U.S. Congressman David F. Emery, James V. Day, Federal Maritime Commissioner and chairman, Maine Maritime Board of Visitors, and Samuel B. Nemirow, Assistant Secretary of Commerce for Maritime Affairs, lead an array of dignitaries taking part in the event, a highlight celebration in connection with the Academy's 40th anniversary year.

A number of top executives of shipping companies and related industries from around the country, whose organizations were major donors to the reconstruction of Leavitt Hall as the Center for Advanced Maritime Studies, were on hand and recognized for their contribution. The donors satisfied the criteria established by MMA's Board of Trustees for the naming of rooms and areas located in Leavitt Hall, site of the Center for Advanced Maritime Studies and Conference Center.

The \$1,850,000 complex contains the principal Academy administrative offices, lodgings for up to 35 program participants, and a variety of conference and meeting areas, including a 300-seat auditorium (Delano Hall).

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installation can be eliminated. The resulting cost savings are said to be appreciable.

Simplicity and elimination of numerous installation and machining procedures are cited as the prime advantages of the system. Installation of a conventional stern tube can easily take two weeks of man-hours. Using the chocking method, an experienced crew can complete the operation in two days, with another 24 hours for the resin to cure. Machining operations at the yard are eliminated, as the stern tube comes with bearings installed and the outer diameter of the tube needs no machining. The chocking resin fills the 1/2-inch gap that remains.

Installation accuracy is claimed as another significant advantage. The entire assembly can be optically aligned and adjusted with preset jack bolts. A single optical alignment is all that is required prior to chocking. As the seal holes are drilled and tapped at the factory, that margin of error is also eliminated.

For additional information and free literature on the Waukesha/Philadelphia system,

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New Customer Support Organization Implemented By Honeywell Marine

Honeywell Marine Systems Operations in Seattle has implemented a new Customer Support Organization designed to provide local service to the firm's worldwide service areas. "By dividing our service areas into three separate zones, with self-contained service capabilities, we can now provide more efficient and cost-effective service to all our customers," says **John Brennan**, manager of the new Customer Support Organization.

Under the new system, Honeywell has increased its shop repair facilities and built up its inventories in each of the three zones. It has also expanded its customer training capabilities and plans to introduce planned maintenance contracts in the near future.

Honeywell's service headquarters for Zone 1, which includes North and South America, is in Seattle. Zone 2, which includes the entire North Sea and all European and African sectors, is headquartered in Aberdeen, Scotland. Zone 3 includes Australia and South-east Asia. Its headquarters is in Sydney, Australia.

For more information,

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Richard Dillon Named Vice President Of Santa Fe Engineering

Richard H. Dillon has been promoted to vice president of Santa Fe Engineering & Construction Company. He continues to be based at Houma, La., with responsibility for Santa Fe's marine construction activities in the Gulf of Mexico.

He worked for J. Ray McDermott from 1962 until 1971 when he joined Fluor Ocean Services. Two years later, Santa Fe International Corporation purchased a reel pipeline barge and other assets of Fluor Ocean Services, and Mr. Dillon was one of about 275 employees who joined Santa Fe at that time.

Since 1973 Mr. Dillon has worked as manager of marine construction for the Middle East, stationed in Bahrain, and as manager of estimating for Santa Fe Engineering &

Construction at its Orange, Calif., headquarters. He was assigned to Houma as area manager for the Gulf of Mexico in 1979.

Title XI On Drill Barge To Cost \$11.5 Million Asked By Merit Five Drilling

Merit Five Drilling Ltd., a subsidiary of Merit Drilling Company, Houston, has applied to the Maritime Administration for a Title XI guarantee to aid in financing the construction of a posted drilling barge capable of drilling to 25,000 feet.

United States Steel Corporation, Orange, Texas, is building the barge, which is to operate on the U.S. Gulf Coast. Delivery is scheduled in July this year. If approved, the Title XI financing would cover \$8,625,000, or 75 percent of the estimated cost of \$11,500,000.

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* Albert J. Millus, President of the firm is a nationally recognized authority on the Longshoremen's and Harbor Workers' Compensation Act. He is the former Executive Director of The State Insurance Fund (New York) (1972-1978) and has written extensively on the Longshoremen's Act.

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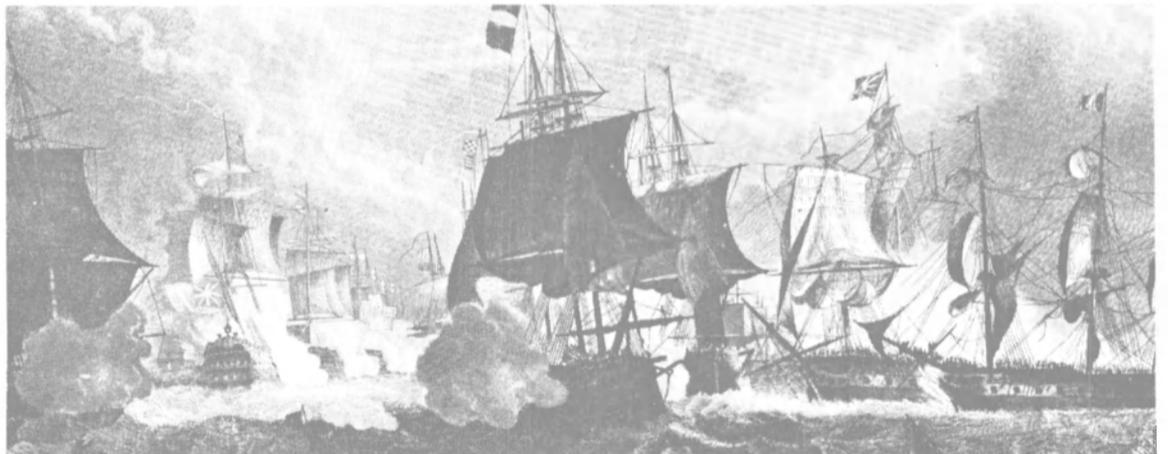
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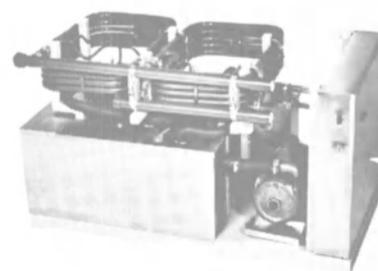
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Paul Hall Named First Posthumous Recipient Of AOTOS Award

The late Paul Hall, former president of the Seafarer's International Union and vice president of the AFL-CIO, has been named the 1981 recipient of the Admiral of the Ocean Sea Award. Mr. Hall is the first awardee to receive the maritime industry's highest award posthumously. It will be accepted by his widow, Rose, and by Frank Drozak, who succeeded him as SIU president, at a dinner and dance in New York on September 25, 1981.

Mr. Hall's selection was announced by J. Lane Kirkland, president of the AFL-CIO, at the union leadership's recent meeting in

Bal Harbour, Fla. Mr. Kirkland will also serve as general chairman of the event.

The AOTOS is given annually by the United Seamen's Service to the person in maritime labor, industry, or government who has made outstanding contributions to the American Merchant Marine.

Further information on the event is available from AOTOS, care of United Seamen's Service, Suite 2601, One World Trade Center, New York, N.Y. 10048.

American Commercial Asks Title XI On Towboats And Barges To Cost \$84 Million

American Commercial Lines, Inc., Houston, has applied to the Maritime Administration for a Title XI guarantee of some \$69

million to aid in financing the construction of five towboats and 296 barges. The applicant is a subsidiary of Texas Gas Transmission Corp. of Owensboro, Ky.

The barges will vary in length from 195 feet to 245 feet. The towboats are to be 145 feet by 48 feet by 11 feet 5 inches. Being built by Jeffboat, the vessels were scheduled for deliveries beginning in 1979 through 1981. All are intended for operation on inland waterways.

Of the vessels' total estimated cost of \$84,013,895, the Title XI guarantee would be \$69,300,000, if approved; 87½ percent of the costs of the barges and 75 percent of the costs of the towboats are eligible for guarantees under the federal ship financing program.

Leam Transport Seeks Title XI On Tug/Supply Boats To Cost \$24.5 Million

Leam Transport, Ltd., a subsidiary of Leam Transportation, 1806 Big Horn, Houston, Texas 77090, has applied to the Maritime Administration for a Title XI guarantee to aid in financing the construction of six 180-foot, oceangoing tug/supply vessels.

The diesel-powered 1,250-horsepower vessels are to operate in the Gulf of Mexico. Halter Marine, Inc., New Orleans, is the proposed builder. Deliveries are scheduled between January and June 1982.

If approved, the Title XI guarantee would cover \$21,400,000, or 87½ percent of the estimated cost of \$24,457,132.

Furuno's FR-360 Radar Gives Big-Screen Output —Literature Available

With a bright 7-inch CRT display (12-inch with standard magnification), Furuno's FR-360 is reported to be one of the most compact big screen radars of its class. The FR-360 has the latest microwave receiver circuitry with a 3-kw output.

The unit has seven range scales from ½ to 36 nautical miles, back-lit controls for convenient night operation, clutter controls for sea and rain interference, and dual pulse length as standard features. The radar alarm and EVRM are available as options.

The display unit can be tabletop, bulkhead, or overhead mounted with its reversible mounting cable. The antenna unit includes a 3.5-foot centered radiator with a low-noise drive system, and a modularized microwave transceiver.

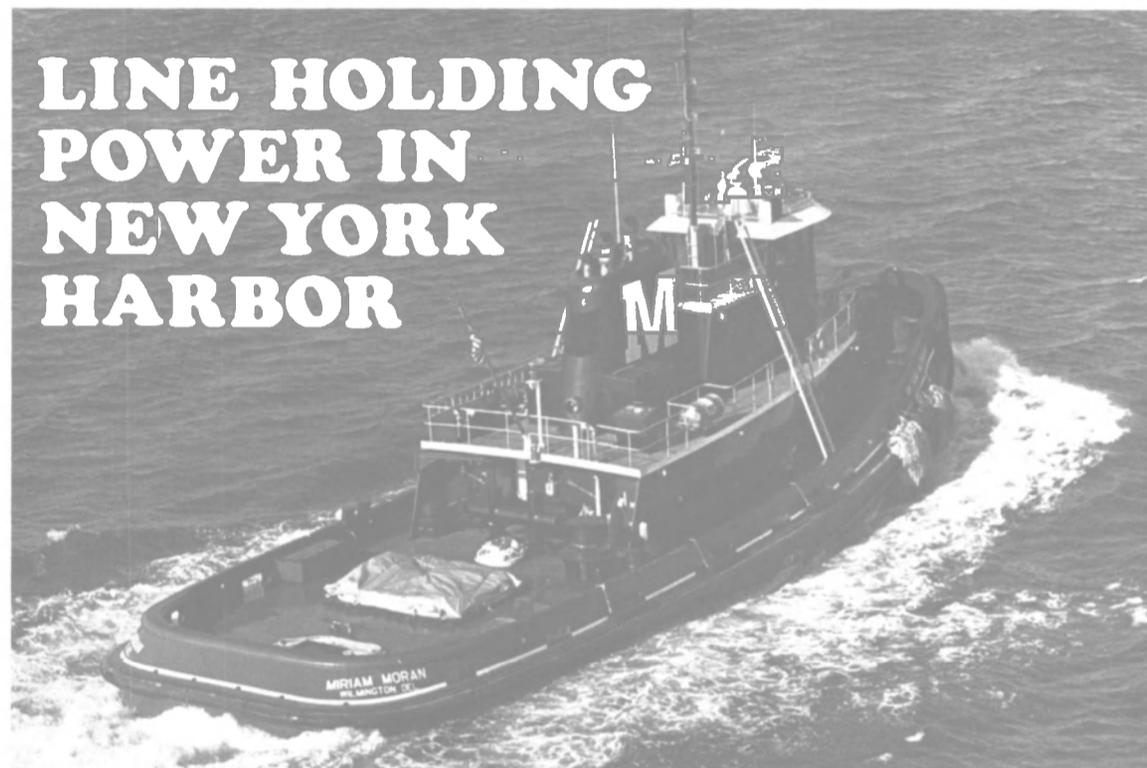
For more information on the FR-360,

Write 40 on Reader Service Card

MarAd Approves Title XI On \$9-Million Drilling Rig Built By Vemar

The Maritime Administration has approved in principle an application from Glendel Ltd. II for a Title XI guarantee to aid in financing an inland posted barge drilling rig. Glendel II is a limited partnership with offices in common with its corporate general partner, Glendel Drilling Company Inc., The Woodlands, Texas.

Built by Vemar, Inc., Channelview, Texas, the 190-foot by 50-foot drilling rig was delivered last December. The approved Title XI guarantee covers \$6,835,000, or approximately 75 percent of the vessel's estimated depreciated cost of \$9,114,449.



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engined, 3,300 h.p. Moran tugs equipped with Markey CEV-100 type capstans for line handling are prepared to master any assignment with capstans that "hold the line". When you need a line that hangs on, get Markey. Ask us.

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**\$821,000 Orders For
Automation Equipment
Received By Lyngso**

Soren T. Lyngso A/S of Copenhagen recently received orders totaling about \$821,000 for shipboard automation equipment. One order of approximately \$448,000 is for electronic automation equipment that will be installed in four ships under construction at the Puerto Real yard of Astilleros Espanoles S.A. for Polish Ocean Line. It includes complete alarm system with video screen and printer, automatic control equipment for the shaft and diesel generators, and a large number of gauges.

The other order, amounting to about \$373,000, is for use in three ships being built at Oresunds Shipyard in Landskrona, Sweden, for Phs. Van Ommeren of Netherlands. The automation equipment for these ships consists of STL's remote control system RCS 990 with an electronic governor and an alarm system with video screen and printer.

**Wheeler Named U.S. Agent
For Royal Schelde's Repair
Yard At Vlissingen**



Royal Schelde's Scheldepoort repair yard at Flushing (Vlissingen), Netherlands, (B.V. Koninklijke Maatschappij 'De Schelde') has named Wesley D. Wheeler Associates, Ltd. of New York City as exclusive U.S. agents. The yard (shown above) is situated at the crossroads of the North Sea and English Channel at the mouth of the River Scheldt, entrance to the ports of Flushing, Antwerp, Terneuzen, and Ghent. It is on open water, ideally situated for problem-free direct approach from open sea without deviation. There are repair piers for ships up to 350,000 dwt, and dock capacity for ships up to 45,000 dwt. The harbor has an entrance width of 400 meters (1,312 feet), and is readily accessible for ships with a practically unrestricted draft. Thus afloat, repairs can be done to almost any vessel.

Royal Schelde can supply Sulzer diesel engine spare parts from stock. A list of spares in stock will be mailed on request. Strict adherence to schedule is the rule at Scheldepoort. The yard operates 24 hours a day, seven days a week. Royal Schelde builds Schelde/Sulzer marine diesel engines for ships under construction at its own yard and elsewhere.

Management is by project and utilizes a system of continuous communication between owners and repair yard. All parties are kept up to date daily about the progress and cost of the work. The yard uses the newest gritblasting and coating equipment, including a high-pressure freshwater jet in-

stallation for hull cleaning of ships in dry-dock.

There are two graving and one floating dock at Scheldepoort. Graving dock No. 1 is for ships up to 25,000 dwt having a length of 175 meters (574 feet), beam of 25 meters (83.64 feet), and depth of 7.80 meters (25.58 feet). Graving dock No. 2 is for ships up to 45,000 dwt having a length of 217 meters (711.76 feet), beam of 30 meters (98.40 feet), and depth of 8.70 meters (28.54 feet). Floating dock No. 3 is for ships up to 25,000 dwt and has a lifting capacity of 10,000 tons. It accommodates ships having a length of 177.80 meters (583.18 feet), beam of 27 meters (88.56 feet), and depth of 7 meters (22.96 feet).

For a free four-color illustrated brochure describing Royal Schelde's facilities and capabilities,

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**Herbert Baker Promoted
To VP-Far East Services
At Waterman Steamship**

Waterman Steamship Corporation has announced the promotion of **Herbert N. Baker Jr.** to the position of vice president Far East Services. He will have overall responsibility for outbound and inbound traffic, operations, and sales between the United States and ports in the Far East and Southeast Asia.

Since joining Waterman in 1973, Mr. Baker has held various management positions in traffic, operations and marketing. He holds a bachelor of science degree from the U.S. Merchant Marine Academy and a master of science degree in transportation management from the State University of New York.

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Promet Private Launches Jackup For The Offshore Company

Promet Private Limited, Singapore, recently launched a 165-foot by 140-foot by 18-foot jackup rig, Offshore Jupiter (shown above), owned by The Offshore Company of Houston. The drilling rig, a four-legged, 150-foot water depth, cantilever jackup will probably be operating in the Arabian Gulf. Equipped with recessed tank footings, the rig will be a version of proven Offshore design and will be capable of working in worldwide water depths from 13 to 150 feet and drilling to depths of 16,000 feet.

The platform includes a cambered-deck steel hull about 18 feet deep supported by four tubular caisson-type legs, and will be fitted with living quarters for 82 men on three levels above deck.

Other projects recently awarded to Promet include two units of BMC-200, 200-foot water depth Self-elevating Independent Leg Mobile Drilling Unit for Sedco Inc., and one unit BMC-300, 300-foot water depth Jackup Drilling Unit.



Hitachi Zosen Delivers Bulk Carrier For Norwegian Owner

Constructed at the Hiroshima Works (Innoshima) of Hitachi Zosen, the 60,662-dwt bulk carrier Jaraconda (shown above) was delivered recently to Aksjeselskapet Kosmos of Norway. A Panamax type bulker developed by Hitachi, she is designed to carry various kinds of cargo, including grain, ore, and lime. Cargo hold capacity is 74,778 cubic meters.

Special features of the vessel

include comfortable living quarters that are constructed so as to reduce vibration and noise, in accordance with Norwegian regulations.

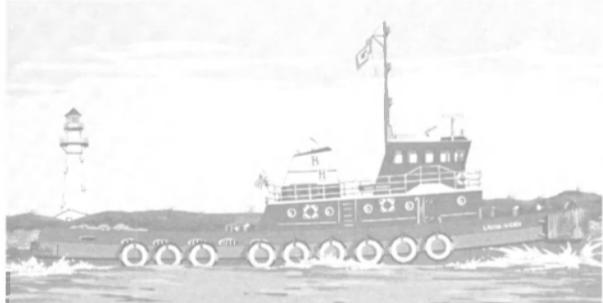
The ship is powered by a Hitachi/Sulzer 6RND76M diesel engine with a maximum continuous output of 14,400 bhp at 122 rpm. By using a newly improved fuel injection system, this engine saves on fuel consumption. Trial speed was 17.036 knots.

Built to Det norske Veritas classification, the Jaraconda has an overall length of 224.50 meters, beam of 32.20 meters, depth of 17.80 meters, and full-load design draft of 12.40 meters (736.54 by 105.64 by 58.40 by 40.68 feet).

Pielstick Diesels Ordered For Three Indian Coast Guard Patrol Vessels

The Indian dockyard Mazagon Dock Ltd. has placed an order with the Alsthom-Atlantique Pielstick Diesel Group for six SEMT-Pielstick 16PA6V280 engines to be fitted in offshore patrol boats for delivery to the Indian Coast Guard. These vessels, which have displacements slightly above 1,000 tons, will each have two 16-cylinder PA6 engines driving a variable-pitch propeller. The maximum continuous rating of each engine is 6,400 bhp at 1,050 rpm.

Following France and the Republics of Korea, Ireland, and Yugoslavia, India will be the fifth nation to use this type of SEMT-Pielstick engine for offshore patrol work.



Three new tugs join the Bay-Houston family.

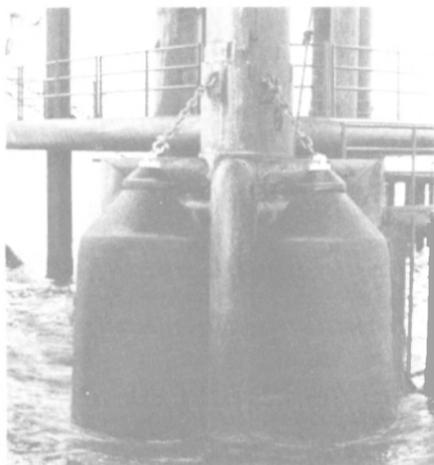
Three new additions to the Bay-Houston fleet will be the Barbara H. Neuhaus, Laura Haden and Mark K. All attest to the dedication of Bay-Houston to provide the best

towing service available on the Gulf Coast.

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**New Protective Fender
For Offshore Structures
Developed By Seaward**



Seaward International, Inc. has developed a new marine fender specifically for the protection of the legs of offshore platforms and structures. The new Sea Guard® (shown above) fender eliminates damage to both the platform leg and the vessel due to accidental collisions. These fenders provide the standoff and energy absorption necessary to safely cushion the impact. They are currently in use for platform leg protection in the Gulf of Mexico.

Sea Guards are also well suited to a variety of other applications where a rugged and streamlined fender is needed between fixed or floating structures and ships, barges, or service craft. Other current applications include use between a tug and barge in the notch of an integrated tug/barge combination, or on general cargo berths.

These fenders are constructed with a resilient foam core, which is covered with nylon-reinforced elastomer. The netless design of the Sea Guard gives the fender a smooth, snag-free, low-friction exterior. The ends are built with a long taper and extra reinforcement caps. These allow sliding contact, which prevents the vessel from catching on the fender.

For additional information and free literature on the Sea Guard,

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**Proceedings Of 1980
REAPS Symposium
Now Available**

The proceedings of the 1980 REAPS Technical Symposium held in October are now available from IIT Research Institute.

The REAPS program is a cooperative effort of the Maritime Administration and U.S. shipyards, administered by IIT Research Institute.

The soft-cover, 600-page volume documents new developments in all phases of ship design and construction, shipbuilding methods, planning and control, and

work organization. These proceedings also mark the Research and Engineering for automation and productivity program's seventh year of operation.

Cost of the proceedings is \$40, shipped prepaid for orders within the U.S. To order, send checks (payable to IIT Research Institute) to REAPS Program Librarian, 10 West 35th Street, Chicago, Ill. 60616.

**Miller Named Assistant
Vice President For
Eller & Company**

Eller & Company, Inc., Fort Lauderdale, has announced the election of Jack Miller as assistant vice president.

He joined Eller in 1972 as line manager for the firm's Jacksonville, Fla., office. He was promoted

to assistant manager in 1973 and to manager of the Jacksonville office in 1974, with responsibility for the company's overall Jacksonville operation.

Prior to joining Eller, Mr. Miller was employed with Southern Shipping Company in Jacksonville for a period of nine years in the position of traffic manager. He will continue to be domiciled in Eller's Jacksonville office.

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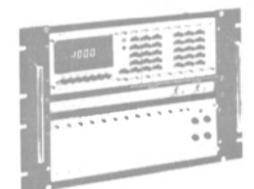
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RO-RO 81

CONGRESS CENTRUM HAMBURG JUNE 30 - JULY 2 1981

CONFERENCE PROGRAMME

This programme is subject to alteration or addition

Session 1: Operations and Commercial Aspects

Regular Ro-Ro freight services and the problems of their membership or association to freight agreements (panel discussion) Panellists to be announced

The operation of a high-speed Ro-Ro service between Seattle-Tacoma and Alaska R. B. McMullen, President Totem Ocean Trailer Express, Inc., (TOTE), USA

The use of flat rack and platform containers on Ro-Ro ships. The advantages and hazards of working these types of 'specials' in the Ro-Ro mode Speaker to be confirmed

Session 2: Ro-Ro Ship Types and Design Features

The planning and design of a new concept of large Combination Ro-Ro carriers now under construction (Joint Paper) Leif Hoegh Co. A. S. Oslo and the Gdynia Shipyard, Poland

Forest products Ro-Ro's in the Eighties; cargo mix and flow patterns; new designs and economic criteria Timo K. Siirila, Head of Development, Rauma-Repola Shipyard, Finland

Combined stabilization Anti-Heeling Systems and their influence on Ro-Ro vessel and Ferry Design Horst A. Halden, Director, Interling GmbH, Hamburg

Session 3: Ro-Ro Ferries and Short-Sea Routes

The emergence of the super-jumbo ferry has brought extra demands on the capability of their Ro-Ro access and internal rolling agreements. A ferry forum will discuss their concept, realisation and service experiences.

Forum Moderator: R. H. Jacquinet, MacGregor Organisation

Ferry to be discussed	Participating Company
Prinsesse Ragnhild	Anders Jahre
4 new ships	Sealink UK
Kronprinsessan Victoria	Operator
Visby	Operator

Mediterranean Ferries

CNAN (Compagnie Nationale Algerienne de Navigation)

The Behaviour and Prospects of NW European Ro-Ro ferry and short-sea operators: the impact of factor costs (fuel; road haulage; etc) and the possible results M. G. Garratt, Marine Transport Centre, University of Liverpool

Session 4: Diesel Propulsion for Ferries and Ro-Ro Cargo Ships

The continuing increase in bunker prices and operating costs has put a new emphasis on machinery selection, arrangement and maintenance. H. Klintorp, Manager, Installation Dept. B & W Diesel A S

Developments in these areas will be discussed by a panel of major engine designers U. Viets, Head of Sales, Marine Diesels, M.A.N.

J. Gallois, Technical Director, S.E.M.T. — Pielstick

J. H. Wesselo, Director of Research and Development, Stork-Werkspoor BV

Session 5: Ro-Ro Safety

Since the 1980 Conference, when major shipowners and designers gave their views on the stability of Ro-Ro ships, much attention has been focussed on recent accidents involving this type of tonnage. For this reason, Ro-Ro 81 will again include a Safety Session on different aspects.

Session 6: Ro-Ro Port Operations

West Africa - Ro-Ro came to stay; the Nigerian experiences, problems and responses from port users. K. Lundberg, General Manager, The Ro-Ro Terminal Co. (Nigeria) Ltd., Managing Agents To the Nigerian Ports Authority

Productivity in a Ro-Ro port — to what degree is it dependent on the co-operation between the stevedoring companies and the shipping lines? P. Bjurstrom, Managing Director, Gothenburg Stevedoring Co.

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**David Porter Elected
Vice President Of
Childs Engineering**



David L. Porter

Kenneth M. Childs Jr., president of Childs Engineering Corporation, Medfield, Mass., recently announced the election of **David L. Porter** as a vice president of the corporation. Mr. Porter joined Childs Engineering, a consulting firm specializing in waterfront engineering, as a design engineer in 1972. He is a registered professional engineer in several states. As a certified marine diver, he has combined engineering knowledge with ability to work underwater, giving him "hands on" experience with structural conditions at the sea-land interface.

This experience has recently been utilized on a project where he has led a team of engineer/divers on underwater inspection and assessment of U.S. Naval facilities throughout the United States. Mr. Porter also is project manager for design and construction of a \$5.5-million tanker berthing facility in Albany, N.Y. Other experience includes inspection and design of numerous piers, marine railways, and floating drydocks.

**Institute Marks 25 Years
Of Containerized Shipping**

The Containerization and Intermodal Institute has announced plans for a silver anniversary celebration honoring the 25th year since the inception of container shipping. A special honors luncheon will be held May 5 at the new Vista International Hotel at the World Trade Center, New York City.

Eric Ridder, publisher of The Journal of Commerce, is serving as chairman and will be master of ceremonies at the event, which will include a salute to the pioneers of the industry. In addition, the institute will publish a commemorative journal in honor of the event, with key articles authored by transportation journalists in the industry.

Inquiries concerning the event can be directed to the Institute at 299 Madison Avenue, New York, N.Y. 10017; (212) 697-3121.

**New Pipe Freezing Kit
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A new pipe freezing kit sold by Maritime Equipment Inc. of Flemington, N.J. makes it easy to repair and modify existing piping systems without draining or shutting down processes. Trade named

Jetfreezer, the kit contains jackets, high-pressure hose, fittings, and other components that make it possible for a pipefitter or maintenance man to freeze a variety of liquids in pipes up to 3 inches in diameter.

Depending upon the situation, a jacket is wrapped around the pipe at one or two locations, and liquid CO₂ is injected into the

jacket forming dry ice at minus 109 F. This freezes the liquid in the pipe, permitting repairs or modifications. Complete instructions are included in the kit, which explain how to make a "controlled" freeze and maintain it as long as required.

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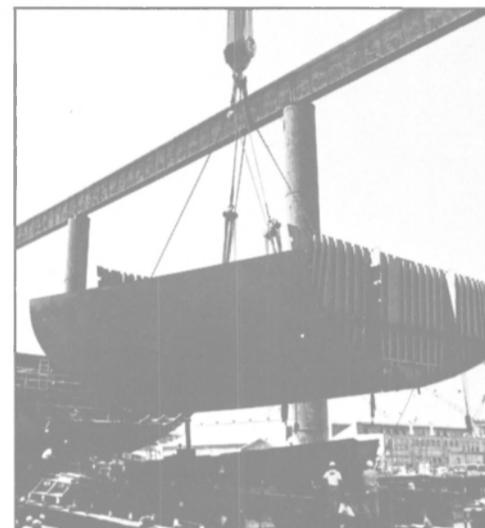
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**MARITIME
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Artist's rendering of air cushion vehicles that Wartsila will build for U.S.S.R. The craft are designed for cargo transfer in Arctic regions, have payload of 38 tons.

Soviet Union Orders Nine ACVs From Wartsila Helsinki Yard

A contract for nine air cushion vehicles (ACV) was signed in Moscow recently between V/O

Sudoimport and Wartsila of Finland. The ACVs, which represent a new line of production for the

shipyard, are based on a Soviet license and on long-term product development work at Wartsila. Deliveries are scheduled for 1982 and 1983.

The vessels are designed for cargo transfer in Arctic regions; each has a loading capacity of 38 tons. They will operate with the nine icebreaking multipurpose ships ordered earlier from Finnish yards. Six of these will be built by Wartsila and three constructed at the Valmet yard.

The Wartsila/Soviet ACV has a length of 67.9 feet, beam of 32.5 feet, and hovering height of about 2 feet. Power output is 1,936 bhp supplied by diesel engines of Soviet manufacture.

Development work for these craft was started at the Helsinki Shipyard in 1976 when the special cargo transfer problems in the Arctic were investigated. The problems include lack of harbor facilities, difficult ice conditions, and shallow coastal waters.

Wartsila will have the benefit of experience gained from an

earlier order for an air cushion ferry placed a year ago by the Finnish Board of Roads and Waterways. This unit, which is now under construction, is intended for winter traffic in the southwestern archipelago of Finland.

Inclusion in the latest contract of a license agreement with the Soviet organization Licensintorg makes it possible to pool the experience of the two parties.

Landregan Named Mgr.— Hawaii Marine Operations For Matson Navigation

Matson Navigation Company has named Capt. J.W. Landregan to the Honolulu post of manager, marine operations, Hawaii. Formerly manager, terminals, northern California, he succeeds Capt. R.J. McKenzie, who has retired after a 47-year maritime career. Captain Landregan started as a deck officer in 1944 and has worked ashore for Matson Terminals, Inc. since 1960.



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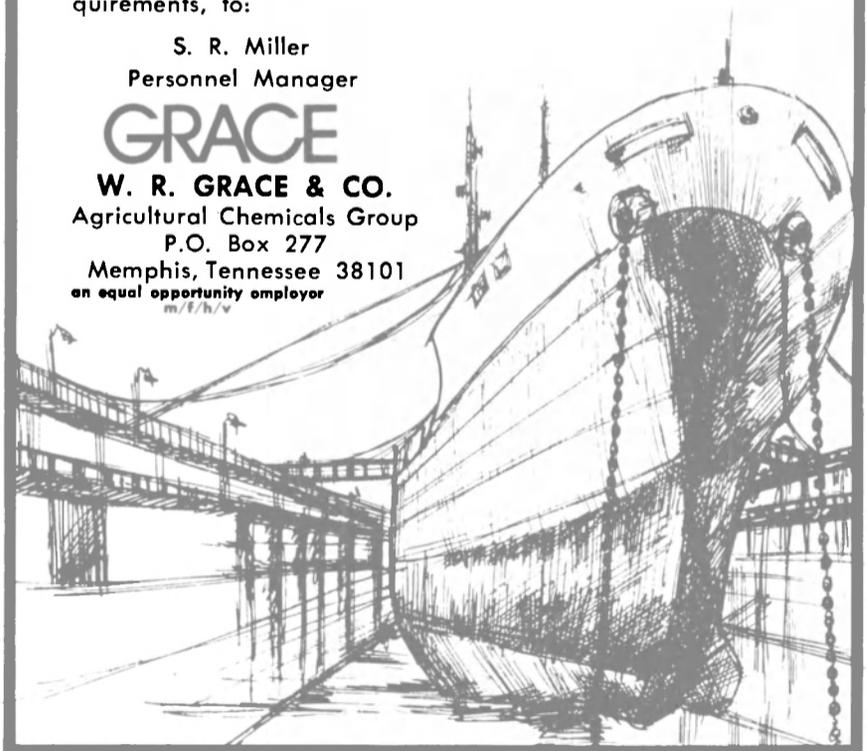
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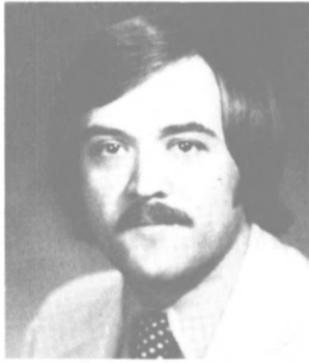
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**Richard Davis Named
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At Waukesha Engine**



Richard A. Davis

Richard A. Davis has been named director of service at Waukesha Engine Division, Dresser Industries Inc. In this capacity, he is responsible for all international and domestic field service activities, warranty administration, dealer service development, and service training.

Mr. Davis has been the division's director of construction and industrial equipment engine sales since 1977. He joined the company in 1974 as central regional manager. A 20-year veteran of the engine business, he has held a number of service, parts, and marketing positions with Ford Motor Company, Perkins Engines, Inc., Detroit Diesel Allison Division of General Motors, and Isuzu Motors Ltd., as well as Waukesha.

Waukesha Engine is a manufacturer of heavy-duty diesel and gas engines for the marine, petroleum, off-highway vehicle and power generation markets.

**Austin Stevens Named
General Manager
Of Fourchon, Inc.**

Ronald J. Doucet, secretary-treasurer of Fourchon, Inc., a growing marine repair facility in south Louisiana, announces the appointment of Austin (Bozo) Stevens to the position of general manager of its facilities at Larose, La., on the Intracoastal Waterway. Mr. Stevens has 30 years of varied managerial experiences in shipyard new construction and repair operations, towboat and barge operations, and oil field drilling and supply environments.

**Todd-Seattle's Hagen
Elected President Of
Shipbuilders Association**

Lawrence (Larry) H. Hagen, director of industrial and public relations at Todd Pacific Shipyards Corporation, Seattle Division, was recently re-elected president of the Pacific Coast Shipbuilders' Association. He has been with the Todd Seattle Division in the personnel and labor relations

field for some 25 years, with the last eight years as director of industrial relations.

Also elected by the PCSBA board of directors at its recent conference were James West, Northwest Marine Iron Works, Portland, as vice president, replacing Jack Conklin, Merrit Ship Repair, Oakland, who has retired; and Robert Nicholas, Tacoma Boatbuilding Company, Tacoma, as secretary.

**Papson Joins Collyer
Insulated Wire As
Operations Manager**

Joseph F. Papson has been appointed manager of operations at Collyer Insulated Wire, Lincoln, R.I., a division of Gulf + Western Manufacturing Company. The announcement was made by Richard A. Rinaldi, president. In his new position, Mr. Papson will be re-

sponsible for plant production, plant engineering, process engineering and traffic (shipping and receiving). He had previously been employed by the Okonite Wire and Cable Company, East Providence, R.I.

Collyer Insulated Wire is a major manufacturer of electrical insulated wire and cable which is used by shipbuilders and in other industries.

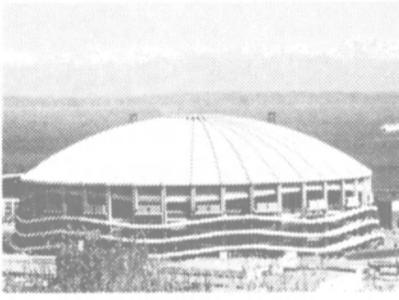
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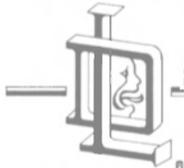
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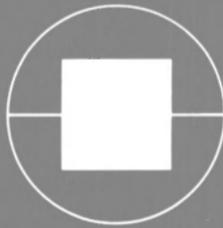
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With this Agreement, Dome will be able to implement in the new yard the most advanced technology in the shipbuilding world for quality control systems, and thus increase Canada's capability to construct large-

size, cost-efficient LNG ships and Arctic oil and LNG carriers.

The technical transfer will be achieved through the construction arrangement for the first two of the four moss spherical type LNG ships required for the LNG sale to Japan. Under this Agreement it is expected Kawasaki will build the first ship in Japan. The second ship will be identical to the first and will be built in Canada in the Dome shipyard, using Kawasaki's drawings and engineering information. Kawasaki will consult to Dome and assist the new yard in the construction of the second LNG ship. As part of the arrangement, Canadian shipyard personnel will be trained in Japan on the construction of the first LNG ship. Japanese technicians will be involved in Canada for building the second ship. Canadian materials and supplies will be utilized to the maximum extent possible.

In addition to bringing new technology to Canada, Kawasaki's technical assistance will allow the new yard to achieve efficient production operations in short order, and thus encourage the shipyard to add more Canadian content when constructing the third and fourth LNG ships.

The first ship will be Japanese-owned and will be delivered during the third quarter of 1985. The second ship will be Canadian-owned and will be delivered in 1986. The proposed Western LNG Project is subject to approval by Canadian regulatory authorities.

**Leech Named Chairman
 And Steading President
 Of G & H Towing**

Capt. John G. Leech has been named chairman of the board of G & H Towing Company, Galveston, Texas. He has been with G & H Towing for the last 37 years of its 47-year existence.

C.H. Steading II was named as president and chief executive officer; H.H. Chapin was appointed vice president of construction and repair; R.D. Fasano, vice president of marine operation; C.R. Klaes Jr., secretary-treasurer; and E.L. Paysee, assistant secretary.

**Wayne Harper Named
 Sales Engineer For
 Delta Shipyard**

Ralph Arceneaux, president of Delta Shipyard, Houma, La., has announced the appointment of Wayne L. Harper to the company's newly created position of sales engineer. Mr. Harper has served in a wide variety of management and engineering assignments associated with the oil and marine industries. He will be responsible for sales management of the shipyard's repair and new construction operations.

Delta Shipyard is presently undertaking an extensive development program aimed at increasing its repair and new construction capabilities. Under construction is a new 4,000-ton floating drydock scheduled for completion in September of 1981.

Additionally, barge fabrication facilities are being constructed that will allow the construction of two large offshore, deck cargo barges or tank barges simultaneously. This is all in addition to its present repair and new construction divisions located at the junction of the Gulf Intracoastal Waterway and the Houma Navigational Channel just outside the city limits of Houma.

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David W. Fenton, Chief Electrical Engineer,
for Additional Information

**Isdahl And Sotir Named
Senior Vice Presidents
At Royal Viking Line**

Royal Viking Line, Norwegian-flag cruise operation headquartered in San Francisco, has just named two senior vice presidents, according to Warren S. Titus, president. Jan Greve Isdahl, formerly with Chase Manhattan Bank in New York, has been appointed senior vice president-corporate planning, and George A. Sotir, previously vice president-sales, has been promoted to senior vice president-marketing. Mr. Isdahl will handle special projects, with particular emphasis on expansion of the firm's cruise interests and other travel-related activities. Mr. Sotir will take over the worldwide marketing responsibility for the line.

Mr. Isdahl has been with Chase Manhattan since 1973 serving in various capacities, moving up to vice president in 1978. He handled credit control, review and coordination of all credit requests originating in Europe and the Middle East that exceeded local lending authorities. His most recent position was in the bank's commodity financing division with clients involved in crude oil and steel trading.

Mr. Sotir, well-known in shipping circles, has been with Royal Viking Line since its inception in 1970 when he was general sales manager. He was named vice president-sales the following year. Prior to his association with Royal Viking, Mr. Sotir served for 18 years with Matson Navigation Company, based at various times in the firm's San Francisco, Chicago, and New York offices.

**Charles Note Named
Materials Manager For
Magnus Maritec Int'l**

Charles C. Note has been promoted by Economics Laboratory, Inc. to materials manager for the company's Magnus Maritec International Division in Palisades Park, N.J. He was previously distribution manager.

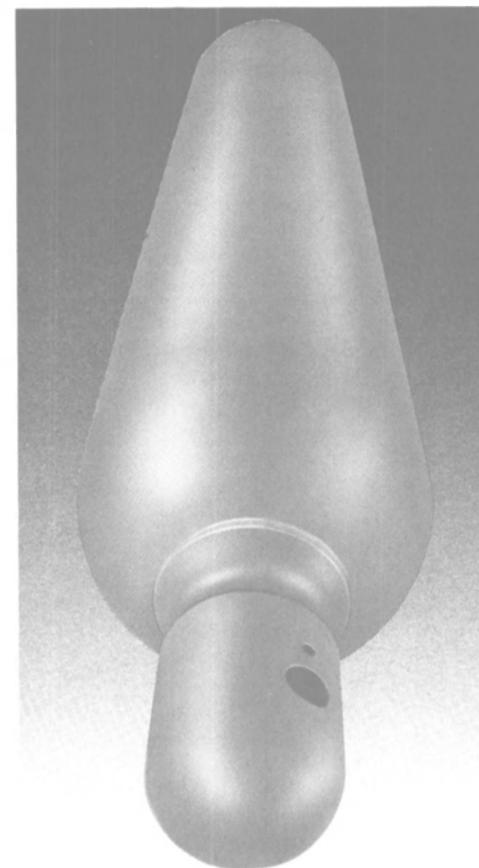
Economics Laboratory develops, manufactures, and markets products and systems for cleaning, environmental and food processing sanitation, and pollution control worldwide.

**Versatile OBO Carrier
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The West German shipyard Bremer Vulkan recently completed the ore/bulk/oil carrier Alexander for Setenata Limited of Monrovia, Liberia. The newbuilding Hull No. 1015 is the first in a series of four unique OBOs of about 75,300 dwt that will be built by the Bremen yard.

In addition to the transport of a variety of cargoes such as dry bulk, containers, large pipes, etc., the multipurpose carrier is also capable of hauling liquid cargoes such as crude oil, light heating oil, and other petroleum products, as well as combinations of dry and liquid cargoes.

The Alexander has an overall length of 798.77 feet, beam of 105.70 feet, depth of 67.26 feet, and draft of 47.00 feet. Her propulsion plant is a single Bremer Vulkan/MAN type K8SZ70/125BL diesel engine with a rating of 16,520 bhp at 145 rpm. The ship has Lloyd's Register of Shipping classification, and will sail under the Liberian flag.



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Port Of Los Angeles Approves Major Coal Terminal Concept

The Los Angeles Board of Harbor Commissioners recently approved in concept the development of a major coal terminal in the harbor's Terminal Island District. The Board directed that an environmental impact report be prepared for the development, including the dredging of a 65-foot channel to the southern portion of Terminal Island, and the creation of necessary landfill in the Outer Harbor for relocation of hazardous liquid bulk terminals presently located adjacent to the harbor community, both projects included in the Port's extensive Master Plan and capital development program.

Los Angeles Mayor Tom Bradley expressed his full support for the Commission action, citing that increased coal export traffic through the Port of Los Angeles will serve to reduce the nation's trade deficit with the Far East, now the primary destination for coal shipments emanating from the U.S. West Coast. Mayor Bradley added, "We hope to bring a major coal-handling terminal to Los Angeles, one capable of storing millions of tons of coal and able to load in excess of 20 million or more tons each year in vessels approaching 250,000 dwt."

Current coal traffic through the Port of Los Angeles's bulk loader facility at Berth

49-50 totaled 700,000 tons in the last six months of 1980. Projected coal tonnage for the entire calendar year 1981 is estimated at two million tons for the three-million-ton-capacity facility.

Webb Institute Receives \$25,000 Grant From The Teagle Foundation

Webb Institute of Naval Architecture, the oldest four-year naval architecture undergraduate institution in the U.S., recently announced receiving a \$25,000 grant from The Teagle Foundation, Inc. Institute officials said that the grant will be used for its general scholarship program solely for the education and future development of naval architects and marine engineers.

The Teagle Foundation was founded in 1944 by Walter C. Teagle, the former chairman of Standard Oil Company of New Jersey, known today as Exxon Corporation. The primary concern of the foundation centers on scholarship assistance to employees of Exxon Corporation and to children of present, retired, and deceased employees to obtain undergraduate or graduate level education. In addition to the above, the foundation also supports a number of colleges with direct grants for the college's scholarship aid program. Selection of the individual and the stipend are determined by the college.

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**NAVAL SEA SYSTEMS COMMAND
SENIOR EXECUTIVE SERVICE OPPORTUNITY
DIRECTOR, RESEARCH, TECHNOLOGY
AND ASSESSMENT OFFICE (SEA 003)**

The incumbent is responsible for bringing together and providing the overall coordination of the Command's RDT&E Program, which includes all aspects of planning, reviewing, assessing and prioritizing the Command's technology base and advanced development goals and objectives. This Office in conjunction with the major Directorates in NAVSEA will plan and execute defense research and exploratory and advanced development programs in the area of military weapons systems and ships to meet the Navy's present and future needs in the most cost efficient and mission effective manner. In addition, this office will serve as the central point of contact for NAVSEA research and technology programs with industry and other agencies as well as with higher authority within DOD.

(This position is interdisciplinary and may be filled as either a General Engineer or a Physical Scientist, depending upon qualifications of the selectee.)

Applicants for the engineering discipline must possess a B.S. or higher degree in engineering or a related field from an accredited college or university.

Applicants for the Physical Science discipline must possess a B.S. degree or higher in physical science, engineering or mathematics that includes 24 semester hours in physical science and/or closely related engineering science such as mechanics, dynamics, properties of materials and electronics or a combination of 4 years experience and education (including 24 hours as described above).

Salary range: \$52,247 to \$61,600 (Currently limited by law to \$50,112.50).

This position is located in Arlington, Virginia in the Crystal City Complex. Interested applicants should send a Standard Form 171, Personal Qualifications Statement to:

HQ. NAVAL MATERIAL COMMAND
Civilian Personnel Operations Division
Staffing Branch/SES Section (09M535)
National Center #3, Room 4E24
Washington, D.C. 20362
Announcement #: SEA-003-81 MR

Applications should be received by 30 April 1981. (Vacancy will close no earlier than 30 April 1981).

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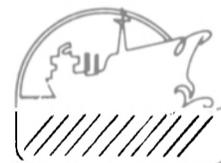
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The incumbent of this position is responsible for overall planning and execution of all managerial and technical functions for the research, development, design, acquisition, maintenance and technical support of Deep Submergence vehicles and systems. Other duties include:

- management of fiscal and manpower resources;
- monitoring/approving equipment design, fabrication and testing for submergence systems;
- evaluating the compatibility and probability of success of deep submergence R&D within the Naval Material Command;
- providing guidance and direction regarding programs, projects and policy development; and
- representing the Project and its interests in dealing with individuals throughout the Navy, Department of Defense, contractors, and other U.S. and foreign government agencies.

Applicants must possess a B.S. Degree in Engineering or a related field from an accredited college or university (or the equivalent) plus progressively responsible engineering and management experience in life cycle management or acquisition of Deep Submergence vehicles and systems.

Salary range: \$52,247 to \$61,600 (Currently limited by law to \$50,112.50).

This position is located in Arlington, Virginia. Interested applicants should send a Standard Form 171, Personal Qualifications Statement to:

Headquarters
Naval Material Command
Civilian Personnel Operations Division
Staffing Branch/SES Section (09M535)
Washington, D.C. 20360
Announcement Number: PMS-395-82

Applications must be received no later than 24 April 1981.

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**NAVAL SEA SYSTEMS COMMAND
SENIOR EXECUTIVE SERVICE OPPORTUNITY
DEPUTY DIRECTOR, SUBMARINE
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Applicants must possess a B.S. degree in engineering or naval architecture from an accredited college or university (or its equivalent); and demonstrated substantial, progressively responsible engineering experience in the management of submarine design, maintenance, modernization, acquisition or logistic support.

Salary range: \$52,247 to \$61,600 (Currently limited by law to \$50,112.50).

This position is located in Arlington, Virginia in the Crystal City Complex. Interested applicants should send a Standard Form 171, Personal Qualifications Statement to:

**HQ NAVAL MATERIAL COMMAND
Civilian Personnel Operations Division
Staffing Branch/SES Section (09M535)
National Center #3, Room 4E24
Washington, D.C. 20362
Announcement # SEA-921B-81 MR**

Applications should be received by 30 April 1981. (Vacancy will close no earlier than 30 April 1981).

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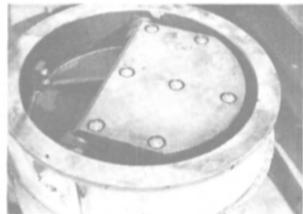
1981 MARINE SURVEY PRACTICE COMPENDIUM By R.A. Cady \$54 pp. Other guides for Surveyors & Port Engineers available MARINE SURVEY PRESS Box 9307 Mobile Ala 36691 USA

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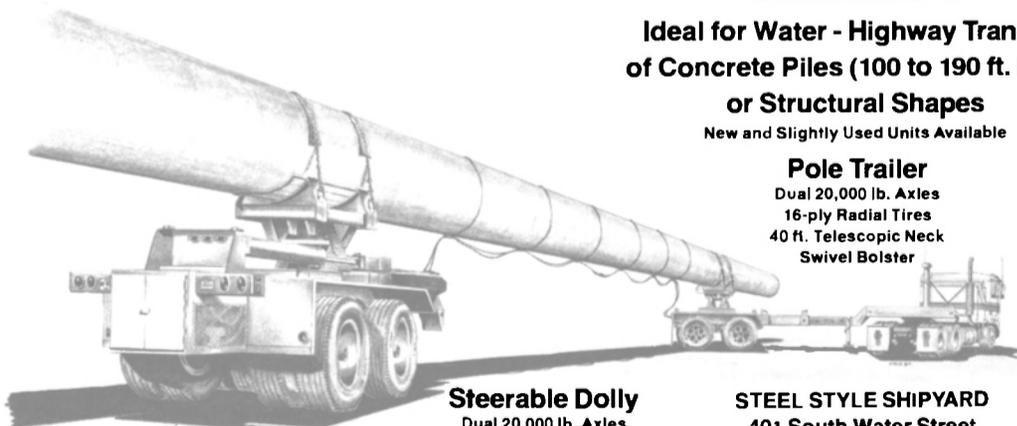
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One horizontal duplex pump, 10 x 10 x 12

Two Worthington 5 1/2 x 2 3/4 x 6 vertical duplex pumps

One Ingersoll-Rand 6-ALV, 1400 GPM at 295 ft. head, 8 x 6 pump

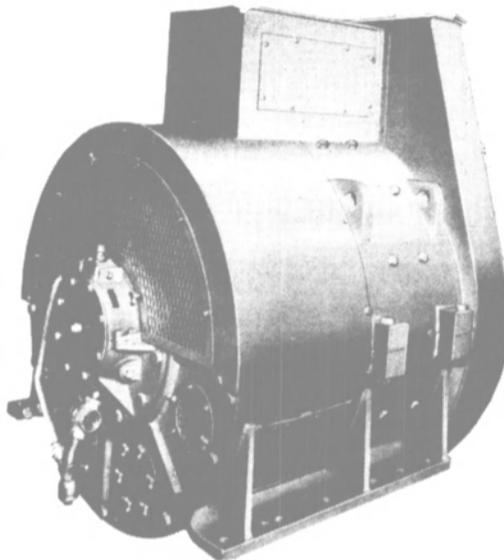
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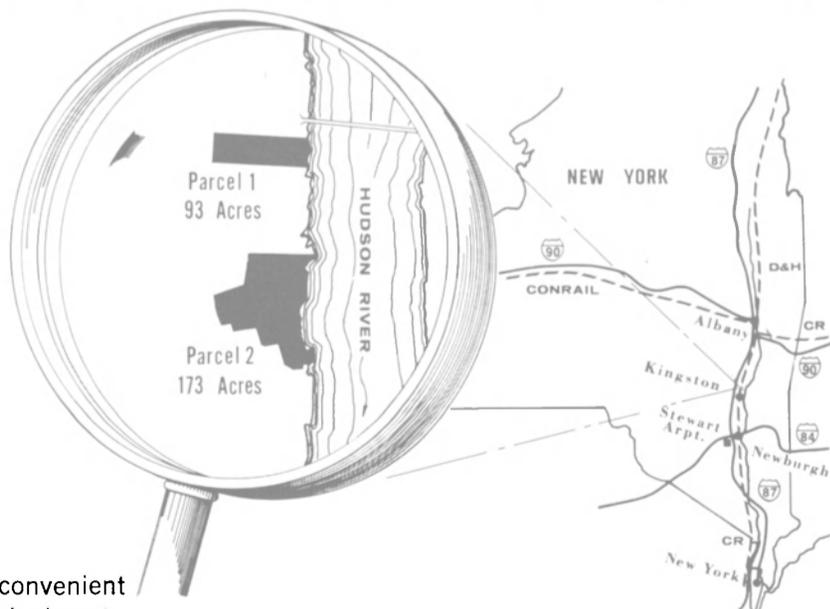
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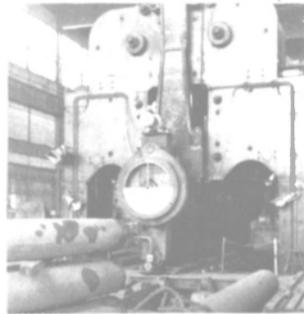
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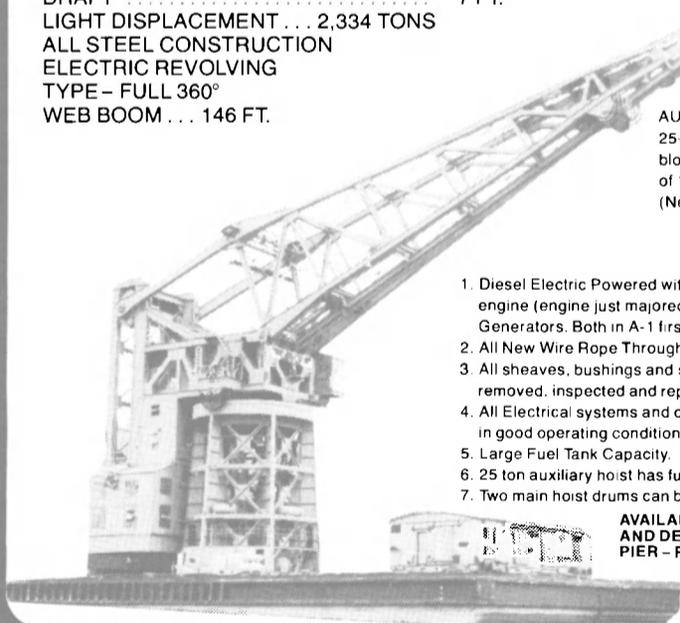
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Container Cranes 70-foot Track Span

NEW 1970-72

Priced at a fraction of today's new replacement cost. Good Condition. Immediately Available. From LASH Ships. Late Model. Manufactured by PACEO. Suitable for Ship, Barge or Land Use. Manufactured to ABS and MARAD requirements.

AC Power Input with Cable Reel and 350 feet of 500 MCM Cable.

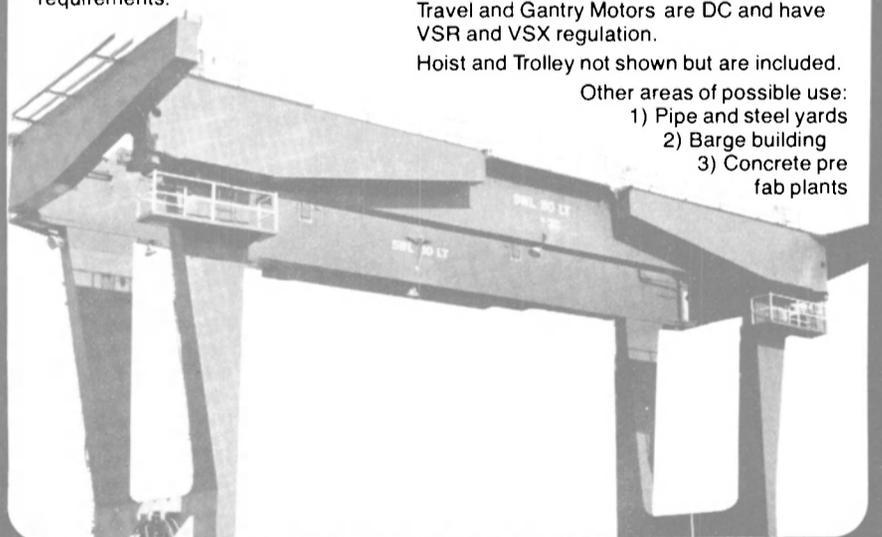
MG set: 250 HP-AC-170 KW 230 DC.

• 200 HP DC Hoist Motor • 100 HP DC Trolley Motor • 2-40 HP DC Gantry Travel Motors • Trolley Travel 275 F.P.M. • Gantry Travel 100 F.P.M. • Hoist Speed: 30 LT @ 85 F.P.M.; 20 LT @ 100 F.P.M.; Empty Spreader 200 F.P.M. • 32' 0" Maximum Outstretch • Hoist, Trolley Travel and Gantry Motors are DC and have VSR and VSX regulation.

Hoist and Trolley not shown but are included.

Other areas of possible use:

- 1) Pipe and steel yards
- 2) Barge building
- 3) Concrete pre fab plants



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

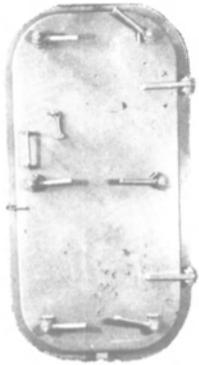
ZIDELL

ZIDELL EXPLORATIONS, INC.

3121 S.W. Moody Ave., Portland, Oregon 97201
Phone: (503) 228-8691 • Telex 36-0503 • Cable "Zidell"

FOR SALE

NEW WATERTIGHT DOORS



Steel Dogs

6-Dog right and left hand hinged doors with frames. Constructed of 1/4" steel plate and meet Coast Guard regulations for above deck as well as below deck use. All dogs are bronze bushed. Also available with 8" bronze portlights.

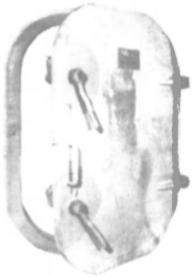
SIZE

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

EACH DOOR

IMMEDIATE DELIVERY

NEW SMALL STEEL WATERTIGHT DOORS



24" X 36"

2-DOGS

5 Right Hand
2 Left Hand

IMMEDIATE DELIVERY

NEW 7" RADIUS PANAMA CHOCKS

(MEET PANAMA REGULATIONS)
14" X 10" CLEAR OPENING



With extended legs for welding to deck. 14" Wide on base—length 28"—height 27 1/4". IMMEDIATE DELIVERY FROM STOCK.

NEW UNUSED 12" X 6 1/2" PANAMA CHOCKS FOR SMALL VESSELS



Closed chocks—12" X 6 1/2" inside opening—23" overall outside—8" high—15" high—7" radius—weight 110 lbs. IN STOCK.

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Marine Warehouse (301) 752-1077
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"THE OFFSHORE" MODEL Reflector/Projection BINNACLE



Projector Unit is Heavy Gauge Naval Aluminum—Hard Coated Spring Mounted

Suitable for workboats & fish boats. Circular magnet in card for steadiness. Navy type metal compass rose—0-360—adjustable mirror for Steersmans eye. Anti-vibration mount. Complete with internal correctors including heavy duty heeling corrector for steadiness in rolling sea.

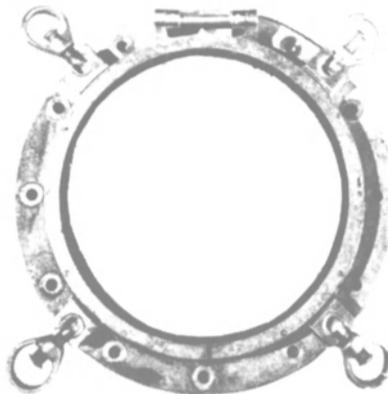
INQUIRE FOR PRICE & FURTHER DETAILS

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15 1/2" & 16" CLEAN BRASS 4-DOG MARINE PORTLIGHTS

15 1/2" CLEAR OPENING
16" CLEAR OPENING



Recently carefully hand removed from ocean vessels. Suitable for re-use on shipyard conversions or for marine ornamental use. Heavy marine standard glass . . . clear or can be furnished frosted for use in special locations.

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WORTHINGTON HIGH PRESSURE AIR COMPRESSORS

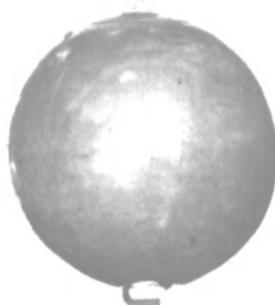


10 CFM—600 lbs. 7 1/2 HP
440/3/60 A.C. Motors

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NEW—UNUSED SPHERICAL MOORING BUOYS



About 58" diam. With tieplates top & bottom. Est. wt 680 lbs each. 120 lbs submergence

CYLINDRICAL BUOYS

3 Available—5 ft X 9 ft—with wood bumpers

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KEARFOTT PENDULUM WINDOW WIPERS

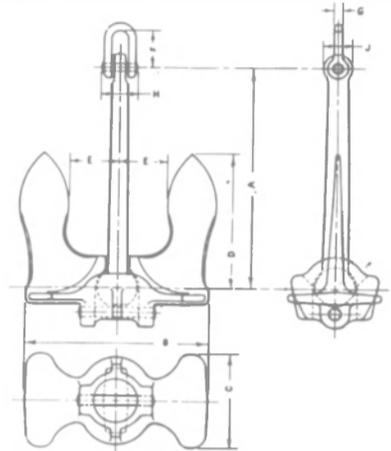
1/30 HP 110 volt AC/DC universal series wound motor—ball bearing—5000 RPM—\$19750
with 40:1 single worm reduction Clear opening 27 1/2"—14" arm—10" blade—with EACH
rheostat & shutoff switch. 4 available.

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DETACHABLE LINKS
PEAR-SHAPED DETACHABLE LINKS



LARGE BALDT-TYPE ANCHORS

16000 LBS/12000 LBS/8000 LBS/3000 LBS

10 EA. 5" x 15" I.D. STEEL RINGS
3 EA. R.P. ANCHOR SHAX 3 7/8 STK, 3 7/8 PIN

NEW CHAIN

9 X 90 Ft. 2" DILOK CHAIN—ABS

NEW SWIVELS

3 EA. 2 5/8—3" E&E SWIVELS
13 EA. 3 7/8 DETACHABLE LINKS

PEARSHAPED DETACHABLE LINKS

25 EA. #7—17 EA. #5

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HEAVY STEEL DOOR FOR LOADING CARGO THRU SIDE OF SHIP

Complete with heavy frame. Clear opening 72" wide 90" high. Outside frame size 103" high—86" wide. While under way, door is secured with 18 heavy bolts & steel blocks around frame—6 heavy bolts & steel blocks in middle.

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LOUIS-ALLIS M.G. SETS

2.5 KW 120 Volt Single Phase 60 Cycle Output
120 Volt D.C. Input—1800 RPM



2 1/2 KW—115 volts single phase A.C. output. GENERATOR: Type GNA—class 1G—Frame 28A—Form A—1800 RPM—5 KVA—2.5 KW 115 volts AC—60 cycle—50% PF—43.4 amps. MOTOR: Louis Allis—Type GNA—Class E—Frame 25A—Form A—1800 RPM—115 volts DC—32 amps—shunt wound (with attached Ward-Leonard frequency regulator). Some control panels available.

CAN FURNISH WITH 230 VOLT DC INPUT

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**SURPLUS
BERGER
FAIRLEADS**



2 Model 620—for 1 1/4" wire—20" sheave.
Located San Francisco, Ca.

\$3950 EACH

3 Model 614—for 1 1/4" wire—14" sheave.
Located Panama City, Fla.

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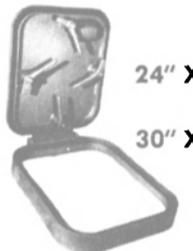
HATCHES

**NEW UNUSED
FLUSH HATCHES**



54" X 77"

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



24" X 30"

30" X 30"



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



60" X 42" X 12"
10-DOG



72" X 72" X 12"
16-DOG



36" X 26" 7-DOG
TANKER EXPANSION
TRUNK

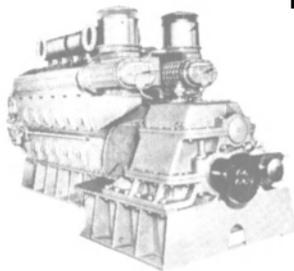


42" X 42" X 9"
7-DOG
SPRING
LOADED

THE BOSTON METALS COMPANY

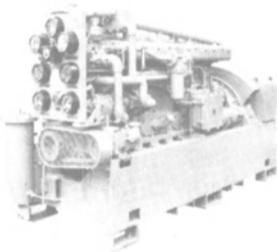
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LST MACHINERY



**PORT & STARBOARD GM 12-567A
900 HP DIESEL ENGINES
with Falk reverse & reduction gears**

ENGINE: GM 12-567A—8 1/2 X 10—V-type—2-cycle—747 RPM—electric starting—serial Nos. 1041 & 1060. GEAR: Falk AirFlex—reverse & reduction—2.48:1 forward—2.52:1 reverse.



100KW GBD-8 DIESEL GENS.

120/240 VDC—417 amps—stab shunt—1200 RPM—Delco generator—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 11/16" high—42" wide. Hgt necessary to pull piston 68". Fuel consumption 0.620 lbs/hr.



**GARDNER-DENVER
BALLAST PUMP**

Bronze — 1500 GPM — 56' head or 25 bs — 8" suction — 6" discharge. MOTOR: Century 30 HP 230 VDC 110 amps 1750 RPM. 40° T rise — stab. shunt — ballbearing — dripproof. Controls available.

TAILSHAFTS

Diameter: 6 1/8" Length: 21' 2 5/8"

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**USCG APPROVED HEAVY SLIDING
DOORS WITH FRAMES**

All Doors Bolted In And Easily Removed

- 1 36"x66" Horizontal hand mech. steel sliding door—complete with mechanical local & remote gear boxes
- 1 60"x78" Steel watertight sliding door. Complete with mechanical local and remote boxes.

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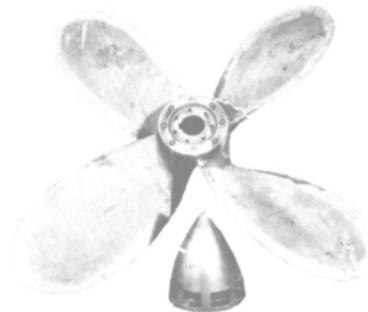
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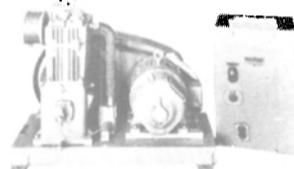
GOULD FIRE & BILGE PUMP

250 GPM & 100 lbs—4" suction—3" discharge—2200 RPM—bronze—manufactured by Gould. Direct connected to 30 HP 230 volt DC Louis-Allis motor.

**4-BLADE PROPELLERS
BRONZE—PORT & STARBOARD**



7' Diameter—pitch constant 4.699. Bore tapers from 6 1/8" to 4 53/64". 14 1/2" Taper equal to 1"/foot on diameter. U.S. Navy reconditioned. Average weight 1760 lbs.



CLUTCH TIRE AIR COMPRESSOR

Model 320—4 X 2 1/2 X 3"—10/15 CFM—100/150 PSI—700 RPM. MOTOR: 3 HP—230 volts DC—1750 RPM

**COMBINATION LUBE OIL &
SALT WATER COOLING PUMPS**

Model 3630—mfg by Goulds—1150 RPM. Rotary lube oil pump one end (35 GPM @ 15 PSI—1 1/2" X 1 1/2")—salt water circulating pump other end (35 GPM @ 15 PSI—2" X 1 1/2") G.E. Motor model 5B254A1988—type B—Frame 254—3 HP—230 VDC—11.9 amps—1150 RPM compound—Cont. 40° C temp rise. Ball bearing.

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**QUICK-ACTING
LEVER
OPERATED
WATERTITE
DOORS**

26" X 66"
8-DOG
Rights & Lefts

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Goff Corporation, One Pleasant Grove Rd., Seminole, OK 74868

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Combustion Engineering, Inc., Windsor, Connecticut 06095
A.B. Murray Company, Inc., P.O. Box 476, Elizabeth, NJ 07207

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Capt. Astad Company, Inc., P.O. Box 53434, New Orleans, La. 70153
Crown Assets Disposal Corp., 300 Notre Dame St., Ville St.-Pierre, Quebec, Canada H8R 3Z6
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Megasonics, Inc., 5909 West 130th Street, Cleveland, OH 44130
Pan American Systems Corporation, P.O. Drawer 400, Belle Chasse, LA 70037
Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.
Transamerica Delaval, Inc., Gem Sensors Div., Spring Lane, Farmington, CT 06032

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Teledyne Metal Finishers, 3125 Brinkerhoff Road, Kansas City, KS 66115
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Port Electric Supply, 157 Perry Street N.Y., N.Y. 10014
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Consafe Inc., P.O. Box 40339, Houston, TX 77040
Kearfott Marine Products, 550 South Fulton Ave., Mount Vernon, N.Y. 10550
J. H. Menge & Company, Inc., P. O. Box 23602, New Orleans, La.
Rockwell International, Power Tool Division, 400 N. Lexington Ave., Pittsburgh, PA 15208
Schnitzer-Levin Marine Co., 445 Littlefield Ave., So. San Francisco, CA 94080
Schwepper Beschlag GmbH, Postfach 101110, 5620 Velbert 1, West Germany
Sudoimport, 5 Kalyaevskaya, Moscow K-6, USSR
Unitor Ships Service A/S, Mastemyr, 1410 Kolbotn, Norway
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Hartzell Propeller Fan Company, 901 S. Downing Street, Piqua, OH 45356
Joy Manufacturing Co., 338 So. Broadway, New Philadelphia, Ohio 44663
Zidell Explorations, 3121 S.W. Moody St., Portland, Ore. 97201

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Foster Wheeler Boiler Corp., 110 So. Orange Ave., Livingston, N.J. 07039

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Oreck Corp., 100 Plantation Rd., New Orleans, LA 70123
Perko Inc., P.O. Box 6400D, Miami, Florida 33164
Phoenix Products Company, 4785 North 27th Street, Milwaukee, WI 53209
Port Electric Supply Corp., 157 Perry Street, New York, N.Y. 10014

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

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American Standards Testing Bureau, Inc., 40 Water Street, New York, N.Y. 10004
Amirikian Engineering Co., Chevy Chase Center Bldg., Suite 505, 35 Wisconsin Circle, Chevy Chase, Md. 20015
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Jacksonville, Florida 32211
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CADCOM, 107 Ridgely Ave., Annapolis, MD 21401
Childs Engineering Corp., Box 333, Medfield, Mass. 02052
John P. Colletti & Associates, P.O. Box 13378, Pittsburgh, PA 15243

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John W. Gilbert Associates, Inc., 58 Commercial Wharf, Boston, Mass. 02110
The Glosien Associates, Inc., 610 Colman Bldg., 811 First Ave., Seattle, WA 98104
Phillip Gresser Associates, Ltd., 3250 South Ocean Blvd., Palm Beach, FL 33480
Morris Guralnick Associates, Inc., 620 Folsom Street, Suite 300, San Francisco, CA 94107
Hampton Roads Engineering, Inc., 119 E. Little Creek Rd., Norfolk, VA 23505
J.J. Henry Co., Inc., Two World Trade Center—Suite 9528, New York, N.Y. 10048
Hoffman Maritime Consultants Inc., 9 Glen Head Road, Glen Head, NY 11545
Hydronautics, Incorporated, 7210 Pindell School Road, Howard County, Laurel, Maryland 20810
Janzen Engineering Co., 6655-H Amberton Drive, Baltimore, Md. 21227
James S. Kroger & Co., Inc., 3333 Rice St., Miami, Fla. 33133
Littleton Research and Engrg. Corp., 95 Russell St., Littleton, Mass. 01460
Lucander Designs, P.O. Box 711, San Perito, TX 78590
Alan C. McClure Associates, Inc., 2600 South Gessner, Houston, TX 77063
John J. McMullen Associates, Inc., 1 World Trade Center, New York, N.Y. 10048
MacLear & Harris, Inc., 28 West 44 Street, New York, N.Y. 10036
Marine Consultants & Designers, Inc., 308 Investment Insurance Bldg., Corner E. 6th St. & Rockwell Ave., Cleveland, Ohio 44114
Marine Design Inc., 401 Broad Hollow Road, Rte. 110, Melville, N.Y. 11746
Marine Technical Associates, Inc., 195 Paterson Avenue, Little Falls, NJ 07424
Maritime Service Company, 1357 Rosecrans St., Suite B, San Diego, CA 92106
Rudolph F. Matzer & Associates, Inc., 13891 Atlantic Blvd., Jacksonville, Fla. 32225
Mechanical Resources Inc., 191 Cambridge Avenue, Jersey City, N.J. 07307
George E. Meese, 194 Acton Rd., Annapolis, Md. 21403
Metritape, Inc., 33 Bradford Street, Concord, MA 01742
NKF Engineering Assoc., Inc., 8150 Leesburg Pike, Vienna, VA 22202
Nelson & Associates, Inc., 1405 N.W. 167th Street, Miami, FL 33169
Nickum & Spaulding Associates, Inc., 911 Western Ave., Seattle, WA 98104
Robert B. Niederberger, P.E., 507 Evergreen Road, Severna Park, MD 21146
Norgaard and Clark, 114 Sansome St., San Francisco, CA 94104
Ocean-Oil International Engineering Corporation, 3019 Mercedes Blvd., New Orleans, La. 70114
Offshore Power Systems, 8000 Arlington Expressway, Jacksonville, FL 32211
Oromar International Enterprises, Inc., P.O. Box 13069, Port Everglades, FL 33316
PRC Guralnick, 5252 Balboa Ave., San Diego, CA 92117
Pacific Industries Inc., 1440 Canal Street, Suite 1915, New Orleans, LA 70112
Pearlson Engineering Co., Inc., 8970 S.W. 87th Ct., Miami, Florida 33156
S.L. Petchul, Inc., 1380 SW 57th Ave., Fort Lauderdale, Fla. 33317
Pilotaage Consultants, Inc., P.O. Box 3, Atlantic Highlands, NJ 07716
M. Rosenblatt & Son, Inc., 350 Broadway, New York, N.Y. 10013
and 657 Mission St., San Francisco, Calif.
Sargent & Herkes, Inc., 611 Gavier St., New Orleans, La. 70130
Schmahl and Schmahl, Inc., 1209 S.E. Third Ave., Fort Lauderdale, Florida 33316
Seacor Systems Engineering Associates, Corp., P.O. Box 2030, 19 Cherry Hill Industrial Park, Perina Blvd., Cherry Hill, NJ 08003
Seaworthy Engine Systems, 36 Main Street, Essex, CT 06426
George G. Sharp, Inc., 100 Church St., New York, N.Y. 10007
T. W. Spaetgens, 156 West 8th Ave., Vancouver, Canada V5Y 1N2
R.A. Stearn, Inc., 253 N. 1st Ave., Sturgeon Bay, WI 54235
Richard R. Taubler Inc., 8 Columbia St., Milford, Del. 19963
Thames Engineering Consultants Inc., P.O. Box 589, New London, Ct. 06320
Timco, 622 Azalea Road, Mobile, AL 36609
Corning Townsend III, 18 Church St., Georgetown, CT 06829
Undersea Systems, 112 W. Main St., Bay Shore, N.Y. 11706
Wesley D. Wheeler Assoc., Ltd., 104 E. 40th St., Suite 206, New York, NY 10016
Thomas B. Wilson, 920 North Avalon Blvd., Wilmington, CA 90744
Wind Ship Development Corporation, 690 Main Street, Norwell, MA 02061
Wink Incorporated, 8020 Mayo Blvd., New Orleans, LA 70126
XPLO Corporation, 229 Fifth Street, Gretna, LA 70053

NAVIGATION & COMMUNICATIONS EQUIPMENT

AAT Communications Corporation, 1854 Hylan Blvd., New York, NY 10305
American Hydromath Co., Buckwheat Bridge Rd., Germantown, N.Y. 12526
Apelco Marine Electronics, Division of Raytheon, 676 Island Pond Rd., Manchester, NH 03103
Communication Associates, Inc., 200 McKay Road, Huntington Station, N.Y. 11746
Comsat General Corp., 950 L'Enfant Plaza, S.W., Washington, D.C. 20024
Dantronics Company, P.O. Box 204, Bocca Raton, FL 33432
Electro-Nav Inc., 840 Bond Street, Elizabeth, NJ 07201
EPSCO, Inc., 411 Providence Highway, Westwood, Mass. 02090
Furuno U.S.A., 271 Harbor Way, S. San Francisco, CA 94080
Griffith Marine Navigation, Inc., 134 North Avenue, New Rochelle, NY 10801
Harris Communications, RF Communications Division, 1680 University Avenue, Rochester, NY 14610
Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
Hose McCann Telephone Company, Inc., 9 Smith Street, Englewood, NJ 07631
ITT Decca Marine, U.S. Route 1 & St. Joe Rd., P.O. Box G, Palm Coast, FL 32037
ITT Mackay Marine, 2912 Wake Forest Road, Raleigh, N.C. 27611
Intermarine Electronics, Inc., Flowerfield Bldg. #7, St. James, N.Y. 11780
Iatron Corp., 5 Alfred Circle, Bedford, MA 01730
Maritel, Inc., 139 Old Solomon's Island Road, Annapolis, MD 21401
Nav-Com, Inc., 711 Grand Blvd., Deer Park, NY 11729
Navidyne Corp., 11824 Fishing Point Drive, Newport News, VA 23606

Navigation Communications Systems, Inc., 20100 Plummer Street, Chatsworth, CA 91311

North American Phillips Communication Corp., 91 Mckee Road, Mahwah, N.J. 07430

RCA Service Co., Building 204-2, Camden, N.J. 08101

Radar Devices, Inc., 2955 Merced Street, San Leandro, CA 94577

Raytheon Marine Co., 676 Island Pond Road, Manchester, N.H. 03103

Raytheon Ocean Systems Company, Westminster Park, Risho Avenue, East Providence, RI 02914

Raytheon Service Co., 103 Roesler Rd., Glen Burnie, MD 21061

Simrad Inc., 1 Labriola Court, Armonk, N.Y. 10504

Southern Marine Research, Inc., 1401 N.W. 89th Court, Miami, FL 33172

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

Texas Instruments Inc., P.O. Box 226080, M/S 3107, Dallas, TX 75265

Tracor, Inc., Industrial Products Div., 6500 Tracor Lane, Austin, Texas 78721

OILS—Marine—Additives

B. P. Marine North America Trading, Plaza 9, 900 Route 9, Woodbridge, NJ 07095

Ferrous Corporation, P.O. Box 1764, Bellevue, WA 98009

Gulf Oil Company—U.S. (Domestic Oils), 909 Fannin Street, Houston, TX 77001

Gulf Oil Trading Co., 1290 Ave. of Americas, New York, N.Y. 10019

Houston Marine Services, Inc., 505 Atrium One, 11811 1-10 East, Houston, TX 77029

Shell Oil Co., 1 Shell Plaza, Houston, Texas 77002

Mobil Oil Corporation, 150 East 42nd St., New York, N.Y. 10017

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

OIL/WATER SEPARATORS

Alfa-Laval, Inc., 2115 Linwood Avenue, Ft. Lee, NJ 07024

Butterworth Systems Inc., 224 Park Ave., Florham Park, N.J. 07932

Sigma Treatment Systems, 2 Davis Ave., Frazer, PA 19355

PAINTS—COATINGS—CORROSION CONTROL

Belzona Molecular Metalife Inc., 224 7th Street, Garden City, NY 11530

"CONSOL" manufactured by Hanline Bros., Inc., 1400 Warner St., Baltimore, MD 21230

Devco Marine Coatings Co., P.O. Box 7600 Louisville, KY 40207

Eureka Chemical Company, 234 Lawrence Ave., So. San Francisco, CA 94080

International Paint Co., 17 Battery Place North, Suite 1150, New York, N.Y. 10004

Jotun-Baltimore Copper Paint Co., 501 Key Highway, Baltimore, MD 21230

Mobil Chemical Co., Maintenance & Marine Coatings Dept., P.O. Box 250, Edison, N.J. 08817

Woolsey Marine Industries, Inc., 1250 Broadway, New York, NY 10001

PETROLEUM SUPPLIES

Houston Marine Services, Inc., 505 Atrium One, 11811 1-10 East, Houston, TX 77029

Shell Oil Co., 1 Shell Plaza, Houston, Texas 77002

PIPE—HOSE—Cargo Transfer, Clamps, Couplings

Camlock Flange Sales Corp., 449 Sheridan Blvd., Inwood, L.I., N.Y. 11696

CUNICO Corp., Cooney Pipe & Copper Works Div., 214 N. Hawaiian Ave., Wilmington, CA 90748

Hydro-Craft, Inc., 4223 Edgeland, Royal Oak, Mich. 48073

Kubota Ltd., 2-47, Shikit Suhigashi 1-Chome, Naniwa-Ku, Osaka 556-91, Japan

Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030

Tioga Pipe & Supply Company, 2450 Wheatshaf Lane, Philadelphia, PA 19137

PLASTICS—Marine Applications

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

PROPULSION EQUIPMENT—Bowthrusters, Diesel Engines, Gears, Propellers, Shafts, Turbines

Alco Power Inc., 100 Orchard St., Auburn, N.Y. 13021

Alstom-Atlantique, 2 quai de Seine, 93203 Saint-Denis, France

Armo Steel/Advanced Materials Div., 703 Curtis St., Middletown, OH 45043

Avondale Shipyards, Inc., P.O. Box 52080, New Orleans, La. 70150

Bird Johnson Company, 110 Norfolk St., Walpole, Mass. 02081

Burmeister & Wain Alpha Diesel AS, DK-1400 Copenhagen K., Denmark

Burmeister & Wain Diesel, Inc., 50 Broadway, New York, NY 10004

Caterpillar Tractor Company, Engine Division, Peoria, IL 61629

Colt Industries' Fairbanks Morse Engine Division, Beloit, Wis. 53511

Combustion Engineering, Inc., Windsor, Connecticut 06095

Electro-Motive Division, General Motors Corp., LaGrange, Ill. 60525

Elliott Company, (Div. of Carrier Corp.), Jeanette, PA 15644

General Electric Co., Diesel Power Products, 2901 E. Lake Rd., Erie, PA 16531

Kawasaki Heavy Industries, Ltd., 2-4-1 Hamamtsu-cho, Minato-ku, Tokyo, Japan

MTU of North America, Inc., 10450 Corporate Drive, Sugar Land, TX 77478

Maritime Industries, Ltd., 6307 Laurel St., Burnaby, B.C. Canada V5B 3B3

Michigan Wheel, 1501 Buchanan Ave., S.W., Grand Rapids, MI 49507

Omnithruster Inc., 15418 Cornet Ave., Santa Fe Springs, CA 90670

Oosterhuis Industries, Inc. (Marine Engineering, Inc.), P.O. Box 30587, New Orleans, LA 70190

Port Electric Turbine Div., 155-157 Perry St., New York, N.Y. 10014

Propulsion Systems Inc., 21213 76th Ave., So., Kent, WA 98031

Schottel of America, Inc., 8375 N.W. 56 Street, Miami, Fla. 33166

Skinner Engine Company, P.O. Box 1149, Erie, PA 16512

Steamco Corporation, 364 Stowe Avenue, Orange Park, FL 32073

Tacoma Boatbuilding Co./Escher Wyss, 1840 Marine View Dr., Tacoma, WA 98422

Transamerica Delaval Inc., Engine & Compressor Div., 550 85th Ave., Oakland, CA 94621

Transamerica Delaval, Inc., Turbine & Compressor Div., P.O. Box 8788, Trenton, N.J. 08650

Turbine Specialties, Inc., P. O. Box 207, West State Street Road, Salina, KS 67401

Vaith Schneider of America—U.S. Agent: Eli Sharprut, 347 Evelyn St., Paramis, N.J. 07652

PUMPS—Repairs—Drives

Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030

Transamerica Delaval, IMO Pump Division, P.O. Box 447, Monroe, NC 28110

Warren Pumps, Inc., Bridges Ave., Warren, Mass. 01083

REFRIGERATION—Refrigerant Valves

Bailey Refrigeration Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231

Port Refrigeration Div., 157 Perry Street, New York, N.Y. 10014

ROPE—Manila—Nylon—Hawsers—Fibers

American Mfg. Co., Inc., Willow Avenue, Honesdale, Pa. 18431

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

Tubbs Cordage Company, Orange, CA 92668

RUDDER ANGLE INDICATORS

Electric Tachometer Corp., 68th & Upland St., Philadelphia, Pa. 19142

Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913

Hose McCann Telephone Co., Inc., 524 W. 23rd St., N.Y. 10011

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

SANITATION DEVICES—Pollution Control

Argo Marine Pollution Systems Division, 140 Franklin St., New York, N.Y. 10013

Envirovac (Division of Dometic Inc.), 1260 Turret Drive, Rockford IL 61111

Marine Moisture Control Co., Inc., 449 Sheridan Blvd., Inwood, L.I., N.Y. 11696

Marland Environmental Systems, Inc., N. Main Street, Walworth, WI 53184

Microphor, Inc., P.O. Box 490, Willits, CA 95490

Red Fox Industries, P.O. Drawer 640, New Iberia, LA 70560

Research Products/Blankenship, 2639 Andjion, Dallas, Texas 75220

St. Louis Ship FAST Sewage Systems, 611 East Marceau St., St. Louis, Mo. 63111

Sigma Treatment Systems, 2 Davis Ave., Frazer, PA 19355

SCAFFOLDING EQUIPMENT—Work Platforms

Patent Scaffolding Co., 2125 Center Ave., Fort Lee, N.J. 07024

Spider Staging Sales Co., P.O. Box 182, Renton, Washington 98055

Trus Joist Corp., P.O. Box 60, Boise, Idaho 83707

SHACKLES

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

SHAFT SEALS, REVOLUTION INDICATOR EQUIPMENT

Bird-Johnson Co., 100 Norfolk St., Walpole, MA 02081

Electric Tachometer Corp., 68th & Upland St., Philadelphia, Pa. 19142

Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913

Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030

SHIPBREAKING—Salvage

American Ship Dismantlers, Inc., Division of Schlitz Industries, 3300 N.W. Yeon Avenue, Portland, Ore. 97210

The Boston Metals Co., 313 E. Baltimore St., Baltimore, Md. 21202

Levin Metals Corporation, 1310 Canal Blvd., Richmond, CA 94807

Zidell Explorations, Inc., 3121 S.W. Moody St., Portland, Ore. 97201

SHIPBUILDING STEEL

Armo Steel Corp., 703 Curtis St., Middletown, Ohio 45042

Bethlehem Steel Corp., One State Street Plaza, N.Y. 10004

SHIPBUILDING—Repairs, Maintenance, Drydocking

A.D.M. (Amsterdam Drydock Mfg.), Moatschappij bv, P.O. Box 3006, 1003 AA, Amsterdam, Holland

AMT, Inc., 2400 N.W. 39th Avenue, Miami, FL 33142

Asmar Shipyards Co., Astilleros y Maestranzas de la Armada, Prat 856, Piso 14, Casilla 150-V, Valparaiso, Chile, S.A.

Astilleros Espanoles S.A., 17 Padilla, P.O. Box 815, Madrid, Spain

Astilleros Unidos de Veracruz, S.A., San Juan de Ulua S/N, Apdo. Postal 647, Veracruz, Ver., Mexico

Avondale Shipyards, Inc., P.O. Box 52030, New Orleans, La. 70150

Bay Shipbuilding Corporation, 605 North Third Avenue, Sturgeon Bay, WI 54235

Bender Shipbuilding & Repair, P.O. Box 42, Mobile, AL 36601

Bergeron Industries Inc., P.O. Box 38, St. Bernard, La. 70085

Bethlehem Steel Corp., One State Street Plaza, N.Y. 10004

Blohm & Voss Company, 55 Morris Avenue, Springfield, NJ 07081

Bludworth Bond Shipyards Inc., P.O. Box 5065, Houston, TX 77012

Boeing Marine Systems, P.O. Box 3707, Mail Stop 14-11, Seattle, WA 98124

Ira S. Bushey & Sons, Inc., 764 Court Street, Brooklyn, N.Y. 11231

Cantieri Navali Riuniti, Via Cipro, 11, 16100 Genova, Italy

Carrington Slipways Pty. Ltd., Old Punt Road, Tomago, N.S.W., Australia 2322

Centromar, One World Trade Center, Suite 3557, New York, N.Y. 10048

China Shipbuilding Corp., c/o Allegro Transportation Supply Co., One Penn Plaza, Room 1606, New York, NY 10119

Conrad Industries, P.O. Box 790, Morgan City, La. 70380

Curacao Drydock Co., Inc., P.O. Box 153, Willemstad, Curacao, Netherlands Antilles

Curacao Drydock, 26 Broadway, Suite 741, New York, N.Y. 10004

Delattre-Levivier, Tour Fiat, Cedex 16, 92084 Paris La Defense, France

Dorbyl Ltd., Military Road, 1 Industrial Sites, West Bank, 5201 East London Republic of South Africa

Dravo Steelship Corp., R.4. Box 167, Pine Bluff, Ark. 71602

Equitable Shipyards, Inc., P.O. Box 8001, New Orleans, La. 70122

FMC Corp., Marine & Rail Equipment Div., 4700 N.W. Front Ave., Portland, Oregon 97208

Galveston Shipbuilding Co., P.O. Drawer 2660, Galveston, TX 77553

HBC Barge, Inc., Grant Building, Pittsburgh, PA 15219

Halifax Industries Ltd., P.O. Box 1477, Halifax, Nova Scotia, Canada, B3K 5H7

Halter Marine, Inc., P.O. Box 29266, New Orleans, La. 70189

Havre de Grace, Havre de Grace, Md.

Hitachi Shipbuilding & Engrg. Co., Ltd., 47 Edojori 1-Chome, Nishi-Ku, Osaka, Japan

Hong Kong United Dockyards Ltd., P.O. Box 534, Kowloon Central Post Office, Kowloon, Hong Kong

Hudson Shipbuilders, Inc., P.O. Box Q, Pascagoula, MS 39567

Jackson/Engineering Company, Inc., 2945 Richmond Terrace, Staten Island, NY 10303

Jeffboat, Inc., Jeffersonville, Ind. 47130

Keppel Shipyard Ltd., P.O. Box 2169, 325, Telok Blangah Road, Singapore 4

Levingston Shipbuilding, P.O. Box 968, Orange, TX 77630

Lockheed Shipbuilding and Construction Co., 2929 16th Avenue, S.W., Seattle, Wash. 98134

McDermott Incorporated, 1010 Common Street, New Orleans, LA 70160

MacGregor Land & Sea, Inc., 135 Dermody Street, Cranford, NJ 07016

Mangone Shipbuilding Co., 819 South 80th Street, P.O. Box 5446, Houston, TX 77012

Marine Fabricators, P.O. Box 246, Green Cove Springs, FL 32043

Mattson Shipyard Co., Inc., P.O. Box 645, Cohoes, New York 12047

Midland Marine Corporation, One Pennsylvania Plaza, New York, NY 10001

Misener Industries, Inc., 5353 Tyson Avenue, P.O. Box 13625, Tampa, Fla. 33681

Mississippi Marine Towboat Corp., P.O. Box 539, Harbor Front Industrial Park, Greenville, MS 38701

Monark Boat Co., P.O. Box 210, Monticello, Ark. 71655

Nashville Bridge Company, P.O. Box 239, Nashville, TN 37202

National Steel & Shipbuilding Corp., San Diego, Calif. 92112

Newpark Shipbuilding & Repair, P.O. Box 5426, Houston, TX 77012

Newport News Shipbuilding & Dry Dock Co., 4101 Washington Ave., Newport News, Va. 23607

North American Hydraulics, P.O. Box 278, Brampton, Ontario Canada L6V 2L1

O.A.R.N. (Officine Allestimento-Riprazioni Navi), P.O. Box 1395 Genoa, Italy 16100

Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501

Pearlson Engineering Co., P.O. Box 8, Kendall Branch, Miami, Fla. 33156

Perth Amboy Dry Dock Co., Perth Amboy, N.J. 08862

Port Allen Marine Service, Inc., P.O. Box 108, Port Allen, LA 70767

Port Houston Marine, Inc., 7220 J.W. Peavy Drive, Houston, TX 77012

Port of Portland, P.O. Box 3529, Portland, OR 97208

Promet (PTE) Ltd., 27 Pandam Rd., Jurong Industrial Estate, Singapore 22

S.E.B.N., Societa Estercozio Bacini Napoletani, Via Marinella Varco N.6 (80133) Naples, Italy

St. Louis Shipbuilding—Federal Barge, Inc., 611 East Marceau, St. Louis, Mo. 63111

STE Marie Yard & Marine, Inc., 741 East Portage Ave., Sault Ste Marie, MI 49783

Savannah Shipyard Co., P.O. Box 787, Savannah, GA 31402

Sembawang Shipyard Ltd., Sembawang, P.O. Box 3, Singapore 9175

The Service Machine Group, Inc., P.O. Box 2664, Morgan City, LA 70308

Setenave-Estaleiros Navais De Setubal, P.O. Box 135, Setubal, Portugal

Southwest Marine, Inc., P.O. Box 13308, San Diego, Ca 92113

Sudoimport, 5 Kalyaevskaya, Moscow K-6, USSR

Sun Ship Inc., Chester, PA 19013

Swiftships Inc., P.O. Box 1903, Morgan City, LA 70380

Tacoma Boatbuilding Co., Inc., 1840 Marine View Drive, Tacoma, WA 98422

Tandanor (Piacentini), Antartida Argentina 555 Darsena Norte, (1104) Buenos Aires-Republica Argentina

Thomas Marine Inc., 37 Bransford Street, Patchogue, NY 11772

Todd Shipyards Corp., 1 State St. Plaza, New York, N.Y. 10004

Total Transportation Systems Inc., 813 Forest Dr., Newport News, VA 23606

Total Transportation Systems (International) A/S, Bjornegarden, P.O. Box 28, N5201 Oslo, Norway

Tracor Marine, P.O. Box 13107, Port Everglades, Fla. 33316

Tug Barge Systems, Inc., subsidiary of Ingram Corp., 4100 One Shell Square, New Orleans, La. 70139

Union Dry Dock & Repair Co., Foot of Pershing Road, Weehawken, N.J. 07087

Wiley Manufacturing, a unit of AMCA International Corp., P.O. Box 97, Port Deposit, MD 21904

SHIP STABILIZERS

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

SMOKE INDICATORS

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

STUFFING BOXES

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

SURVEYORS AND CONSULTANTS

Francis B. Crocco, Inc., P.O. Box 1411, San Juan, Puerto Rico 00903

Hull & Cargo Surveyors, Inc., 99 John St., New York, NY 10038

TANK CLEANING

Butterworth Systems Inc., 224 Park Ave., P.O. Box 352, Florham Park, N.J. 07932

Environmental Chemicals, Inc., 487 Division Street, Boonton, NJ 07005

Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030

Salwico, Inc., 77 River St., Hoboken, N.J. 07030

TANK LEVELING INDICATORS

Transamerica Delaval, Inc., Gem Sensors Div., Spring Lane, Farmington, CT 06032

Vu-Gage System, 150 E. 42nd St. (Room 910), New York, NY 10017

Zesco, Inc., 3131 Brian Park, Suite 1095, Houston, TX 77042

TECHNICAL MANUAL PREPARATION

Tenhorf, Inc., 2468 N. Jerusalem Road, N. Bellmore, NY 11710

TERMINALS—Oil-Transfer

Caicos Petroleum Services Div., Federal Chicago Corp., 2222 North Elston Avenue, Chicago, IL 60614

Delong Corp., 29 Broadway, New York, N.Y. 10006

Transportation Concepts & Techniques Inc., 1020 West Main Street, Charlottesville, VA 22903

TOWING—Barges, Vessel Chartering, Lighterage, Salvage, etc.

Bay-Houston Towing Co., 805 World Trade Bldg., Houston, Texas 77002

Chatin Transportation, Inc., 580 Walnut St., Cincinnati, Ohio 45202

Curtis Bay Towing Co., Mercantile Bldg., Baltimore, Md. 21202

Henry Gillen's Sons Lighterage, 21 West Main St., Oyster Bay, N.Y. 11771

Great Lakes Towing Company, 1800 Terminal Tower, Cleveland, OH 44113

Gulf Fleet Marine Corporation, Canal Place One, Suite 2400, New Orleans, LA 70130

James Hughes, Inc., 17 Battery Pl., New York, N.Y. 10004

McAllister Bros., Inc., 17 Battery Pl., New York, N.Y. 10004

McDonough Marine Service, P.O. Box 26206, New Orleans, La.

Moran Towing & Transportation Co., Inc., One World Trade Center, Suite 5335, New York, N.Y. 10048

Ocean Salvors Company, One World Trade Center, New York, NY 10048

Smit International (Americas) Inc., 17 Battery Place, New York, NY 10004

Suderman & Young Co., Inc., 918 World Trade Bldg., Houston, Texas 77002

Turecamo Coastal & Harbor Towing Corp., One Edgewater St., Clifton, Staten Island, N.Y. 10305

TRAINING SERVICES—Simulator

Ship Analytics, Park Circle, Centerport, NY 11721

VALVES AND FITTINGS

Dover Corporation, Norris Division, P.O. Box 1739, Tulsa, OK 74101

Hayward Marine Products, 900 Fairmount Avenue, Elizabeth, NJ 07207

Marine Moisture Control Co., 449 Sheridan Blvd., Inwood, N.Y. 11696

Marland Environmental Systems Inc., N. Main St., Walworth, WI 53184

Rockwell International, Flow Control Division, 400 N. Lexington Avenue, Pittsburgh, PA 15208

Stacey Valve Co., 29 Meserole Ave., Brooklyn, N.Y. 11222

Voss, Inc., Building J, 7029 Huntley Road, Columbus, Ohio 43229

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

Waukesha Bearings Corp., P.O. Box 798, Waukesha, WI 53186

Winel of America, Inc., 16014 Cowley Road, Grafton, OH 44044

WATER PURIFIERS

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

Halogenic Products Corporation, P.O. Box 27488, Salt Lake City, UT 84127

WINCHES AND FAIRLEADERS

Bloom Inc., Highway 20, West Four Miles, Independence, IA 50644

Clyde Iron, a unit of AMCA International Corp., Suite 102, 2300 West Loop South, Houston, TX 77027

Gearmatic Co. Ltd., 7400 132nd Street, Surrey, B.C., Canada

Markey Machinery Co., 79 South Horton St., Seattle, Washington 98134

Smith-Berger Manufacturing Corporation, 3236 16th Avenue S.W., Seattle, WA 98134

WINDOWS

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

WIRE AND CABLE

Anixter Bros., Inc., 4711 Golf Road, One Concourse Plaza, Skokie, Illinois 60076

Seacoast Electric Supply Corp., 225 Passaic St., Passaic, NJ 07055

Seacoast Electric Supply Corp., 1505 Oliver St., Houston, TX 77007

WIRE ROPE—Slings

Armo Steel Corp., 703 Curtis St., Middletown, Ohio 45042

Bethlehem Steel Corp., One State Street Plaza, N.Y. 10004

ZINC

Smith & McCracken, 153 Franklin St., New York, N.Y. 10013

This directory section is an editorial feature published in every issue for the convenience of the readers of MARITIME REPORTER/Engineering News. A quick-reference readers' guide, it includes the names and addresses of the world's leading manufacturers and suppliers of all types of marine machinery, equipment, supplies and services. A listing is provided, at no cost for one year in all 24 issues, only to companies with continuing advertising programs in this publication, whether an advertisement appears in every issue or not. Because it is an editorial service, unpaid and not part of the advertisers contract, MR/EN assumes no responsibility for errors.

U.S. SHIP CONSTRUCTION CONTRACTS

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

Builder	Owner	Total No.	Type	Hull Nos.	Est. GT (Each)	Est. DWT (Each)	Est. HP (Each)	Est. Total Cost (\$Mil.)
American Ship Building	Interlake Steamship	1	Bulk	909	32,000	59,000	D-16,000	50.0
Avondale Shipyards	American President Lines	3	Container	2329-31	40,500	30,300	D-43,200	330.0
	Suwanee River	3	Tug/Barge	2323-8	16,000	41,300	D-18,200	111.6
	Ogden Marine	2	Products	2318-19	25,000	42,000	D-15,000	100.0
	Eagle Dredging	1	Dredge	2320	4,200	4,900	D-7,500	30.0
	Corps of Engineers	1	Dredge	2322	9,900	8,000	D-10,400	67.5
	United States Trust	1	Dredge	2332	—	—	—	30.0
Bath Iron Works	Corps of Engineers	1	Dredge*	402	6,000	—	D-7,000	65.0
	Falcon I Sea Transport	2	Tanker	403-4	24,000	33,900	D-14,720	142.0
	Calif. & Hawaii Sugar	1	Barge*	405	21,000	37,000	—	25.0
Bay Shipbuilding	Goodyear Steamship	1	Bulk	724	12,000	23,500	D-7,500	25.0
	Ogelbay Norton	1	Bulk	726	33,000	50,000	D-14,000	52.4
	Beker Shipping	1	Bulk Barge	728	20,000	41,000	—	NA
	Universal American Barge	1	Bulk Barge	729	17,500	33,000	—	NA
	Ocean Barge	1	Bulk Barge	730	17,500	33,000	—	NA
Bethlehem-Sparrows Point	Artemis Marine	1	Tug/Barge	4652	32,000	47,000	D-18,200	52.6
	First-Fifth Tug/Barge	5	Tug/Barge	4653-7	32,000	47,000	D-18,200	266.0
Equitable Shipyards	City of New York	2	Ferry	1713-14	3,000	4,200	D-7,800	30.0
General Dynamics-Quincy	Bulkfleet Marine	2	Tug/Barge	055-6	12,000	27,000	D-8,000	NA
	Coastwise Shipping	3	Tank Barge	023-5	—	—	—	NA
	New England Electric	1	Collier	—	23,500	36,000	T-12,000	60.0
Levingston Shipbuilding	Asco Falcon I	3	Bulk	751-3	23,500	36,000	D-14,800	120.0
Mangone Shipbuilding	Sun Transport	1	Products	129	1,600	2,300	D-1,900	NA
National Steel & SB	Union Oil	3	Products	415-17	24,500	37,500	T-13,000	150.0
	American Tankships	2**	Products	419-20	24,500	37,500	D-11,400	102.0
	American Trading Trans.	3	Products	424-6	27,000	44,000	D-11,400	153.0
Norfolk Shipbuilding	Corps of Engineers	1	Dredge	178	2,750	—	D-2,250	18.5
Sun Ship, Inc.	Sun Transport	1	Products	677	17,000	31,000	D-14,200	36.0
	Waterman Steamship	3	RO/RO-Cont.	679-80, 82	18,500	23,500	T-32,000	207.1
Upper Peninsula SB	State of Michigan	1/4	Tug(1)/ Barge(4)	001-5	5,400	10,000	D-8,000	35.5

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

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

Builder	Owner	Name	Type	Delivery
Alabama Maritime Mobile, Ala.	Diamond M	Diamond M. Hunter Diamond M. Eagle	Semisub.	11/81 4/82
Baker Marine Ingleside, Texas	Huthnance Dlg. Huthnance Dig. Magnum Marine Magnum Marine Magnum Marine Marine Drilling	Charger I Charger II Mr. Demp Robert N. Haskin Robert W. Womack J. Storm XV	Jackup	6/81 9/81 11/81 5/82 6/82 3/81
Bethlehem Steel Beaumont, Texas	Broughton Offshore Griffin-Alexander	Broughton II Griffin-Alexander I Griffin-Alexander II Griffin-Alexander V Griffin-Alexander VII	Jackup	3/81 4/81 6/81 5/82 9/82
	Houtech Energy	Houtech I Houtech II Houtech III Houtech IV	"	8/81 10/81 3/82 9/82
	Marine Drilling	J. Storm XVI J. Storm XVII (unnamed)	"	7/81 9/81 1/82
Bethlehem Steel Sparrows Point, Md.	Houston Offshore Griffin-Alexander	Sabine III Griffin-Alexander III Griffin-Alexander IV Griffin-Alexander VI	Jackup	6/81 10/81 3/82 6/82
	Temple Drilling	Cheyenne	"	4/82
General Dynamics Charleston, S.C.	Bailey & Shannon Inc.	Bill Bailey Bob Warner	Jackup	10/81 12/81
Ingalls Shipbuilding Pascagoula, Miss.	Transworld Drilling	Transworld 69 Transworld 70 Transworld 72 Transworld 73	Submersible	6/81 8/81 11/81 2/82
	Bonito Offshore Chiles Drilling Global Marine	Bonito I Yucatan Glomar Main Pass I Glomar Main Pass II Glomar Main Pass III Glomar Main Pass IV	Jackup	3/82 9/81 11/81 1/82 5/82 9/82
	Huthnance Drilling	Vanguard I Vanguard II	"	7/81 10/82
	Keyes Offshore	Keyes 300 Keyes 301 Keyes 302 Keyes 303	"	3/81 5/81 6/81 7/82
Levingston Shipbuilding Orange, Texas	Dixilyn-Field Noble Drilling	DF-87 Ed Holt (unnamed) (unnamed)	Jackup	4/81 10/81 12/82 5/82
Marathon LeTourneau Brownsville, Texas	Compania Perforadora Chiles Drilling Global Marine	(unnamed) Seabee Glomar High Island V Glomar Adriatic I Glomar Adriatic II Glomar Adriatic IV	Jackup	3/83 3/81 7/81 10/81 8/83
	Penrod Drilling	Penrod 86 Penrod 88 Penrod 90 (unnamed)	"	2/82 5/82 8/82 12/82
Marathon LeTourneau Vicksburg, Miss.	Rowan Drilling Penrod Drilling	Penrod 87 Penrod 89 Penrod 91 Charles Rowan Arch Rowan Gilbert Rowe Cecil Provine (unnamed) (unnamed)	Jackup	5/82 9/82 1/83 3/81 6/81 10/81 3/82 9/83 1983

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

Builder	Owner	Name	Type	Delivery
Vemar Shipyard Channelview, Texas	Rowan Drilling Atwood Oceanics Cliffs Drilling Penrod Drilling	(unnamed) Richmond (unnamed) (unnamed) Penrod 170 Penrod 171 Penrod 172	Jackup Submersible Jackup Submersible Submersible Submersible	1984 9/81 7/81 11/81 12/81 4/82 8/82

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

Builder	Type	Navy Nos.	No.	Est. Contract Value, \$Mil.
Avondale Shipyards	Fleet Oiler	AO-178-9 AO-180, 186	2 2	\$144.0 146.2
Bath Iron Works	Guided-Missile Frigate	FFG-21, 24, 26 FFG-29, 32, 34 FFG-36, 39, 42 FFG-45, 47, 49	3 3 3 3	178.2 147.0 209.9 203.0
Boeing Marine Systems	Missile Patrol Hydrofoil	PHM-2 PHM-3-6	1 4	21.3 178.0
GD-Electric Boat	Attack Submarine	SSN-698-9 SSN-700-4 SSN-705-10 SSN-719-20	2 5 6 2	856.0 2,171.4 2,605.6
	Trident Submarine	SSBN-726 SSBN-727-9 SSBN-730 SSBN-731-2 SSBN-733	1 3 1 2 1	285.4 699.4 354.5 699.0 401.0
Ingalls Shipbuilding	Missile Destroyer Destroyer Aegis Missile Cruiser	DDG-993-6 DD-997 CG-47	4 1 1	1,400.0 231.0 287.8
Lockheed Shipbuilding	Sub. Tender Dock Landing Ship	AS-41 LSD-41	1 1	209.5 338.6
Marinette Marine	Fleet Ocean Tug	T-ATF-171-2	2	16.8
National Steel & SB	Destroyer Tender Cable Repair Ship	AD-42-4 T-ARC-7	3 1	520.0 107.0
Newport News SB	Attack Carrier Attack Submarine	CVN-70-71 SSN-711 SSN-712-15 SSN-716-18	2 1 4 3	1,718.6 111.4 388.0 380.8
Peterson Builders	Patrol Gunboats **	F-PGG-2-9	8	70.1
Tacoma Boatbuilding	Missile Patrol Chaser ** Med. End. Cutter*	F-PCG-1-4 WMEC-901-4	4 4	52.5 130.0
Todd-San Pedro	Guided Missile Frigate	FFG-14 FFG-19, 23, 25 FFG-27, 30, 33 FFG-38, 41, 43 FFG-46	1 3 3 3 1	48.7 151.0 147.0 214.8 67.7
Todd-Seattle	Guided-Missile Frigate	FFG-18 FFG-20, 22 FFG-28, 31, 35 FFG-37, 40 FFG-44, 48	1 2 3 2 2	49.6 100.7 147.0 143.2 135.3

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

WARNING CALL YOUR ELECTRICIAN

Your building may have one of these Federal Pacific Circuit Breakers which need to be replaced, or field modified:

NEJ/HEJ NFJ/HFJ NEG/HEG NEF NP

Under certain conditions these breakers could cause personal injury or property damage.

FPE circuit breakers are most likely to be found in enclosures marked FPE. However, they *may* also be found in *some* enclosures made by other manufacturers.

THEY WILL NOT BE FOUND IN ENCLOSURES MARKED GE, WESTINGHOUSE, ITE, SQUARE D, AND CUTLER-HAMMER.

Because of the difficulty in identifying these devices, have your on-site electrician or facility engineer review the following chart to determine if you have any of these FPE Breakers.

Identification chart of breakers involved in corrective actions

BREAKER TYPE	AMPERE RANGE	POLES	VOLTS A.C. RATING MAX.	TYPE OF FACILITY	CORRECTIVE ACTION REQUIRED
NEJ/HEJ	70-225	2 & 3	240	Light Industrial	REPLACE BREAKERS
NFJ/HFJ	70-225	2 & 3	600	Industrial	REPLACE BREAKERS INSTALLED ON ELECTRICAL SYSTEMS ABOVE 550 VOLTS
NEG/HEG	30-100	2 & 3	600	Heavy Industrial	MODIFY BREAKERS INSTALLED ON 480 VOLTS OR ABOVE. MODIFY BREAKERS INSTALLED IN FPE ENCLOSURES 1100T.
NEF	40-100	2 & 3	480 600	Commercial and Industrial	REPLACE BREAKERS
NP	600-2500	2 & 3	600	Large Electrical Distribution Systems	REPLACE BREAKERS INSTALLED ON ELECTRICAL SYSTEMS WITH AVAILABLE FAULT CURRENTS ABOVE 85,000 AMPERES AT 240 VOLTS OR 50,000 AMPERES AT 480 AND 600 VOLTS OR WHERE ROUTINELY USED AS A SWITCH

This is part of a program voluntarily initiated by Federal Pacific. The Consumer Product Safety Commission has been notified. Lab tests have indicated that these Circuit Breakers could cause personal injury or property damage. Federal Pacific will respond as soon as possible by phone or mail. Allow 6 weeks for this preliminary contact.

If your electrician finds you have these FPE breakers in service, or if he is uncertain, please call, toll free: 800-526-3962 (In New Jersey: call collect: 201-526-1330).

Yes. We have _____ breakers in use. MR

Please have an FPE engineer contact us.

Name _____

Title _____

Company _____

Address _____

Phone _____



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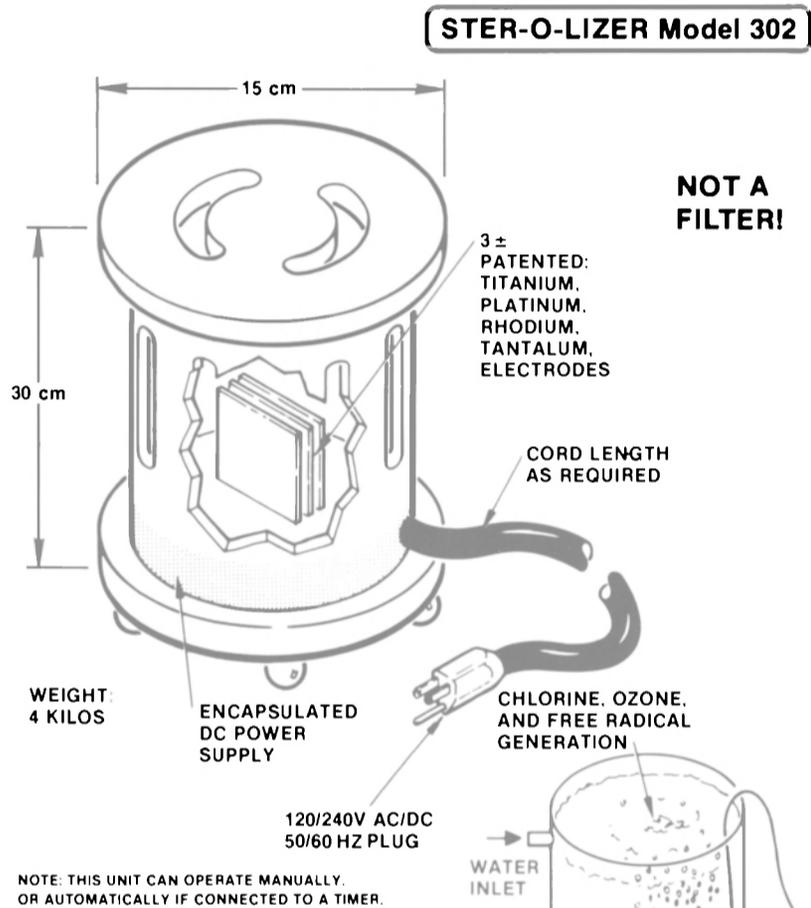
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Write 470 on Reader Service Card

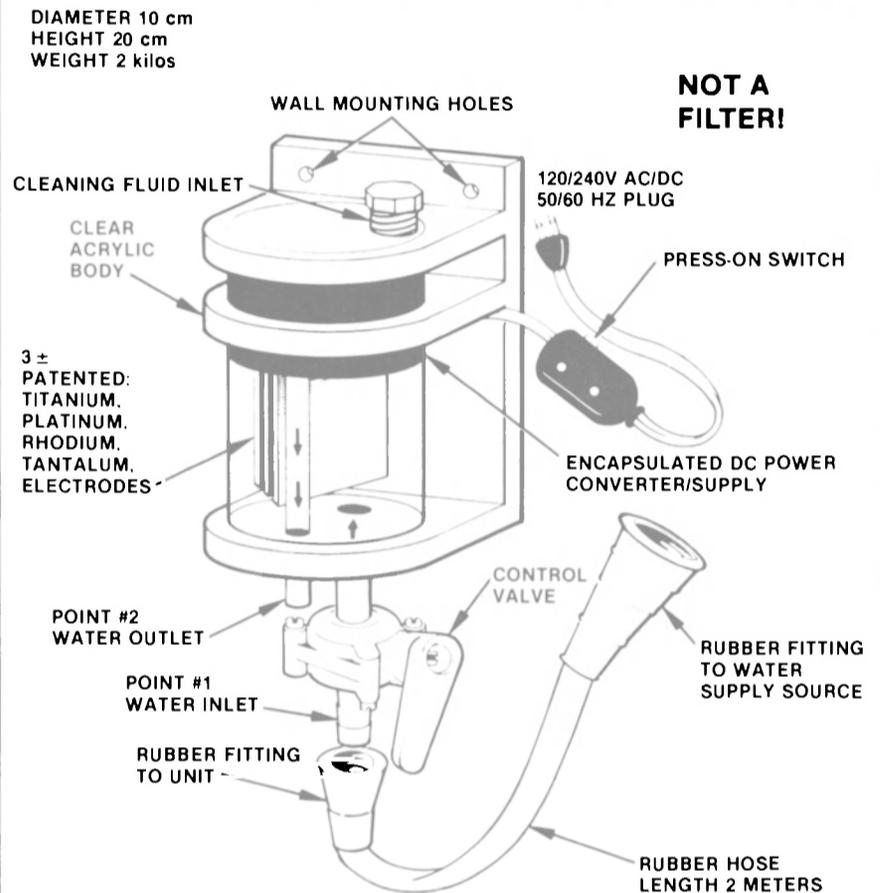
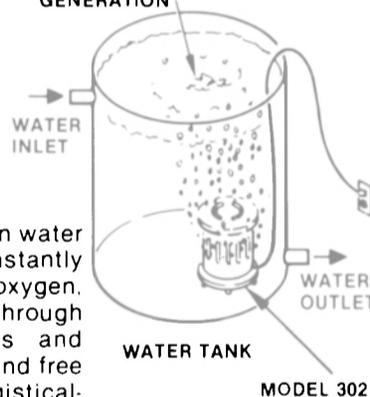
● BACTERIA-FREE WATER ● PATHOGEN-FREE WATER ● STERILE WATER WITHOUT FILTERS, CHEMICALS, ULTRA VIOLET LIGHTS, BOILING, REVERSE OSMOSIS, ETC.!

A NEW AND SCIENTIFICALLY PROVEN WAY TO KILL ALL WATER-BORNE BACTERIA, INSTANTLY AND AUTOMATICALLY!

The fastest, easiest, most economical way to sterilize water for homes, industries, hospitals, marine uses, laboratories, agriculture, sewage, and a myriad of other uses and applications without altering the color, taste, odor or texture of the water!



To operate this unit, simply immerse it in water and plug it in. Nothing else! This unit instantly separates the water into hydrogen and oxygen, and the salt into sodium and chlorine, through electrolysis. Thus, it manufactures and releases pure nascent chlorine, ozone and free radicals into the water. Working synergistically, these halogens are known to be a powerful germicidal agent, capable of instantly destroying all water-borne bacteria, rendering the water pathogen-free, sterile and safe for human consumption. It may also be used for sterilization of livestock water, food processing and a myriad of other applications. For drinking purposes, where the water contains about 50 ppm salt, capacity of Model 302 is about 200 liters per half-hour (10,000 liters per 24-hour day of continuous operation). Electrical consumption is 15 amps at 120 V, and 30 amps at 240 V. AC/DC 50-60 Hz. If water contains more than 50 ppm salt, consult the factory for modification to accommodate salt content. Higher salt content increases sterilizing capacity.



STER-O-LIZER Model 310

CAPACITY:
4 liters per minute
6,000 liters per day

STER-O-LIZER Model 320

CAPACITY:
8 liters per minute
12,000 liters per day

To operate this unit, simply introduce running water which contains no more than 50 ppm salt at point #1. Plug it in and press the switch. Nothing else. The water will exit at point #2 free of all water-borne bacteria, pathogen-free, sterile, ready for immediate human consumption, or it can be stored for later use. If the water contains more than 50 ppm salt, the factory can adjust this unit to take up to 30,000 ppm salt. The process used is electrolysis of the water and its salt. The patented electrodes generate nascent chlorine, ozone and free radicals, known as a powerful germicidal agent. Electrical consumption is from 6 to 20 amps.

FEATURES OF THE STER-O-LIZERS:

- INFINITE USES AND APPLICATIONS ● SUPERIOR CONSTRUCTION
- NO MOVING PARTS ● NOTHING TO ADJUST OR WEAR OUT ● MAINTENANCE FREE
- AMAZINGLY SIMPLE AND EFFECTIVE BACTERIA KILLER ● MIRACLE OF MINIATURIZATION
- IT REPLACES BULKY SYSTEMS COSTING MANY TIMES MORE TO BUY, OPERATE AND MAINTAIN

For information on retail purchases, dealerships, and license to manufacture write:

HALOGENIC PRODUCTS CORPORATION

P.O. Box 27488, Salt Lake City, Utah 84127 U.S.A.

Telephone: (801) 532-5600 Telex: 388-310 HALOGENICS SLC

Registered with the Food and Drug Administration and Environmental Protection Agency

Write 146 on Reader Service Card

Simrad designs and builds every piece of marine electronic equipment to meet the most stringent legal requirements not only of the U.S. Government but all over the world. Important? Yes. But not as important as the everyday safety of your boat and your crew. So Simrad goes beyond legal requirements to make sure that your electronics are accurate, reliable, tough and easy-to-use. Quality that you can depend on, and economical so that you can afford to have all the protection that you and your crew deserve.

Simrad can help you pass IMCO inspection... and much more!

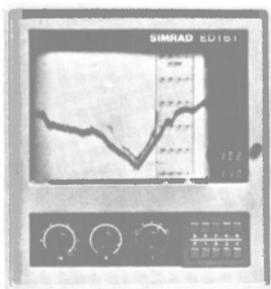
Simrad Loran C's are designed and manufactured to meet or exceed the U.S. Coast Guard endorsed RTCM Minimum Performance Standard (MPS).



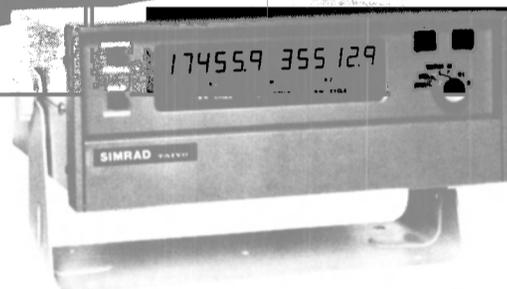
TL-856 Loran C Navigator automatically computes and displays TD's, Lat/Long, course, ground speed, time and distance to any of ten waypoints, as well as cross-track error. It can acquire and track all Loran C masters and secondaries worldwide. Four tunable and two preset notch filters for professional performance even in high interference areas. *TL-856 makes it all simple.*



2182 KHz Watch Alarm Receiver. Simrad's new, compact, FCC approved Watch Alarm Receiver, RW 105, fulfills all legal requirements of the new IMCO/SOLAS Regulations. The RW 105 also meets the specifications for most other maritime regulatory agencies. It can be set to receive all transmissions on the 2182 KHz distress frequency or automatically mute all but distress signals preceded by the two-tone alarm. An internal digital clock lifts the mute during radio silence periods. Connection for optional tape recorder or remote speaker, and built-in test generator are standard. *Easily fits into limited space.*



New Digital Recording Sounders. Simrad offers two economical navigation recording echosounders that meet IMCO recommendations for merchant vessels. In addition to showing a well defined bottom on recording paper, the systems have independent digital depth indicators and depth alarms. The Simrad ED-161 has four recording ranges from 0-25 to 0-550 fathoms. For navigating in shallower waters, the 200 KHz ED-162 has four ranges from 0-30 feet to 0-250 fathoms. The optional IR-201 Remote Digital Analog Indicator displays depth in feet, meters and fathoms. An optional transducer selector with alarm (TS-101) allows use of up to four transducers. Due to Simrad's special engineering, some vessels can be retrofitted from inside the hull without having to drydock. Contact Simrad for details.



TL-838 Loran C Receiver simultaneously displays two lines of position from automatically acquired and tracked masters and all available Loran C secondaries. TL-838 has four tunable and two preset notch filters for outstanding performance, worldwide. It incorporates a three point memory, and *very fast acquisition and settling.*



Loran C Coordinate Converter Model TC-28A adds total navigation functions to most Simrad Loran C Receivers. Converts TD's to Lat/Long, memorizes up to ten waypoints and calls up course and distance to any of them. Computes and displays on command time to destination and cross-track error. Installs directly on TL-838 or separately with other Simrad models. *Makes them all navigators.*



Two IMCO approved automatic direction finders, the TD-A202B and the TD-C328HATS (shown), are now offered by Simrad. The TD-A202B has frequency ranges of 200-580 KHz beacon band and 1.5-2.8 MHz marine band. The TD-C328HATS has a range of 200 KHz to 13.5 MHz. Both are highly sensitive superheterodyne receivers. *They lock in fast.*

SIMRAD
A trusted name at sea.

Simrad Inc., One Labriola Court,
Armonk, NY 10504 (914) 273-9410

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NOW REPRESENTED IN THE UNITED STATES BY



PENCO



The team you can trust for your ships and machinery :

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- Routine dry-dockings or lengthenings
- Harbour repairs or extensive conversions
- Reconditioning of engine parts between voyages or most difficult engine repairs
- "Flying Squad" services en-voyage or
- Maintenance of engine plants on a yearly contract basis

Incomparable facilities

- Large dock 331, 60x57, 46x7, 70m, 450 t crane
 - Floating dock 170x23x6m, 8 500 t lifting capacity
 - Repair quays for simultaneous repair of several vessels, crange up to 150 t; floating crane
 - Repair base at Bremerhaven with floating dock
- Machine shops with advanced techniques for any kind of efficient machining of heavy engine parts. Reconditioning of crankshafts in situ. Licensee for MAN engines; Stal-Laval turbines; Foster Wheeler and Babcock & Wilcox boilers.



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AND ENDS WITH**

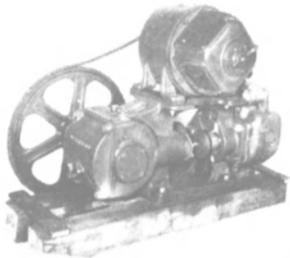
PENCO

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PUMPS

WORTHINGTON 2½x2 SANITARY & FLUSHING PUMP — 20 GPM — 80 LBS



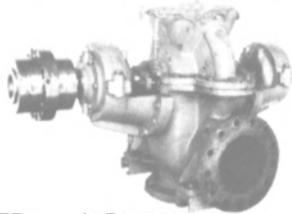
Motor driven type KAA — 1½" suction — 1" discharge. MOTOR: 2 HP — 230 VDC. Can also be furnished with A.C. motor if desired.

UNUSED 5"x4" — 500 GPM @ 20 PSI — 1800 RPM WEIL GENERAL CIRCULATOR SERVICE PUMP

With totally enclosed explosion-proof motor. Bronze pump — horizontally split case — flooded submergence test pressure 300 PSI. MOTOR: Continental 10 HP — 440/3/60 — 1800 RPM — fan cooled — totally enclosed — horizontal — self-ventilated — EXPLOSION-PROOF. Unit 60" long — 24" flange to flange.

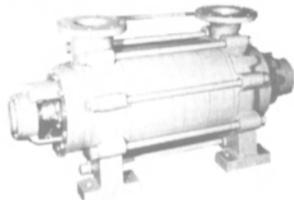
2000 GPM @ 75'

BRONZE PUMPS



8X8 — 2000 GPM @ 75' — 1750 RPM — requires 50 HP 440/3/60 1750 RPM motor — frame 445-S. Pumps are ball-bearing split case centrifugals with cast iron driplip base. Very good condition.

UNUSED NIJUIS FIRE PUMP — PUMP ONLY



HID-5125250 — 531 GPM @ 323' head @ 1800 RPM

6X5 BRONZE GARDNER-DENVER PUMP

Split case type D — 1000 GPM — 125 lbs — 281' @ 1800 RPM. Requires 100 HP diesel drive. Suction lift 15 to 25' — 10½" diameter flange. 6" Suction 5" Discharge.

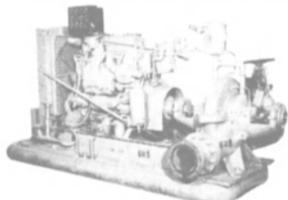
"EUREKA" DUPLEX DOUBLE-ACTING RECIPROCATING BILGE PUMP 500 GPM — 100' HEAD

Motor driven — pump operates at 320 RPM. MOTOR: 15 HP — 440/3/60 1750 RPM. DIMENSIONS: 5'9" high — 3' wide — 4' deep. Ex-M.V. Globtic Sun.

NIJUIS 3510 GPM DIESEL DRIVEN FIRE PUMP

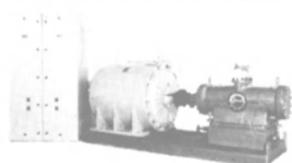
3510 GPM @ 350' head — 161.7 PSI. Pump is 10X8 — factory new — horizontally split case. ENGINE: GM 6V-71 or 8-V-71. Can furnish with heat exchanger & radiator.

GARDNER-DENVER 6"x5" BRONZE CENTRIFUGAL FIRE OR JETTING PUMP



Driven by GM 3-71 diesel engine. PUMP: 1000 GPM @ 150 PSI/1500 GPM @ 100 PSI — 1750/2000 RPM. Maximum head 175 PSI. Self-contained fuel tank in base. Automatic self-priming optional.

NEW UNUSED — 700 GPM — 150 PSI DELAVAL ROTARY PUMP



6X8 — 700 GPM @ 150 PSI — 1150 RPM — with 4-speed motor & control 100/75/50/37.5 HP — 440/3/60 — 1200/900/600/450 RPM. With Cutler-Hammer controller.

UNUSED BRONZE 2000 GPM @ 337' HEAD FIRE OR HIGH PRESSURE SERVICE PUMP



Mfg by Frederick Iron & Steel — 8" side discharge; — 8" bottom suction — model 8DSU-SPL. MOTOR: Crocker Wheeler — 250 HP — 240 volts DC — 1900 RPM — 102 7/8" O.A.L. — 34½" wide — 37" high.

NEW UNUSED KINNEY 20 GPM FUEL OIL SERVICE PUMP

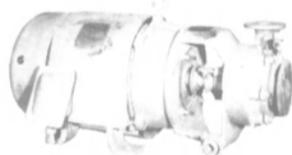
Vertical — 50 PSI — with 2" inlet & outlet. MOTOR: 2 HP — 440/3/60 860 RPM — with starter. For fuel oil service, etc.

NEW UNUSED SUMP OR LOW PRESSURE DRAIN PUMPS



Bronze — 40 GPM @ 40 PSI. 2" Discharge — single impeller — CW rotation — 32" from deck plate to base. Complete with flotation equipment. Totally enclosed 5 HP 440/3/60 1725 RPM motor. Repair parts for motor & pump included.

CARVER CHILLED WATER SERVICE PUMP 160 GPM — 57 PSI



For air conditioning or water circulation. 160 GPM @ 57 PSI — 110 ft. head. Closed coupled — 10 HP 440/3/60/3500 RPM.

500 GPM FIRE SERVICE PUMP



Mfg. by Buffalo. Bronze — 500 GPM @ 100 Lbs. — 5X4 — 30 HP/240 DC — 105 amps — 1750 RPM.

PASSENGER/CRUISE SHIP SELF PRIMING NEW WORTHINGTON VERTICAL SUBMERSIBLE BILGE PUMP



FOR EMERGENCY USE ON PASSENGER SHIPS, ETC. PUMP: JAS — 264 GPM — 171' head — two 6" inlets — one 5" outlet. MOTOR: 40 HP — 230 volts DC — 149 amps. COMPLETE WITH NASH — SELF PRIMING PUMP ATTACHED.

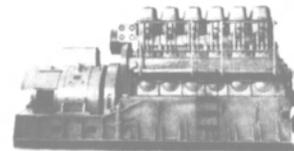
DIESEL GENERATOR SETS

290KW GM 8-268A DIESEL GENERATOR SET



120/240 VDC—1250 amps—shunt wound. ENGINE: GM 8-268A — 8 cyl — 6½X7 — 1200 RPM — good condition.

300KW BALDWIN DIESEL GENERATOR SET

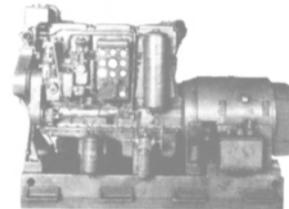


300KW — 120/240 VDC — 1250 amps — stab. shunt — 450 RPM. Baldwin diesel model VO. Ex C-1MAVO1.

100KW GBD8 DIESEL GENERATORS

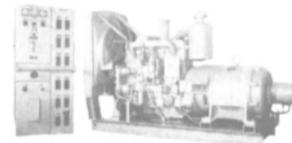
From LST vessels. 120/240 VDC — 417 amps — stab shunt — 1200 RPM — Delco generator — self-excited. ENGINE: Superior GBD-8 — 8 cyl — 5½X7 — 150 HP — 30 volt electric starting. Reconditioned to ABS. Dry weight 10,000 lbs. — OAL 124" — 65 11/16" high — 42" wide. Height necessary to pull piston 68". Fuel consumption 0.620 lbs/hr.

60 KW CUMMINS DIESEL GEN. SETS



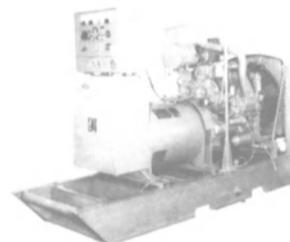
60KW — 120 volts — 500 amps DC generators. 6-Cyl. model H Cummins diesel engine.

75 KW CUMMINS DIESEL GENERATOR SET



75KW — 93.8 KVA — 440/3/60 — 1200 RPM — electric starting. Cummins 6-cyl engine with free-standing switchgear.

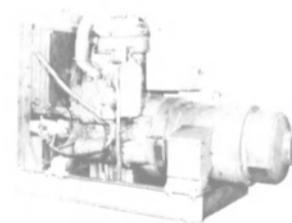
GM-4-71-T TURBO-CHARGED 100 KW DIESEL GENERATOR SET RADIATOR COOLED 1800 RPM



12 wire — all voltages possible — 100 KW 440/220/3/60. With switchgear. Has protective cabinet.

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OTC '81

Technical Program

(continued from page 61)

Thursday Morning

9:30 a.m. to 12:00 noon

- Ship Collisions and Structural Monitoring

OTC

- 4134 Collisions Between Ships and Offshore

Platforms

- 4135 New Non-Linear Methods for Estimation of Collision Resistance of Mobile Offshore Units
- 4136 The Behavior of Steel Offshore Structures Under Accidental Collisions
- 4137 Measured Vibrational Behavior of a Gulf of Mexico Platform

• Field Development and Economics

OTC

- 4138 An Offshore Development Planning Model Incorporating Risk Analysis
- 4139 The Planning and Management of the Nido Reef Complex Oil Field Development

- 4140 The Beta Field Development Project
- 4141 Offshore Quartering Study — A Five Year Projection Into an Expanding Gulf of Mexico Operations
- 4142 Availability and Pricing of Insurance for Offshore Operations

• Foundation Performance

OTC

- 4143 Foundation Performance of Mat-Supported Jack-Up Rigs in Soft Soil Areas
- 4144 Prediction of Jack-Up Rig Footing Penetration
- 4145 Scour About Jack-Up Rig Spud Cans
- 4146 Observed Settlements of Five North Sea Gravity Platforms
- 4147 Evaluation of Concepts for Guyed Tower Foundations
- 4148 Use of the Normalized Soil Parameters (NSP) Concept in Gulf of Mexico Offshore Foundation Design
- 4149 Model Studies of Long Piles in Clay

• Corrosion Control/Cathodic Protection of Offshore Production Systems

OTC

- 4150 Sulfide Stress Cracking Resistance of Nitrogen-Strengthened Stainless Steels
- 4151 High Performance Stainless Steels for Improved Offshore Production Economy
- 4152 Fatigue Properties of Stainless Weld Cladding on Low Alloy Steel
- 4153 The Development of Corrosion

- 4154 Resistant Tubing
- 4155 The Effects of Water Depth on Cathodic Protection of Steel in Sea Water
- 4156 The Development and Trials of an Antifouling System Involving the Controlled Release of Copper

• Satellite Data Collection

OTC

- 4156 The Use of a Real Time Weather and Wave Measurement Program to Assist in Offshore Operations
- 4157 The Continuing Evolution of Transit Satellite Based Geodetic Positioning and Survey Navigation Capabilities
- 4158 A New Passive Technique for Offshore Navigation and Positioning
- 4159 Navstar Applications to Offshore Operations
- 4160 MARISAT-to-INMARSAT Transition

• Towage of Offshore Structures

OTC

- 4161 A Quasi-Static Approach for Transportation Analysis of Offshore Platforms
- 4162 Reliability Analysis of Offshore Structures in Towing Operation
- 4163 Fatigue Considerations for Ocean Towing
- 4164 Towing Resistance Estimation of Offshore Construction Barges
- 4165 Analytical and Model Test Study of Platform Jacket Tow in Waves
- 4166 An Experimental Study of the Parameters Affecting the Drag of Barges in Waves

OTC '81

Exhibitors' List

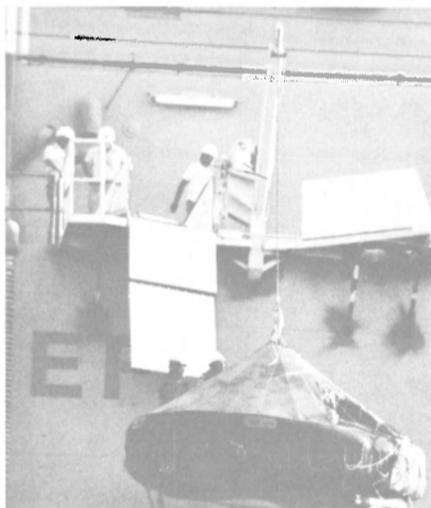
A partial list of marine and offshore exhibitors at OTC '81

Exhibitor	Booth	Exhibitor	Booth
A-Z International Tool Company	3711	Al George, Inc.	9617
ABEX/Denison	9312	Albany International	7319
ABM/McDaniel Controls, Inc.	6212	ALCO Power Inc.	4627
ACMI-Industrial Division	7329	Alexander Industries Inc.	4119
Aeroquip Corporation	6321	Alexandra Towing Co. Ltd.	3347, 3351
AFC, Inc.	3752	Alfa-Laval, Inc.	3589
AGA Navigation Aids	1375	Allen-Bradley and Integrated Power Systems Corporation	2387
AGIP (ENI Group)	7125		
AIRCO Cryogenics, Div. of AIRCO, Inc.	6224		

(continued on page 67)

These companies are using davit-launched inflatables provided by J. H. Menge & Co.

Diamond M. Company, Houston
 Bethlehem Steel Corp., Beaumont, Singapore
 Marathon LeTourneau Offshore Co., Houston
 Reading & Bates
 Chiles Drilling Company, Houston
 J. Ray McDermott, Morgan City
 Southern Shipbuilding Co., Slidell, La.
 North American Trailing Co.
 Livingston Shipbuilding Co., Orange, Texas
 Cleveland Tanker Corp.
 Tidelands Ltd.
 Dixilyn-Field Drilling Co.
 Broughton Offshore Co.
 Penrod, Singapore



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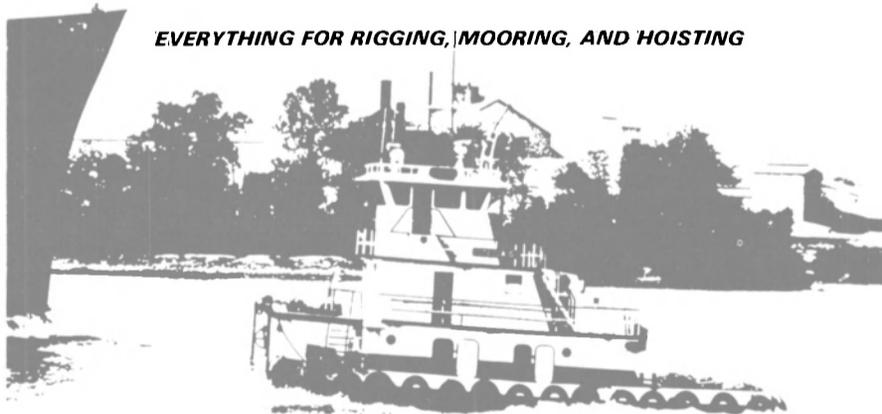


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Maritime Reporter/Engineering News

OTC '81

Technical Program Wednesday Morning

• Diving, Salvage, and Repair Operations II

(continued from page 59)

- 4085 Record Trinx Dive to 2,132 ft. Without Incapacitating High Pressure Nervous Syndrome
- 4086 Sub-Ergometer — An Equipment for Estimating the Work Load on Divers in Open Waters
- 4087 The Latest Diving Support Vessel, Model Tests and Dynamic Positioning for North of 62nd Parallel
- 4088 A New Generation of Diving Support Vessels
- 4089 Snap Loads and Bending Fatigue in Diving Bell Handling Systems

• Ocean Mining I

- OTC
- 4090 Infrastructure Requirements for a Manganese Nodule Processing Industry on the Island of Hawaii
- 4091 Automatic Position Control of a 300,000 Tons Ship During Deep Ocean Mining
- 4092 Dynamic Vertical Stretching Oscillation of Deep Ocean Mining Pipe
- 4093 Computer Simulation of Deep Sea Mining Manoeuvres
- 4094 An Advanced Design Deep Sea Mining System

Wednesday Afternoon

2:30 p.m. to 5:00 p.m.

• Geophysical Interpretation

- OTC
- 4095 3D Reflection Synthetic Seismograms
- 4096 2D Migration Effects of 3D Data
- 4097 Drillability Profiles Derived from 3D Seismic Surveys
- 4098 Seismic Stratigraphic Characteristics of Upper Louisiana Continental Slope — An Area East of Green Canyon
- 4099 The Determination of Grain Characteristics, Contacts and Packing by Shear Velocity
- 4100 A Study on Estimating the Relief of Magnetic Basement

• Offshore Pipelines I

- OTC
- 4101 A New Welding Concept for Pipelines: Electron Beam Welding
- 4102 Electron Beam Weldability for Deep Sea Pipelines
- 4103 Flash Butt Welding for Large Diameter Pipes
- 4104 Probabilistic Fatigue Analysis of Offshore Pipelines During the Laying Operation
- 4105 Predictive Simulations Matched by As-Laid Parameters of Sicily Channel Sealine Project

• Tubular Members and Joints

- OTC
- 4106 Double-Skin Construction of Large Pressure Vessels for Subsea Systems
- 4107 External Pressure Tests of Ring Stiffened Fabricated Steel Cylinders
- 4108 Experimental Study on the Effect of Axial Tension Load on the Collapse Strength of Oil Well Casing
- 4109 BP Magnus Platform Internally Stiffened Bracing Node Studies
- 4110 Novel Underwater Strengthening System for Tubular Joints

• Design and Analysis of Arctic Structures

- OTC
- 4111 Resistance of Concrete Walls in High Concentrated Ice Loads
- 4112 Slope Protection for Artificial Exploration Islands Off Prudhoe Bay
- 4113 A Steel Production Structure for the Alaskan Beaufort Sea
- 4114 Erosion Prediction for Exploration and Production Structure in the Arctic
- 4115 Ice Force Prediction Using a Limited Driving Force Approach

• Marine Geology and Geotechnical Engineering

- OTC
- 4116 Blowout Craters on the Continental Shelf of the Gulf of Mexico

- 4117 Geologic Hazards and Constraints; Federal OCS Oil and Gas Lease Sale 53, Central and Northern California
- 4118 Environmental Geology of Shelikof Strait; OSC Sale Area 60, Alaska
- 4119 Geologic Mapping for Offshore Engineering, Mississippi Delta
- 4120 A Pressurized Core Barrel for Sampling Gas-Charged Marine Sediments
- 4121 Geotechnical Analysis of a Submarine Slump, Eureka, California

• Wind and Wave Forces

- OTC
- 4122 Wind Tunnel Tests of Inclined Rough Circular Cylinders

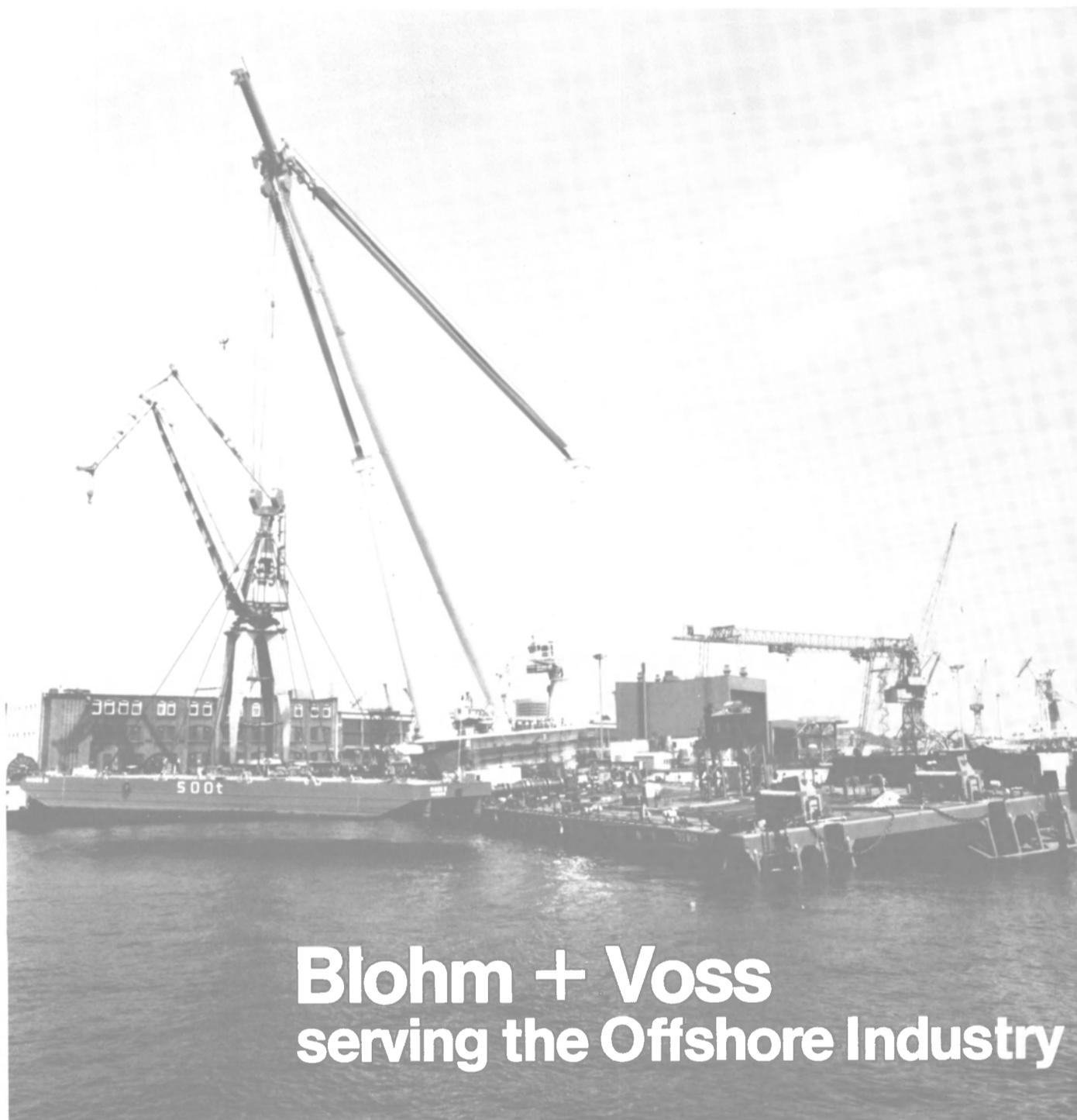
- 4123 Mobile Offshore Platform Wind Loads
- 4124 Wind Overturning Effects Obtained from Wind Tunnel Tests with Various Semisubmersible Models
- 4125 Wind Tunnel Model Testing Techniques for Offshore Gas/Oil Production Platforms
- 4126 The Development and Proposed Use of a Wave Force Measurement System
- 4127 Analysis of the Uncertainties in the Sea Loading of Offshore Steel Structures

• Ocean Mining II

- OTC
- 4128 Offshore Processing of Metalliferous

- Sediments in the Red Sea
- 4129 Comparison Between Galapagos and Gorda Spreading Centers
- 4130 An Electric Rock Core Drill for Deep Ocean Use
- 4131 Hard Mineral Resources Around the U.S. Continental Margin
- 4132 Analysis of Physical and Mechanical Properties of Deepsea Sediments from Potential Manganese Nodule Mining Areas in The North Central Pacific
- 4133 Acoustic Sounding for Manganese Nodules

(continued on page 62)



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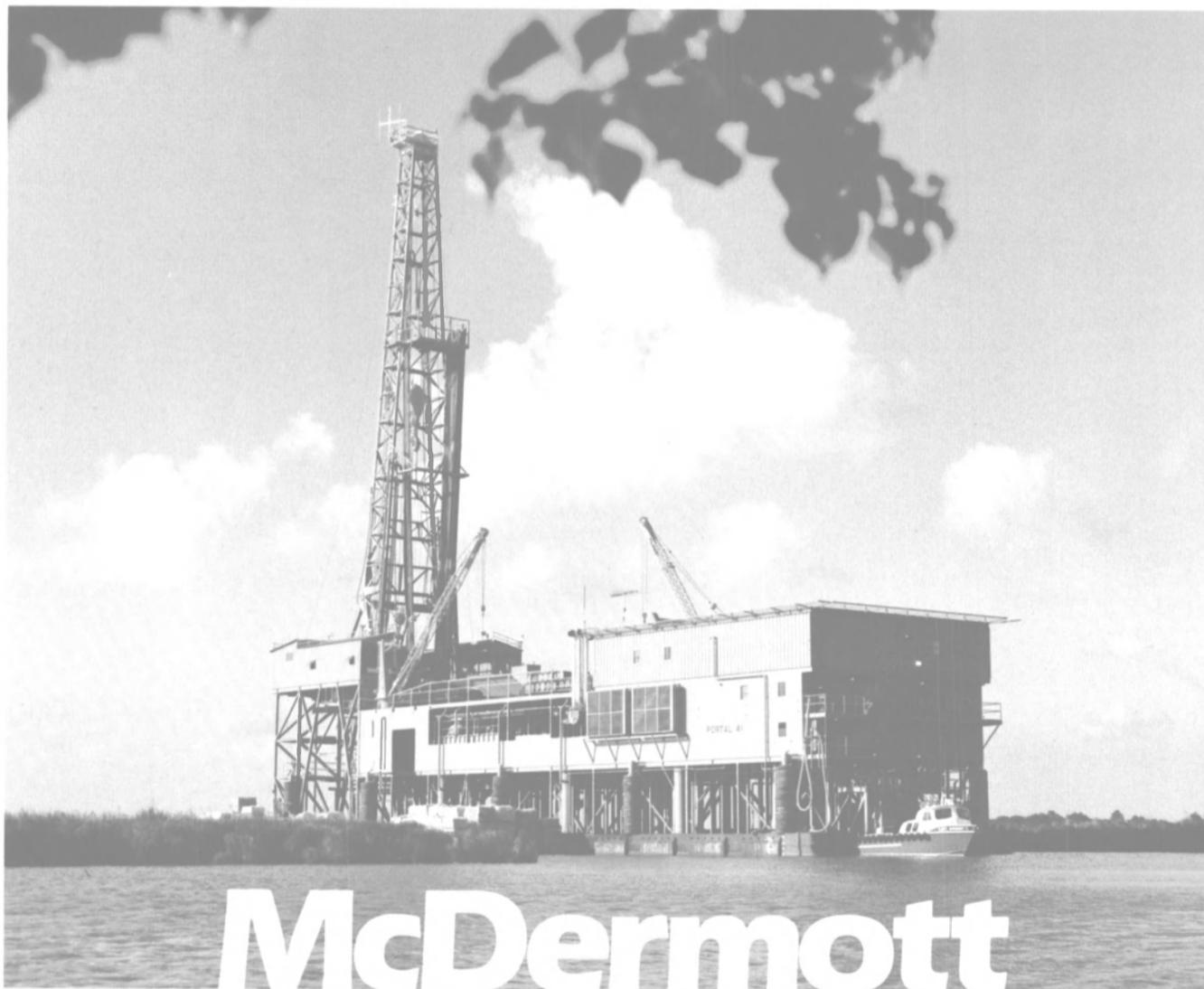
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- 4036 Fabrication and Serviceability of Off-shore Structures
 4037 Development and Application of a High Speed Automatic Field Welding Method for Pipeline

• Subsea Production Systems

- OTC
 4038 Experience with Subsea Well Control Systems
 4039 Subsea Cable Systems Developed for Subsea Completions
 4040 Space Age Pipelining—Murchison Field
 4041 Dorada Field Production System: A

- Solution to Individual Permanent Vertical Access to Several Wells From a Semi-Submersible
 4042 The Dorado Field Production Risers
 4043 The Insert Tree Completion System

• Potential Worldwide Offshore Oil & Gas Reserves

- OTC
 4044 The Sotong Field, Offshore Malaysia—Example of a Subtle Hydrocarbon Trap
 4045 Reserves Estimation from Seismic and Geologic Data by Computer Applications of Multiple Regression Analysis

- 4046 Impact of Federal Policies on Undiscovered Oil and Gas in the Gulf of Mexico
 4047 Potential Worldwide Offshore Oil & Gas Reserves—Where and How Much—A Panel Discussion

• Mooring and Anchoring

- OTC
 4048 Performance of Conventional Anchors
 4049 Development of Absolutely-Roll-Stable Anchors
 4050 Deep Water High-Capacity Moorings
 4051 Non-Linear Response Analysis of An-

- chorage Systems for Compliant Deep Water Platforms
 4052 Self-Protected, Long-Life Deep Sea Mooring Cable
 4053 Dynamic Behavior and Tension of Oscillating Mooring Chain

• Navigation and Data Display

- OTC
 4054 Underwater Navigation with a Narrow Beam Tracking Transducer
 4055 Navigation Control for Pearl River Mouth Basin Seismic Survey in the People's Republic of China
 4056 Case Histories of Loran C Radionavigation Usage for Oil Exploration Activities Offshore Newfoundland
 4057 An Acoustic System for Pipeline Profile Measurements
 4058 Marine Pipeline Inspection by Tracking

• Environmental Considerations

- OTC
 4059 Environmental Impact of Offshore Brine Disposal Associated with Petroleum Storage Activities
 4060 Oil Spill Contingency Planning to Minimize Impacts from a Major Oil Well
 4061 Environmental Monitoring of Three Exploratory Oil and Gas Wells Drilled Near the East Flower Garden Bank
 4062 Effects of Sea-and-Land Breeze System on Oil Trajectory Near the Coast
 4063 Environmental Studies for Oilspill Trajectory Modeling in the Southeastern U.S. Outer Continental Shelf Leasing Area
 4064 On the Resistance Time of Oil Mixed into the Water Column by Breaking Waves

Wednesday Morning

9:30 a.m. to 12:00 noon

• Offshore Pipelines II

- OTC
 4065 Impact-Response Behaviour of Off-shore Pipelines
 4066 Trawl Gear Interaction with Flexible Pipelines
 4067 Movements of Submarine Pipelines Close to Platforms
 4068 Pipeline Performance History in the Gulf of Mexico
 4069 A Survey of Pipelines in The North Sea—Incidents During Installation, Testing, and Operation

• Tension Leg Platforms—Design and Analysis

- OTC
 4070 The Static Offset in Waves of Tension Leg Platforms
 4071 Parametric Response of TLP Anchor Lines—Theoretical and Numerical Analyses
 4072 An Integrated Motion and Structural Analysis System for Tension Leg Platforms
 4073 Motions and Leg Tensions of Tension Leg Platforms
 4074 The Wave Induced Motions of a Tension Leg Platform in Deep Water
 4075 Dynamic Stability of the Tension Leg Platform

• Ice and Arctic Activities

- OTC
 4076 Controlling Iceberg Roll/Stability During Towing Around Drillships
 4077 Iceberg Detection for Canadian Frontier Production
 4078 Iceberg Draft Measurement Using a Remote Control Tethered Submersible
 4079 An Investigation of the Acoustic Emission and Deformation Response of Finite Ice Plates
 4080 Design of Ice Roads in the Southern Beaufort Sea

• Geophysical Data Acquisition

- OTC
 4081 Ocean Bottom Seismometer—An Electronic Perspective
 4082 Deep-Towed Seismic System Design for Operation at Ocean Depths Up to 6000m
 4038 New Frontiers in Geophysical Data Acquisition—A Panel Discussion

• Diving, Salvage, and Repair Operations II

- OTC
 4084 Seawater Hydraulic Systems for Underwater Equipment

(continued on page 61)

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OTC '81

Technical Program Monday Afternoon

• General Session

(continued from page 56)

ment for the 1970's and Forecast for the 1980's."

Tuesday Morning

9:30 a.m. to 12:00 noon

• Wave Forces and Hydroelastic Response

- OTC
3988 A Critical Assessment of Morison's Equation
3989 Hydrodynamic Coefficients for Macro-Roughnesses
3990 Consistent Drag and Added Mass Coefficients from Full Scale Data
3991 Vortex-Induced Vibrations of a Flexible Cylinder Near a Plane Boundary in Steady Flow
3992 Hydroelastic Response of Smooth and Rough Cylinders in Oscillatory Flow

• Undersea Vehicles

- OTC
3993 A Closed Cycle Pressure Control System
4167 Manned Submarines and Remotely Operated Equipment as Construction Tools for Advanced Offshore Projects
3995 SCARAB
3996 Limitations of Diver Alternative Systems
3997 Grondin NE Experimental Station—Diverless Experiments

• Wire and Synthetic Rope

- OTC
3998 Axial Fatigue Testing of AL-6X Stainless Steel Wire in Natural Seawater
3999 Fatigue Behavior of Large-Diameter Wire Ropes
4000 The Behaviour of Wire Ropes in Tension
4001 Improved Wire Rope Endurance Life with Nylon Sheaves
4002 Non-Hazardous Synthetic Mooring Line
4003 Dynamic Behaviour of Synthetic Ropes

• Drilling and Production Practices

- OTC
4004 Hydraulic Fluids for BOP Control Systems
4005 Computerized Gas Lift Control
4006 Simultaneous Activities Offshore Norway: A Review of Practices and Results
4007 A Completion Method for High Pressure, Corrosive, Offshore Gas Wells
4008 The Variable Bore Ram—Present and Future
4009 BOP Recovery in 3,000-Foot Water Depth

• SPECIAL SESSION—Deep Ocean Manganese Nodule Mining: Outlook for the 1980's

• Terminals—Experience and Design

- OTC
4010 Five Years of Operations Optimizing at Saudi Arabia's Ju'Aymah SPM Buoy Export Terminal
4011 Petromin Offshore Terminal Design for Exporting 1.6 Million Barrels of Crude Oil Per Day
4012 Design, Installation and Field Operations of Offshore Tandem Loading System-Nido Field, Offshore Philippines
4013 Evaluating Terminal Loading Efficiency
4014 Fulmar, The First North Sea SALM/VLCC Storage System
4015 SPM Hose Test Program

• Seafloor Surveying and Mapping

- OTC
4016 A Real Time Bathymetry Digitizer Multi-Frequency
4017 Sonar Survey of the U.S. Atlantic Continental Slope and Rise
4018 Computer Rectification and Mosaicking of Side-Looking Sonar Images
4019 A Self Boring Pressuremeter for Deep Sea Soils Investigations
4020 High Precision Near Shore Seafloor Positioning

• Geophysical Data Processing

- OTC
4021 Field Processing of Shallow Seismic Data
4022 Physical Modeling at the Seismic Acoustic Laboratory: An Aid for Production Geophysicists
4023 Detailed Analysis of Geophysical Indicators Associated with Shallow Gas Accumulations
4024 Location and Evaluation of Engineering Hazards with Seismic Data
4025 Seismic Source Decomposition
4026 Estimation of Dispersion in Laboratory and Marine Reflection Data

Tuesday Afternoon 2:30 p.m. to 5:00 p.m.

• Diving, Salvage, and Repair Operations I

- OTC
4027 The Uprighting and Preservation of the Alexander L. Kielland—Project Implementation
4028 No. 2 Fuel Cargo Recovery from Sunken Tanker
4029 Automatic Deep Water Pipeline Repair System
4030 Underwater Inspections: Credibility and Technology

4031 Development of a Depth Independent Closed Cycle Diesel Engine

• Materials and Fabrication Procedures for Offshore Structures

- OTC
4032 Spun Steel Pipes for the Offshore Industry
4033 Heavy Wall HSLA Steel Pipes and Heavy Section HSLA Steel Plates for Jack-Up Rigs
4034 Fracture Toughness of Some Materials Used in Fabricating Fixed Offshore Structures
4035 Deformation Capacity of Steel Tubes in Deep Water

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- Doppler Speed Logs.
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- Simultaneous bottom soundings to 1000 feet with adjustable minimum depth alarm.
- Automatic water temperature and salinity compensation.
- Self-testing. No calibration.
- Large, easy-to-read LED display with mechanical "distance-run" counter.
- Optional digital and analog "dial" remote displays.
- Single transducer.

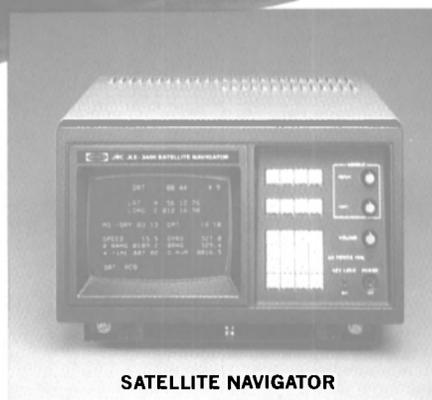
Satellite Navigator gives worldwide fixes accurate within 100 yards every 30 to 90 minutes.

The "complete navigator", Raytheon JLE-3400 acquires and displays very accurate Lat/Long fixes derived from navy navigation satellites in polar orbit. Between satellite fixes, computer-generated dead-reckoning fixes are shown. Dead-reckoning data is keyboard entered or automatically supplied by a gyro compass and dual-axis doppler log.

Featuring a large 9-inch CRT, the JLE-3400 will also display such important data as:

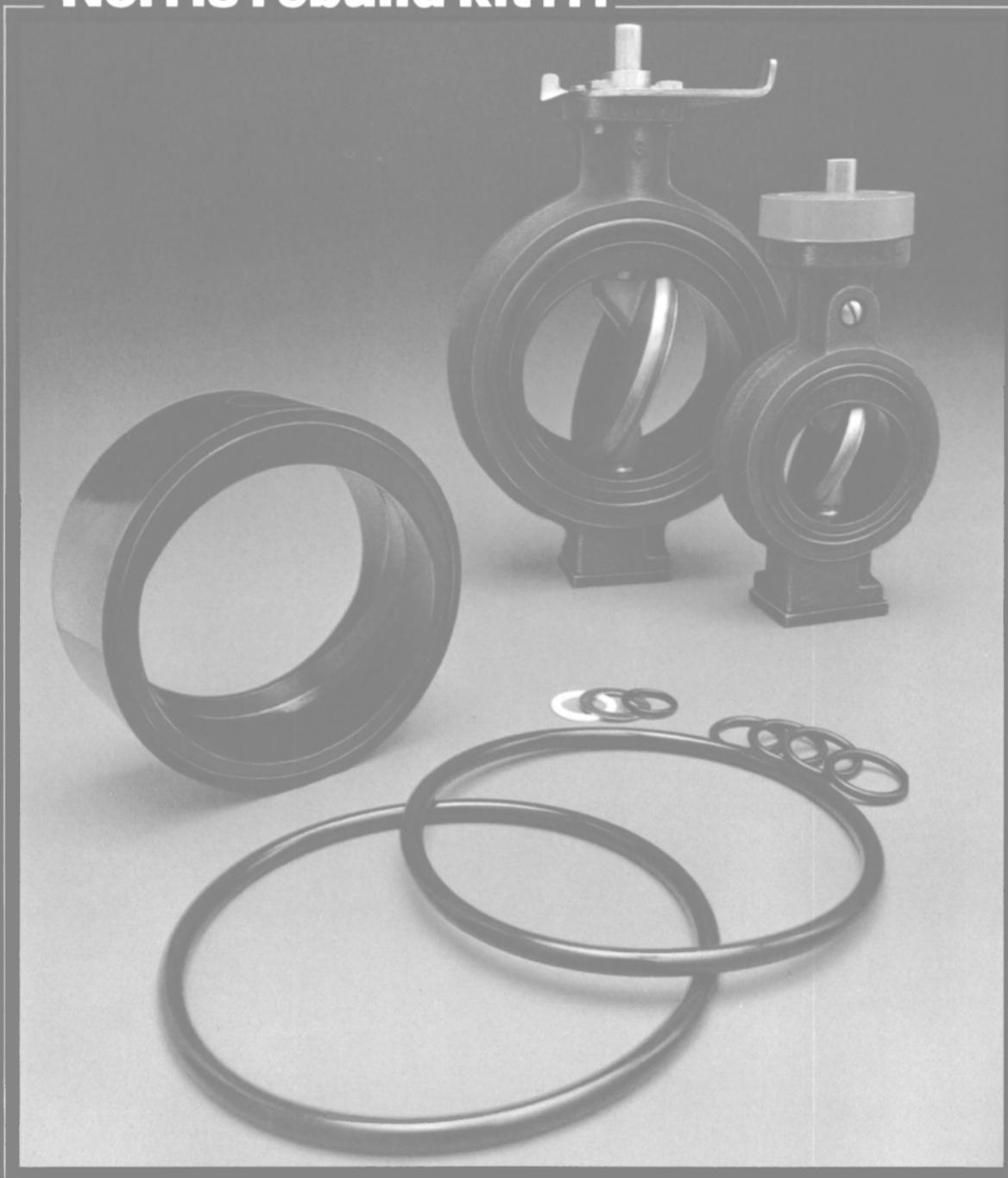
- Date and GMT.
- Time since last satellite fix.
- Time and angle of next satellite fix.
- Ship's speed and course.
- Data from up to ten way-points including: course-to-steer for Rhumb or Great Circle tracks, distance run, ETA's etc.

A printer for displayed data and a remote CRT display are available as options.



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OTC '81

Technical Program Monday Morning

• Floating Structure Response (continued from page 54)

- 3951 Mean and Low Frequency Wave Forces on Semi-Submersibles
- 3952 Dynamic Response of Semi-Submersibles
- 3953 The Response of Floating Platforms to Extreme Sea States
- 3954 Prediction of the Manoeuvring Char-

- acteristics of a Semi-Submersible Drilling Rig
- 3955 Steep Wave Effects on Large Offshore Structures

• Offshore Processing

- OTC
- 3956 Offshore Liquefaction of Associated Gas—A Suitable Process for the North Sea
- 3957 Development of Seabed Dry One Atmosphere Modules for Processing Hydrocarbons from Deep Water, Marginal and Sub-Ice Reservoirs
- 3958 Buchan Development Project—Conversion of a Drilling Rig into a Floating Production Platform
- 3959 Barge-mounted Petrochemical Plants for the Production of Methanol and Ammonia
- 3960 A Technical and Economic Evaluation of the Utilization of Offshore Natural Gas Reserves (50 to 150 mmscfd)
- 3961 Transferring LNG from a North Sea Floating Process Terminal to a Shuttle Carrier—Evaluation by Hybrid Computer Simulation

• Fatigue Considerations in Offshore Systems

- OTC
- 3962 Fatigue of Welded Structural Steel in Sea Water
- 3963 Investigation of Fatigue Data Obtained from Tests of Traverse Butt Welded Specimens
- 3964 Fatigue Strength of Overlapping Tubular N-Joints
- 3965 Hybrid Time-Frequency Domain Fatigue Analysis for Deep-Water Platforms
- 3966 The Use of Full Scale Measurements to Improve Fatigue Predictions

• Platform Installation

- OTC
- 3967 Fabrication to Installation of a Santa Barbara Channel Jacket
- 3968 Maximum Pile Driving Stress Comparison
- 3969 Stress History Approach to Analysis of Soil Resistance to Pile Driving
- 3970 Calculation of Module Reactions in Accordance with API RP2A Clause 2.23
- 3971 Hook-up of Very Heavy Jack-Up Platform Bodies—Motions, Dynamic Forces and Impacts Occurring and Their Effective Control by Interacting Dynamic
- 3972 Structural Design Considerations for Temporary Seafloor Support of Jacket Structures

• Soil Wave Interaction and Seafloor Instability

- OTC
- 3973 Correlation of Field Measurements with Elastic Theory of Seafloor Response to Surface Waves
- 3974 Storm-Induced Bottom Sediment Motions—SEASWAB II Results
- 3975 Evaluation of Seafloor Stability
- 3976 Hindcasting Evaluation of Slope Stability in the Baltimore Canyon Trough Area
- 3977 Ocean Wave Spectrum Transformation Due to Sea-Seabed Interactions
- 3978 Factors Contributing to the Initiation of Slope Instability, Mississippi Delta

• Structural Analysis and Design

- OTC
- 3979 Capabilities and Limitations of Inelastic Seismic Analyses of Braced Offshore Structures
- 3980 Wrinkling Stress of Platform Jackets
- 3981 Residual Strength and Stiffness of Damaged Steel Bracing Members
- 3982 Design of Ring Stiffened Tubulars Under Combined Loading

• Trenching Systems

- OTC
- 3983 TM 402—A New Operating Cable And Pipe Burying System
- 3984 Pipeline Trenching Firth of Forth Estuary
- 3985 Control System for an Intelligent Underwater Trencher
- 3986 Location Finding of Offshore Submarine Cables
- 3987 Buried Submarine Cable Grapnel

Monday Afternoon

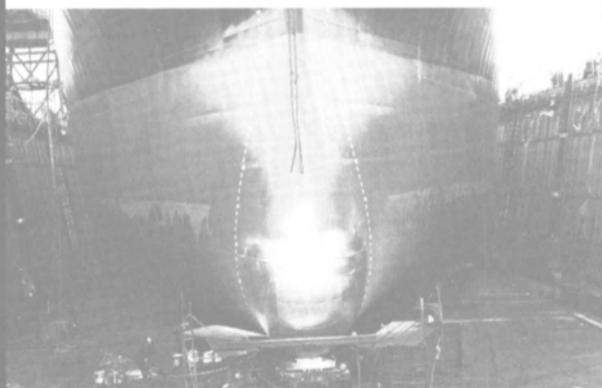
2:30 p.m. to 5:00 p.m.

The 1981 OTC General Session, "Offshore Oil and Gas Operations—Assess-

(continued on page 58)



Ship Doctors



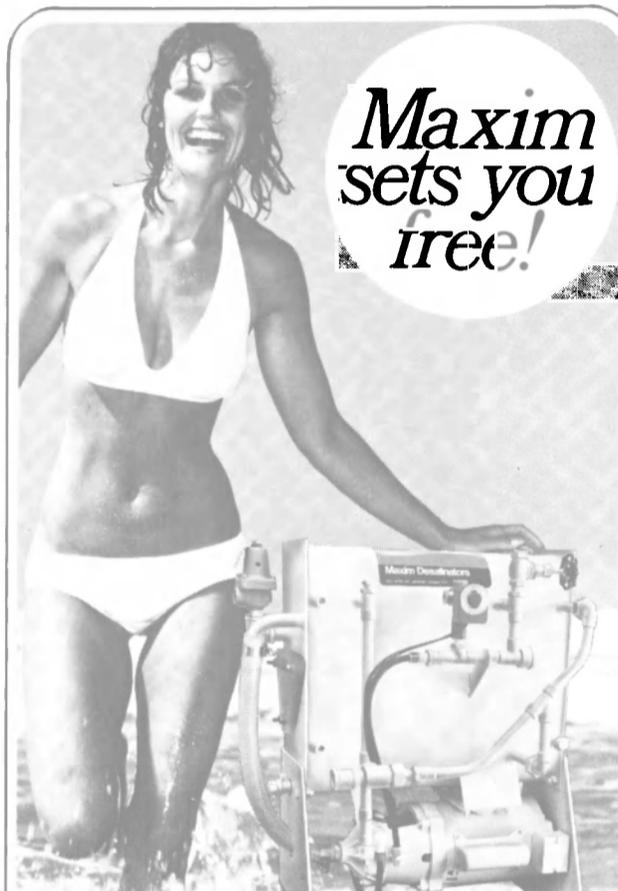
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OTC '81

(continued from page 52)

to order copies of either the 1981 Proceedings (four-volume set) and/or the Proceedings Index, contact the Offshore Technology Conference at 6200 North Cen-

tral Expressway, Dallas, Texas 75206.

Sets of Proceedings from previous Conferences and past editions of the indexes—listing subjects and authors for papers presented at the 1969-80 Conferences—can be obtained at the same address.

Food Service

The Astrodomain provides the

OTC registrant with many choices of food at one of the many snack stands, or at a sit-down meal in one of four restaurants. A Houston restaurant guide will be available at all registration areas in each of the three buildings.

Post-Conference Education

Four OTC sponsoring societies will offer continuing education

programs on Friday and Saturday, May 8-9. Registration and additional information on all courses may be obtained from the contact person listed for each course. These are:

1. American Society of Civil Engineers. Course title: Arctic Offshore Engineering. Contact: **Patricia Irmén**, manager, Continuing Education Services, ASCE, 345 East 47th Street, New York, N.Y. 10017.

2. American Society of Mechanical Engineers. Course title: Compliance Requirements for ANSI/ASME Surface and Subsurface Safety Valves Used in Offshore Oil and Gas Operations Including Code Procedures, Repairs, and Remanufacturing. Contact: **Joy Collier**, administrator, ASME, Professional Development Program/OTC, 345 East 47th street, New York, N.Y. 10017.

3. Society of Exploration Geophysicists. Course title: The Application of Synthetic Sonic Logs to the Development of Offshore Hydrocarbon Reservoirs. Contact: **Robin Dixon**, continuing education coordinator, SEG, P.O. Box 3098, Tulsa, OK 74101.

4. Institute of Electrical and Electronics Engineers. Course title: Basic Project Management—Planning, Scheduling and Control. Contact: **Carolyn A. Yankoski**, IEEE, 445 Hoes Lane, Piscataway, N.J. 08854.

OTC Program Committee

The Program Committee for OTC '81 consisted of: **Daniel G. Godfrey**, program chairman, Shell Development Co.; **Arthur O. Beall Jr.** (AAPG), Conoco Inc.; **Gale L. Hubred** (AIChE), Chevron Research Co.; **James E. Dailey** (ASCE), Brown & Root, Inc.; **Norman A. Nelson** (ASME), N.L. Rig Equipment; **Glen N. Williams** (IEEE), Texas A&M U.; **Comdr. Don D. Wells** (MTS), Naval Electronics System Command; **Margaret Welch** (SEG), Exxon Production Research Co.; **John W. Padan** (SME), NOAA, Office of Marine Materials; **James Magill** (SNAME), Diamond M Co.; **Carroll D. Hudson** (SPE), ARCO Oil and Gas Co., and **John A. Straatmann** (TMS), Climax Molybdenum Co.

OTC '81

Technical Program

Monday Morning

9:30 a.m. to 12:00 noon

- Floating Structure Response

OTC

3950 Wave Drift Force on a Floating Structure in Shallow Water

(continued on page 56)

◀ Write 362 on Reader Service Card

Twin Disc extends marine transmission line for engines up to 3617 kW (4850 bhp).

Now Twin Disc offers the North American marine industry five new series of marine reverse and reduction transmissions for higher horsepower diesel engines. Twin Disc has extended its line of domestically manufactured transmissions to include higher horsepower models from its partially-owned affiliate Niigata Converter Company Limited (NICO). This means the superior reliability, performance and operating economics typical of Twin Disc Marine Transmissions are now available here in greater horsepower capacities than ever.

These larger, coaxial (inline) marine transmissions are designated Models MGN-650BZ, MGN-1000AZ, MGN-1600AZ, MGN-2200AZ and MGN-3200AZ. In addition, special designs and other NICO models are available in production quantities to meet specific installation and application requirements.

The MGN-Z Series Features:

- Coaxial input-output shaft arrangement for lowered propul-

sion package center of gravity.

- Wide variety of models and ratios to meet various propulsion requirements.
- Use same type oil as specified for the engine.
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- Prompt, smooth shifting, integral hydraulic forward and reverse clutches respond to operator requirements for good vessel maneuverability. The "X" control is available as an option which permits variable propeller speed independent of engine speed.
- Housing design and strategic placement of access covers provides for easy inspection and maintenance, even in compact engine rooms.

The MGN-Z Series, like all Twin Disc Marine Transmissions, are backed by Twin Disc's warranty program with Approved Renewal Parts available from Twin Disc. For more information on the new coaxial MGN-Z Series contact Twin Disc, Incorporated, Racine, WI 53403, U.S.A. Telephone (414) 634-1981, Telex 264432.

Request Bulletin 900.

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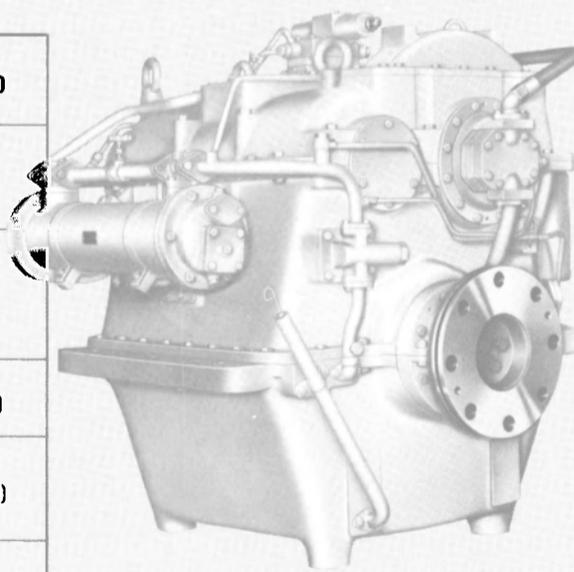


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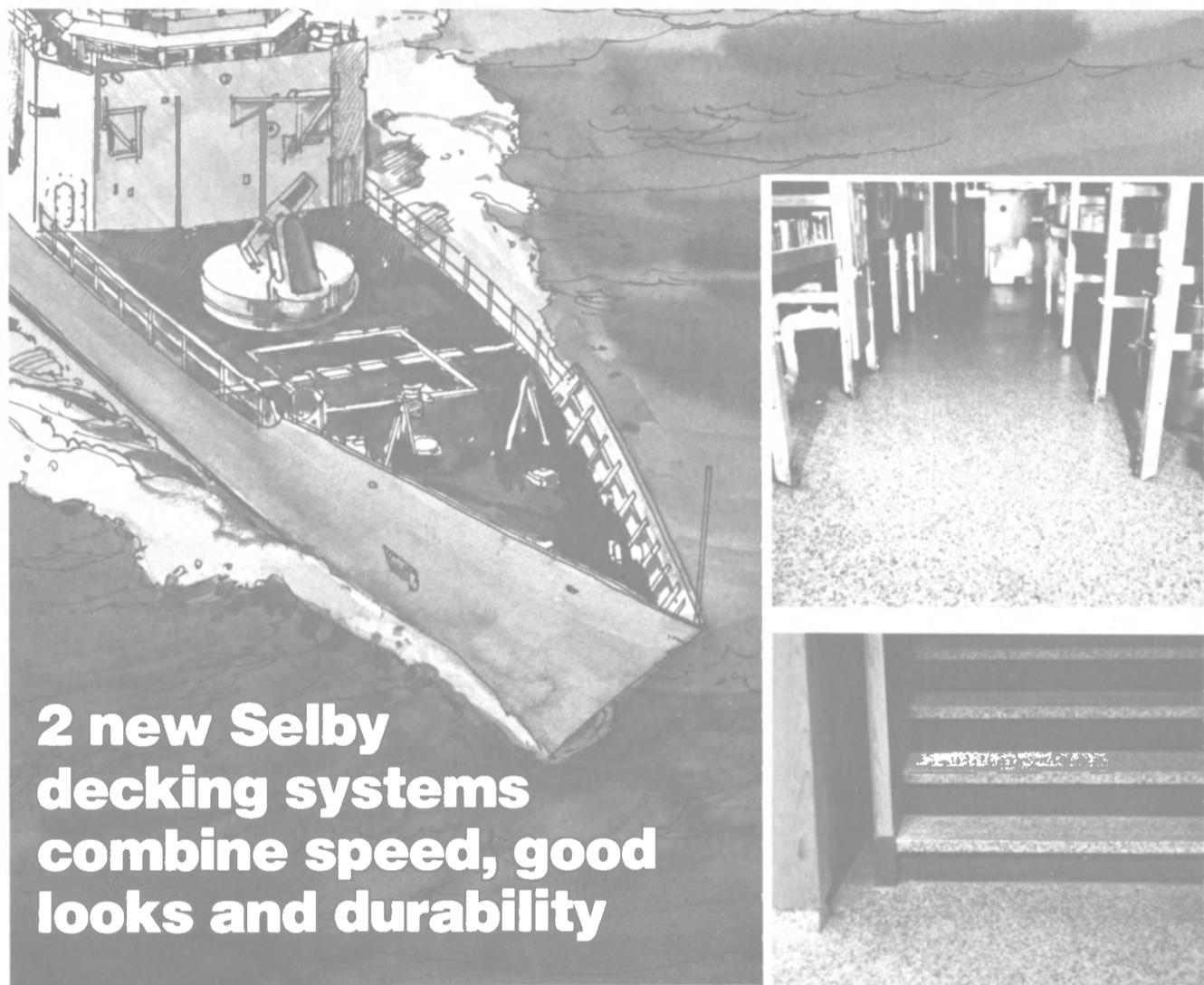
Model MGN-Z Series

MARINE TRANSMISSION MODEL	NOMINAL RATIOS	GOVERNED ENGINE SPEED RANGE*, RPM	POWER RANGE* kW (hp)
MGN-650BZ	3.0:1 3.5:1 4.0:1 5.0:1 6.0:1	700-1800	634-895 (850-1200)
MGN-1000AZ	3.0:1 4.0:1 5.0:1 6.0:1 7.0:1 8.0:1 9.0:1	700-1800	634-1119 (850-1500)
MGN-1600AZ	3.0:1 4.0:1 5.0:1	700-1700	1119-1641 (1500-2200)
MGN-2200Z	3.0:1 3.5:1 4.0:1 4.5:1 5.0:1	700-1600	1491-2237 (2000-3000)
MGN-3200Z	3.0:1 4.0:1 5.0:1	700-1400	2610-3617 (3500-4850)

* Depending on ratio, type of duty, input speed and survey society classification requirements. Certification certificates available from ABS, LRS and other major survey societies.



Model MGN-650BZ



2 new Selby decking systems combine speed, good looks and durability

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Selbalux and Selbaglo are trowel applied, terrazzo type, decorative decking systems. Natural marble chips are used to achieve many attractive color combinations. The products have a finish that reduces light reflection. The products can be turned up walls or bulkheads to create a cove base which enhances appearance and makes for easier maintenance.

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the U.S. Navy fire retardant type. The products adhere tenaciously to properly prepared steel or aluminum decks and can be used either in new construction or renovation.

Selbalux is ideal for wherever a decorative appearance is desired and particularly for wet spaces such as galleys, sculleries, toilet and shower areas, etc.

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OTC '81

(continued from page 51)

May 2, there will be three advance registration sites located at the Hyatt Regency's Ebony Room, the Astro Village's Forum

Five Room, and the Stouffer's Greenway Plaza's Poinsettia Room.

During OTC registration counters will be open at three locations in the Astrodomain Complex during Conference hours. However, registration lines during the Conference may be long so registration by the other methods is recommended.

NASA Tours

Tours are scheduled for Tuesday, May 5, and Wednesday, May 6, to the Lyndon B. Johnson Space Center, departing from the Astrohall. Reservations may be made at the NASA tour desk in the International Center in the Astrohall.

The Lyndon B. Johnson Space Center is one of the newest and

largest research and development facilities of the National Aeronautics and Space Administration. The Center, a \$202-million complex, serves as the focal point for the U.S. manned space flight program and houses a fascinating display of spacecraft and flight items. Visitors also may see the Mission Simulation and Training Facility and the Space Shuttle Orbiter Mock-Up and Integration Laboratory.

OTC Publications

If you are unable to attend the 1981 Conference and would like (continued on page 54)

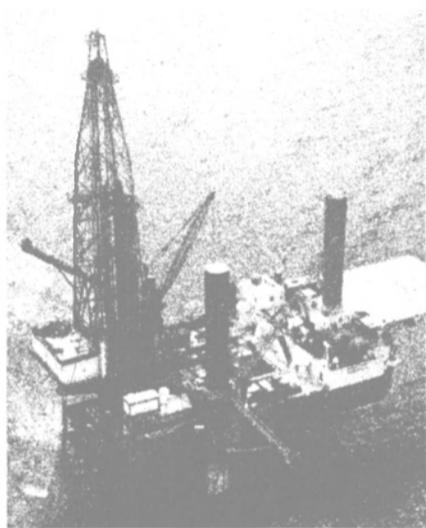
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TIMETABLE TECHNICAL SESSION

Monday Morning—9:30 a.m. to 12 noon

- Floating Structure Response
- Offshore Processing
- Fatigue Considerations in Offshore Systems
- Platform Installation
- Soil Wave Interaction and Seafloor Instability
- Structural Analysis and Design
- Trenching Systems

Monday Afternoon—2:30 p.m. to 5:00 p.m.

- General Session: Offshore Oil and Gas—A Review of the 1970s and a Forecast for the 1980s

Tuesday Morning—9:30 a.m. to 12 noon

- Wave Forces and Hydroelastic Response
- Undersea Vehicles
- Wire and Synthetic Rope
- Drilling and Production Practices
- Special Session: Deep Ocean Manganese Nodule Mining: Outlook for the 1980s
- Terminals—Experience and Design
- Seafloor Surveying and Mapping
- Geophysical Data Processing

Tuesday Afternoon—2:30 p.m. to 5:00 p.m.

- Diving, Salvage, and Repair Operations I
- Materials and Fabrication Procedures for Offshore Structures
- Subsea Production Systems
- Potential Worldwide Offshore Oil and Gas Reserves
- Mooring and Anchoring
- Navigation and Data Display
- Environmental Considerations

Wednesday Morning—9:30 a.m. to 12 noon

- Offshore Pipelines II
- Tension Leg Platforms—Design and Analysis
- Ice and Arctic Activities
- Geophysical Data Acquisition
- Diving, Salvage, and Repair Operations II
- Ocean Mining I

Wednesday Afternoon—2:30 p.m. to 5:00 p.m.

- Geophysical Interpretation
- Offshore Pipelines I
- Tubular Members and Joints
- Design and Analysis of Arctic Structures
- Marine Geology and Geotechnical Engineering
- Wind and Wave Forces
- Ocean Mining II

Thursday Morning—9:30 a.m. to 12 noon

- Ship Collisions and Structural Monitoring
- Towing of Offshore Structures
- Field Development and Economics
- Foundation Performance
- Corrosion Control/Cathodic Protection of Offshore Production Systems
- Satellite Data Collection

And while the program is specifically designed for a public audience, registrants at OTC will be able to broaden their total understanding of the diverse offshore industry by tuning in to OTC-TV.

Broadcast times and program descriptions will appear in the Houston media TV sections during the week of OTC. During Conference hours, OTC-TV will broadcast closed-circuit in the Astrodome Complex information on technical sessions and other items of interest to Conference registrants.

Accommodations

The OTC Conference Committee reports that rooms have been reserved in 88 hotels/motels in the Houston area. During OTC '81 these accommodations will be booked to capacity. Room requests are filled by the OTC Housing Bureau in order of receipt by mail. No rooms are available for arrival on Monday, May 4. Registrants who desire accommodations for Monday should plan to arrive on Sunday, May 3. Any housing requests indicating an arrival on Monday will automatically be changed to reflect an arrival on Tuesday, May 5.

Requests for accommodations should be made through the OTC Housing Bureau and they will notify you of your hotel assignment. The hotel will then confirm to you directly. Unless arrangements are made directly with the hotel from which you receive confirmation, reservations will not be held past 6:00 p.m.

Rooms are available for students. Each student housing request should be mailed to the

Housing Bureau along with a cover letter identifying it as a request for a student.

The OTC Housing Bureau is located at 1522 Main Street, Houston, Texas 77002.

Registration

Registration for the 1981 Offshore Technology Conference are based on two registration alternatives:

1. A four-day registration allowing access to both conference and exhibition for the duration of OTC '81, or

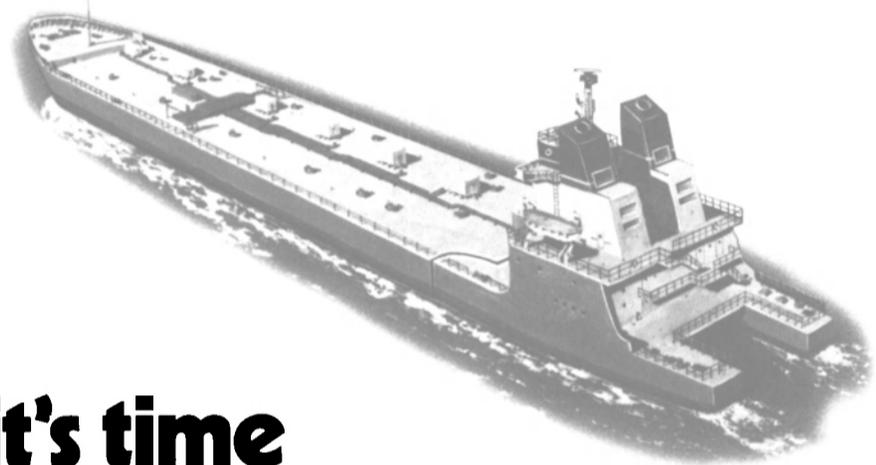
2. Daily registration allowing access to the conference and exhibition for a single, specified day.

Registration for college or university students with valid registration cards from their respective schools is complimentary.

Advance registration by mail may be made with Offshore Technology Conference before April 10. This may be done by contacting OTC, 6200 North Central Expressway, Dallas, Texas 75206.

For early-bird registration for the convenience of Houston residents and out-of-town visitors who plan to be in Houston Wednesday, April 29, through Sunday, (continued on page 52)

When diesel engine breakdown is unthinkable...



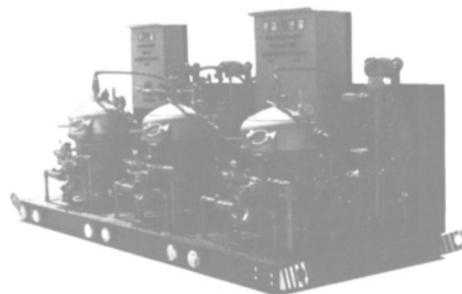
it's time for "CENTRI-PACK"

Work boats designed to burn lower-cost, more available heavy fuels are on the way. Example: the new integrated tug/barge combinations—"work vessels of the future."

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The Westfalia CENTRI-PACK is a compact module that fits almost anywhere. Built around one or more Westfalia Centrifugal Purifiers, it incorporates all necessary components—piping, wiring, motors, pumps, heaters, control panels, the works. Operation is automatic, installation is easy.

There's more. CENTRI-PACK also cleans lube oil, removing carbon and metal particles—which prevents premature engine wear, sharply reduces downtime, and saves money by extending lube oil life. Planning your own "work boat of the future?" It will pay you to learn more about CENTRI-PACK. Call us.



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See us at the Offshore Technology Conference, May 4-7, booth 6665

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CONFERENCE SCHEDULE

Monday, May 4

Registration

7:30 a.m.—6:00 p.m.

Exhibition

8:30 a.m.—6:00 p.m.

Technical Programming

9:30 a.m.—12:00 noon

2:30 p.m.—5:00 p.m.

Tuesday, May 5

Registration

8:00 a.m.—6:00 p.m.

Exhibition

8:30 a.m.—6:00 p.m.

Technical Programming

9:30 a.m.—12:00 noon

2:30 p.m.—5:00 p.m.

Awards Luncheon

12:15 p.m.—2:00 p.m.

Wednesday, May 6

Registration

8:00 a.m.—6:00 p.m.

Exhibition

8:30 a.m.—6:00 p.m.

Technical Programming

9:30 a.m.—12:00 noon

2:30 p.m.—5:00 p.m.

Thursday, May 7

Registration

8:00 a.m.—3:00 p.m.

Exhibition

8:30 a.m.—3:00 p.m.

Technical Programming

9:30 a.m.—12:00 noon



Aerial view of the Astrodomain Complex — Houston, Texas

OTC '81

(continued from page 49)

The Offshore Technology Conference is the definitive international forum on ocean resources exploration and production. OTC attained this distinction early in its 12-year history and continues to build on its own success by annually creating the most conducive atmosphere for the open discussion of virtually every aspect of the technology, products, and services associated with the offshore industry.

This year the 13th Offshore Technology Conference will be held on May 4-7, 1981 in the Astrodomain in Houston, Texas.

The medium of OTC '81—220 technical paper presentations with discussions, coupled with a technical exhibition of more than 483,000 square feet—will draw professionals from all over the world to create the annual forum. Last year, 87,000 scientists, managers, engineers, and government representatives from 90 nations attended OTC. It is expected that this year's attendance will exceed that of last year.

The Conference's Program Committee has created the ideal forum by assembling the world's foremost scientific minds to reveal the latest insights and developments in technology. Participants will have the opportunity to share in open discussions of theories and practical applications of offshore resource development, including deep-water drilling, offshore safety, subsea min-

ing, and ocean thermal-energy conversion. As an added feature, the Conference this year will present two special sessions of particular significance. One general session examines "Offshore Oil and Gas Operations—Assessment for the 1970s and Forecast for the 1980s." Industry representatives will discuss the achievements for the 1970s and the challenge for the 1980s. The other special session addresses the legal uncertainties involved in the deep-sea mining of manganese nodules.

The technical exhibition demonstrates the industry's latest technological advances through 2,200 participating exhibitors. Company representatives from 23 nations explain the equipment and services in such areas as drilling, completion, production, navigation, pollution control, and power generation.

Awards Luncheon

The 1981 OTC Achievement Awards for Individuals and Organizations will be presented during the Awards Luncheon, Tuesday, May 5. This year's recipients of the prestigious awards—Dr. Lyle S. St. Amant and Gulf Universities Research Consortium—were selected in recognition of their outstanding achievements in the field of offshore technology.

Dr. St. Amant, assistant director of the Louisiana Wildlife and Fisheries Commission, receives the award for his work on coastal and estuarine environments and for his objective counsel to the

offshore resources industry on methods to improve the compatibility of industrial and natural activities. Dr. St. Amant, a noted scientist and conservationist, has authored numerous articles dealing with the effects of petroleum production on the marine environment. His research is viewed as a valuable contribution to the development of the offshore industry.

Gulf Universities Research Consortium (GURC) is being honored for its extensive study of offshore ecology during the period of 1971-79. The conclusions of the study, which culminated in the publication "The Offshore Ecology Investigation," provide a sound understanding of the effects of petroleum operations on the ecology of estuarine and offshore waters. Without GURC's

efforts, many experts feel that U.S. leasing and offshore operations would be at a considerably lower level than they are today.

Message Center

A Message Center will be operated by Southwestern Bell in the lobby of the Astrohall during the Conference. The Message Center will be open from 7:30 a.m. to 6:00 p.m. on Monday, 8:00 a.m. to 6:00 p.m. on Tuesday and Wednesday, and 8:00 a.m. to 3:00 p.m. on Thursday. All messages for persons attending the Conference should be telephoned to (713) 791-0949. No paging system is available in the Astrodomain complex.

Transportation

OTC will provide its registrants complimentary shuttle-bus service between the Astrodomain complex and all hotels and motels listed with the OTC Housing Bureau and the official travel agents during the Conference, May 4-7. Bus schedules will be available in the registration areas at the participating hotels and motels.

OTC-TV Coverage

Throughout its 12-year history, OTC has sought to reach beyond the technical community to explain and interpret the spectrum of ocean resources development to the lay audience. The Conference will continue this public-outreach program again in 1981 with the airing of OTC-TV over KUHT-TV, Channel 8, Houston's Public Broadcasting Service affiliate, during the week of OTC.

Programs to be aired will concentrate on the issues of today that reflect the growth and the challenges of the offshore industry. The noncommercial, public-interest program will parallel the Conference itself by calling on the worldwide experts attending OTC to translate into layman's terms the significant and fascinating achievements of industry and academia.

For the third year, KUHT has donated 11 broadcast hours to OTC over a five-day period (including the Sunday before OTC).

OTC Executive Committee

Because of the diversity of engineering and scientific disciplines involved in offshore resource development, interdisciplinary cooperation is a key part of the OTC success record. The 11 international engineering and scientific organizations that joined in 1968 to establish OTC represent more than 475,000 professionals. One of the earliest provisions made for Conference management called for representatives of each Sponsor Society to participate in the overall governing of the Conference through an Executive Committee. Each representative responsible for the 1981 OTC is shown below with his corresponding society:

Dan K. Adamson, OTC Executive Manager.
 R.C. Rieder, Exhibitors' representative, Continental Emsco Co.
 C.A. Hutchinson (SPE-AIME), consultant.
 Howard Breck (SEG).
 James A. Rickard (MTS), Exxon Production Research Co.
 James R. Jackson Jr. (AAPG), Exxon Co., U.S.A.
 Conrad G. Welling (SME-AIME), Ocean Minerals Co.
 William duBarry Thomas (SNAME), J.J. Henry Co., Inc.
 Joseph D. Defilippi (TMS-AIME), U.S. Steel-Research.
 Mickey M. Livingston (ASME), Oilwell Division, U.S. Steel Corp.
 William B. Katz (AIChE), Illinois Chemical Corp.
 William J. Emrich (ASCE), McClelland Engineers.
 John C. Redmond (IEEE), Stromberg-Carlson.



A Preview

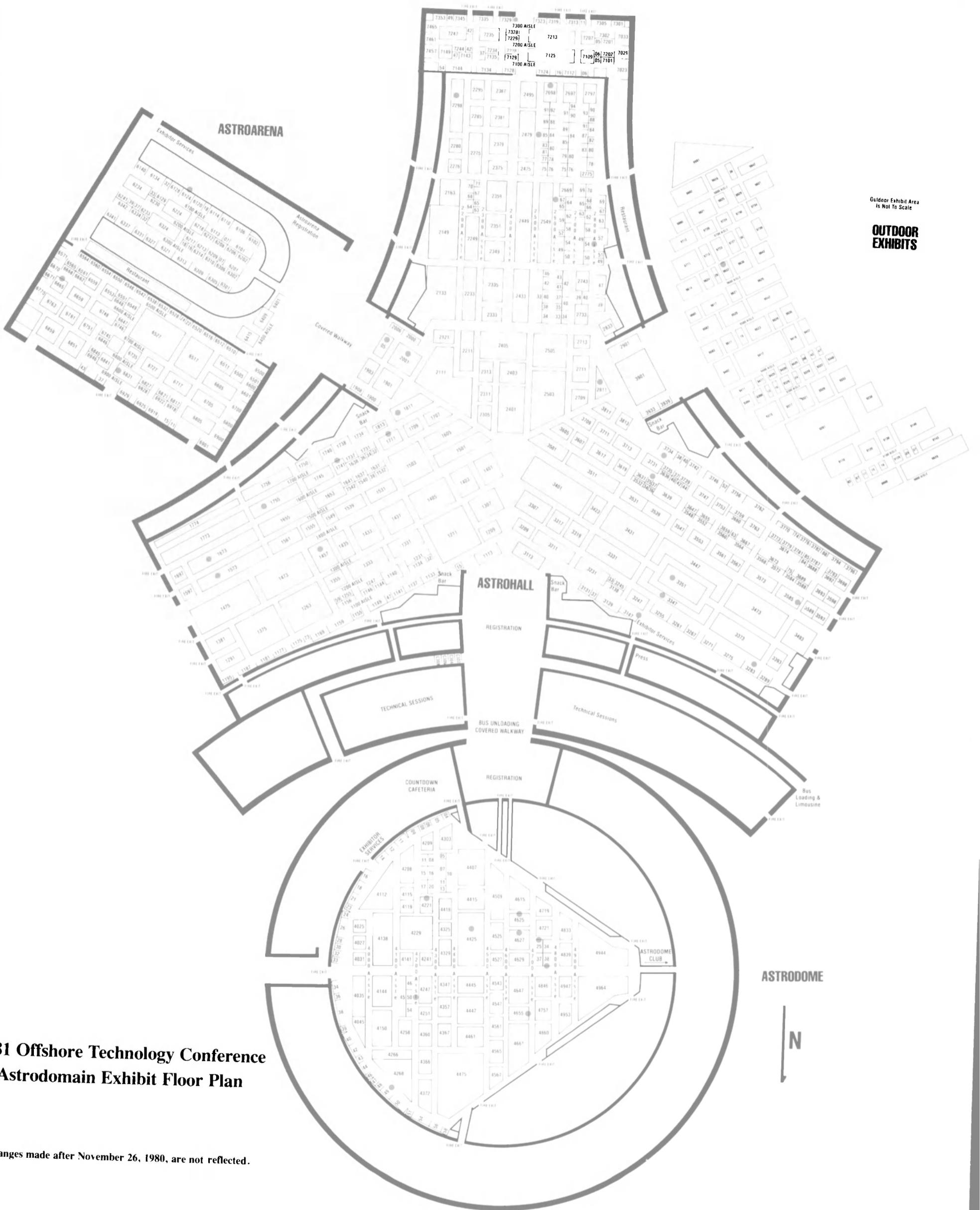
OTC '81

May 4-7, 1981-Houston

RED DOTS ● (on facing page) INDICATE BOOTH LOCATIONS FOR THE FOLLOWING ADVERTISERS IN MARITIME REPORTER

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Aqua-Chem 2005	Kawasaki Heavy Industries Ltd. 9632, 1573, 1673	Newport News Shipbuilding 6831	Selby, Battersby & Co. 2667
Avondale Shipyards, Inc. .. 3283	Krupp Atlas Elektronik .. 4250	Philadelphia Resins Corporation 4725	Smit International 1457
Bethlehem Steel Corporation 2001	Lockheed Corporation 1711	Products Research & Chemical Corporation (PRC) 6124	Transamerica Delaval Inc. 4838
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Dover Corp./Norris Div. .. 4655		Seacoast Electric 4049	
Dreyfus Supply & Machinery Corporation .. 2698			
Engelhard Industries Div. 2585			

(continued on page 50)



**981 Offshore Technology Conference
Astrodomain Exhibit Floor Plan**

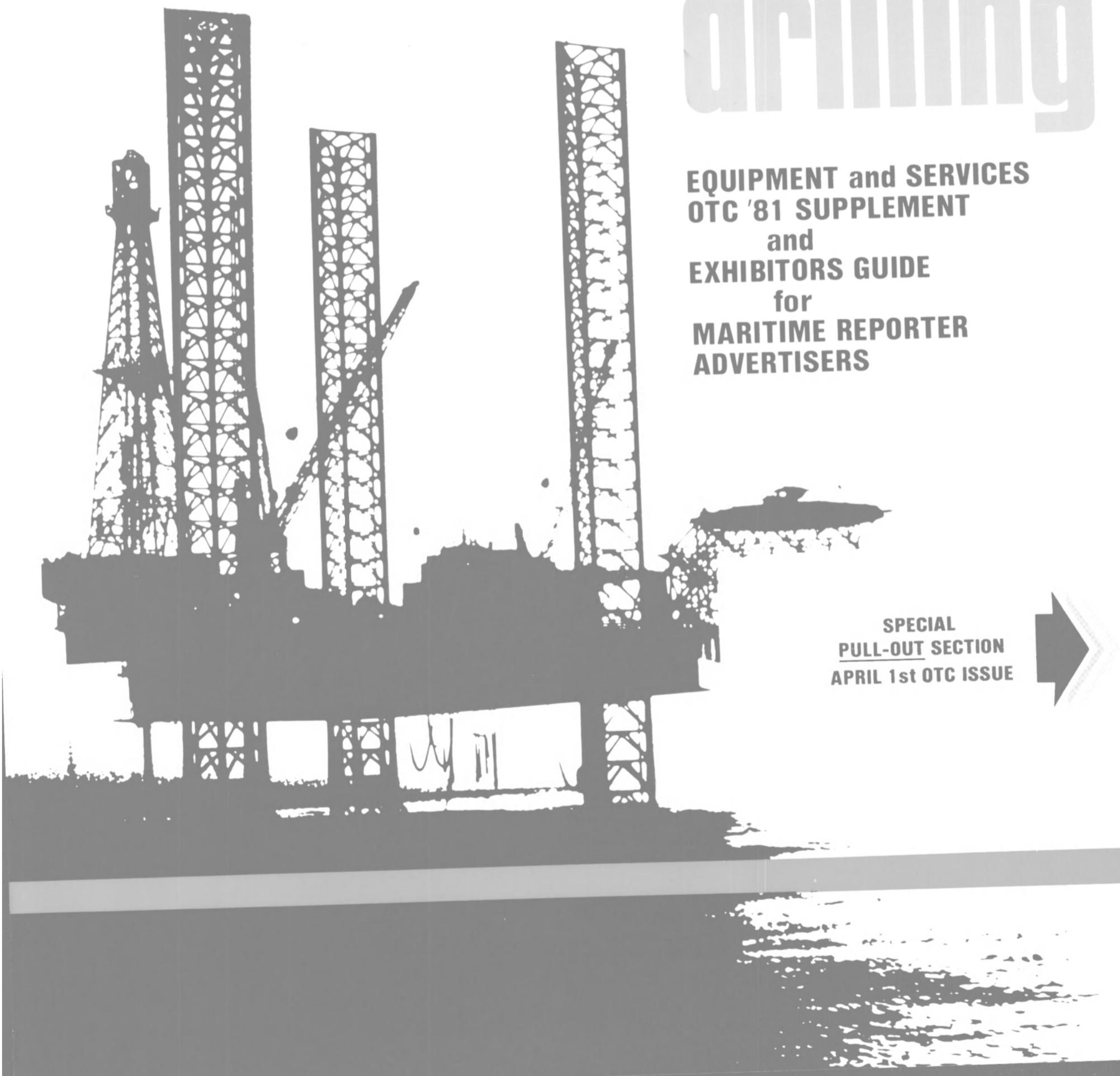
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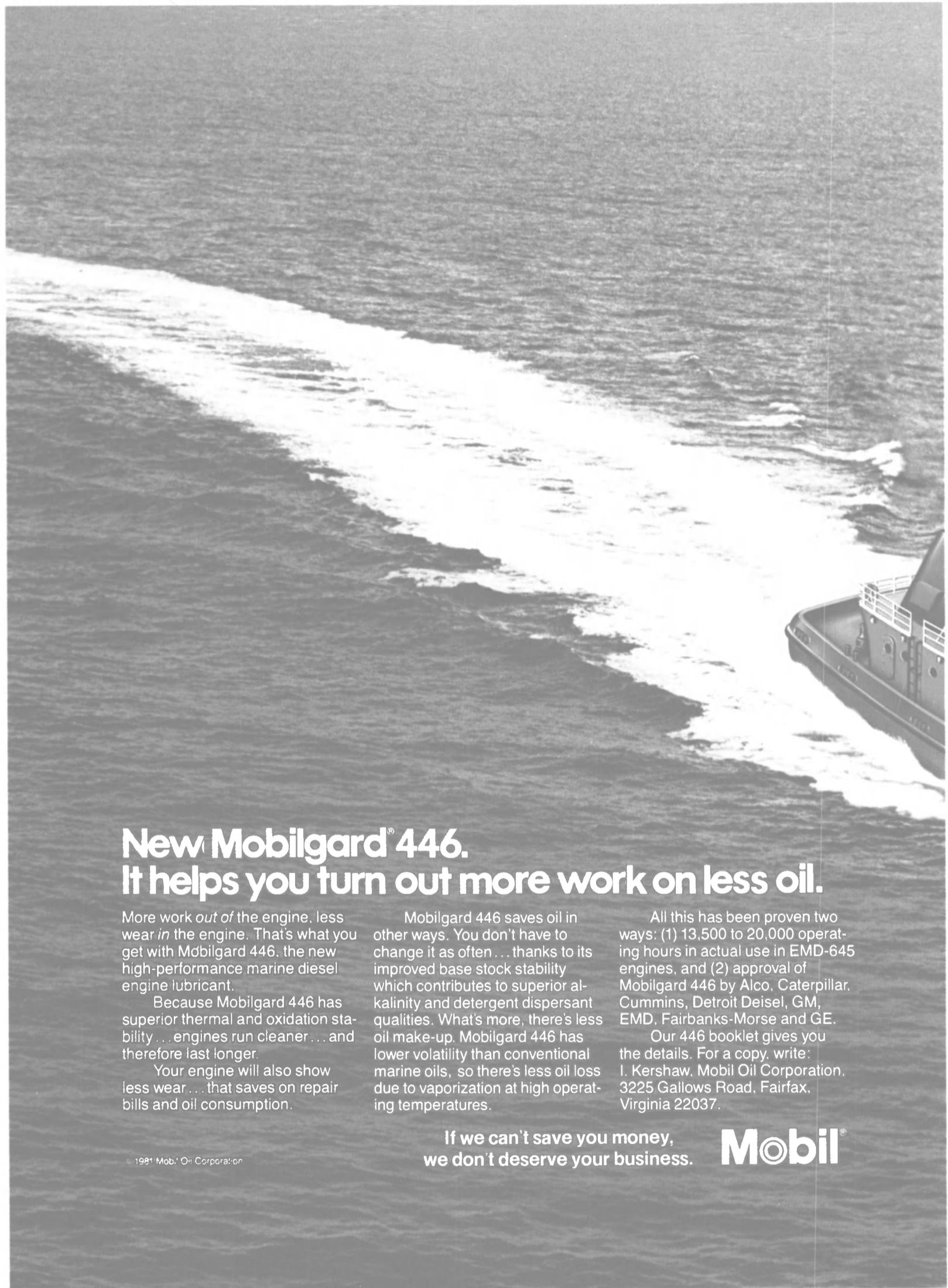
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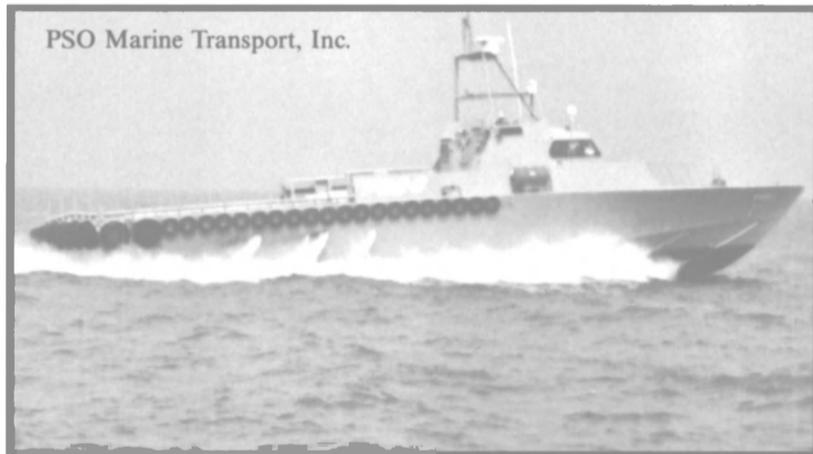
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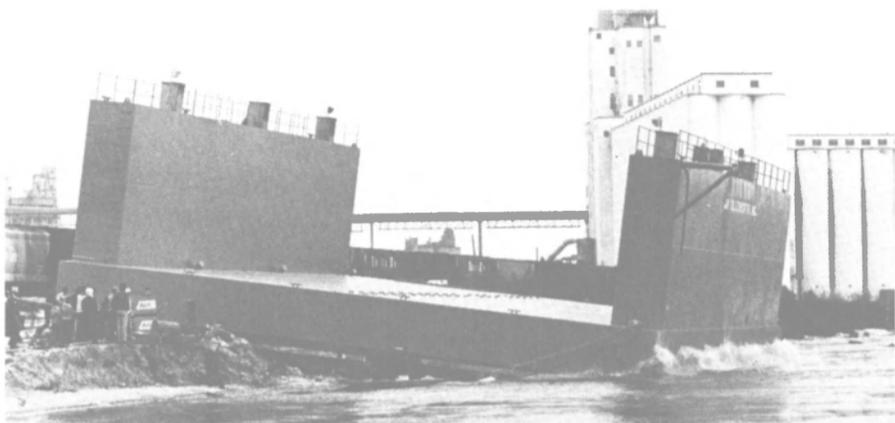
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Corpus Christi Gets Its First Floating Drydock

The first floating drydock in Texas south of Houston was launched (photo above) at the Port of Corpus Christi recently. The facility has the capacity to lift boats and barges weighing up to 1,300 tons, and is operated by Jay Bludworth Inc. The first ves-

sel hauled out for repairs on the 108-foot drydock was the Philip K, a Corpus Christi harbor tugboat that was designed by Mr. Bludworth five years ago.

Mr. Bludworth anticipates that most of his business will come from the growing number of sup-

ply and crewboats that are being used to service offshore oil and gas drilling and production operations in the Gulf. Positioned on the north bank of the ship channel just west of Corpus Christi Public Elevator, the drydock will haul out vessels of up to 200 feet in length. It will accommodate vessels up to 62 feet wide, and some larger barges will extend

from either end of the drydock. This will allow work such as changing shafts and propellers, repairing hulls, painting, repowering, and doing annual inspections.

"This facility adds a new dimension to the type of maintenance service that will be available to the south Texas marine industry," said Corpus Christi port director Harry Plomarity.

Brochure Available From Stacey Valve On Its Spectacle Line Blinds

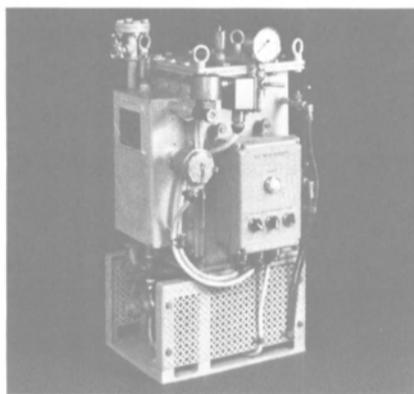
Stacey Valve Company, Brooklyn, N.Y., is offering a catalog that gives detailed specifications and operating features of its 601-AJ Spectacle Line Blind. This blind, particularly suited for shipboard fuel and liquid cargo lines, is said to provide positive dead-tight shutoff in piping from 2 to 18 inches.

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opening is accomplished by a single turn of three bolts. The spectacle is rotated to the desired position—with either the "blind" plate or the full-bore "open" plate in the pipeline—and the bolts are retightened. A short steel bar or pipe is the only tool required. The exposed plate of the spectacle indicates the status of the blind at a glance, even from a distance, a valuable safety and maintenance feature.

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The five 37,500 DWT tankers represent a new class of ship with a LOA of 658 feet, a beam of 90 feet, and a fully loaded draft of 36 feet. These ships, to be built by NASSCO

in San Diego, are among the first U. S. flag coastwise product tankers to be powered with slow-speed diesel engines. American Tankships' new vessels offer further proof of Ingram's dedication to providing the marine industry with innovative technology.

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Santa Fe Drilling's Seven Rigs

(continued from page 41)

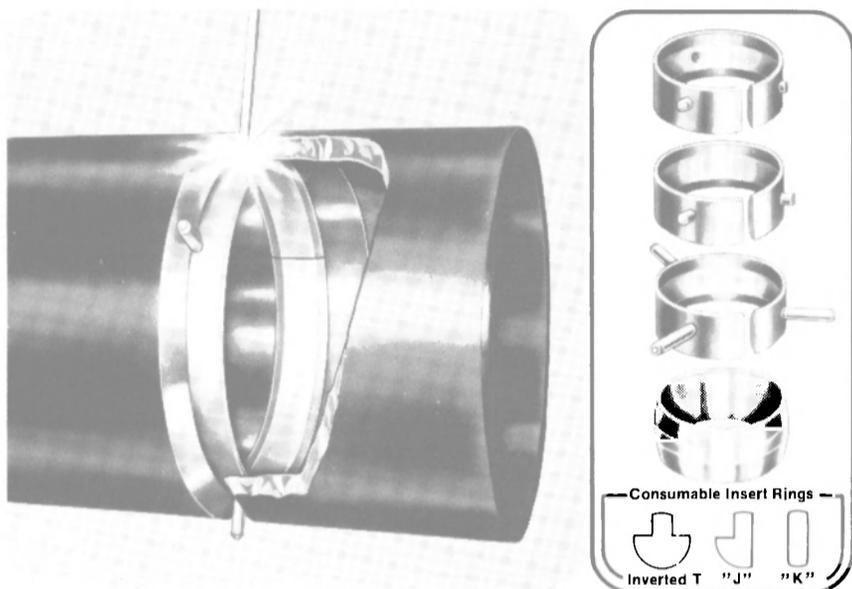
ezuelan oil companies. A British-based affiliate, Taywood-Santa Fe Ltd., is designing and building two fixed-platform rigs for Gas Council (Exploration) Ltd., a sub-

sidiary of British Gas Corporation. These fixed platform rigs will be operated by a joint venture, Taywood-Santa Fe Drilling Ltd.

James C. Thrane, vice president and manager of capital projects at Santa Fe Engineering Services Company, said his design and construction people are as busy now as they have ever been.



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Brent Christens Cummins-Powered Towboat 'Melinda Brent'

The Melinda Brent (shown above), an 86-foot inland waterways towboat, was christened recently in New Orleans by her owners, Brent Towing of Greenville, Miss. Designed and built by Superior Boat Works of Greenville, the vessel is powered by Cummins KTA-2300-M marine diesel engines generating 1,880 total continuous duty horsepower at 1,800 rpm. Power is transmitted to 76-inch, stainless-steel Kahlenberg propellers through Twin Disc MG-540 gears set at 6.18:1. The Melinda Brent is the first of Brent's 18 boats powered by Cummins engines.

The company plans to operate the boat primarily on the Illinois River and Chicago area waterways, where it will transport chemicals to contract customers. The vessel has a beam of 27 feet and a draft of 9 feet. It is the first of two tugs ordered by Brent from Superior Boatworks, a whol-

ly owned subsidiary. A retractable pilothouse gives the boat maneuverability under low bridges in the Chicago area yet still provides adequate visibility for short runs on the choppy waters of Lake Michigan.

Manufacturer's published fuel curves show the 12-cylinder KTA-2300-M consumes 47.4 gallons per hour under full-load, continuous-duty applications. Aside from fuel efficiency, Brent also looked at power and service considerations before choosing Cummins. "The twin engines give us over 1,800 horsepower—plenty of power for the harbor maneuverability we need with the Melinda Brent," vice president Lea Brent says.

The Melinda Brent is also equipped with a Cummins fuel/oil blender to convert dirty lube oil into a mixture that can be burned with diesel fuel, thereby stretching fuel supplies. The vessel is also equipped with four Sarex 10 oil/water separators to filter water and contaminants from fuel.

Two Lima 75-kw generators powered by Cummins NT-495 marine auxiliary engines supply power for electronic gear and Gardner-Denver air compressors. Patterson 20-ton deck winches powered by a five-horsepower electric motor secure tow ropes. Communication equipment includes Triton 20 SSB and 55/75 VHF radios. Radar from Furuno and a LAZ-43 depth sounder pinpoint potential waterways hazards.

Paneled quarters for the eight-man crew are located on the main deck and a spacious galley features full-size range, refrigerator and dishwasher along with a color television. The Melinda Brent is equipped with a full array of warning and safety equipment including Kahlenberg air horns, Carlisle & Finch searchlights, Perko navigation lights, and An-sul fire extinguishers.

Brent Marine Supply Company outfitted the boat, while Cummins Mid-South, Inc. of Jackson, Miss., supplied both the main propulsion engines and the auxiliary generator sets.

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on speculation; others order new rigs only after they have been committed.

The construction activities at Santa Fe Drilling Company, headquartered in Orange, Calif., are probably typical of the industry. New construction by Santa Fe is unusual only in the diversity of equipment being ordered.

When Santa Fe Rig 124 (photo) went to work for Arco-Indonesia in the Java Sea earlier this year, it marked the first of eight new mobile offshore drilling units scheduled to go into operation for the company in the early 1980s.

Santa Fe has seven other marine units either on order or undergoing conversion, at a cost in excess of \$350 million. (An additional 13 land rigs are on order at a cost of \$92 million, making the grand total \$442 million.)

When this phase of construction activity is completed, Santa Fe will be operating 34 marine units and 74 land rigs, for a total of 108 drilling units. Most of these rigs are working overseas in 15 different nations, primarily in Venezuela, the Middle East, the North Sea, Africa and Southeast Asia. Santa Fe's domestic operations are in Texas and Louisiana.

Now in design or under construction for Santa Fe are three large semisubmersibles, a trio of three-leg jackups similar to Rig 124, and a swamp barge. Here is a breakdown:

Rig 130. This semisubmersible is the former Choctaw I, the world's first twin-hull, column-stabilized pipelaying and derrick barge. It was built in 1969 and performed construction work from Australia to the North Sea for 11 years for Santa Fe Engineering & Construction Company, a sister company to Santa Fe Drilling. The barge is presently undergoing conversion at the Avondale shipyard near New Orleans. Upon completion in August, Rig 130 will begin a two-year drilling contract for Cities Service.

Rigs 135 and 140. These large, all-weather semisubmersibles will be modified versions of the Enhanced Pacesetter series designed by the marine architectural firm of Friede and Goldman of New Orleans. They will be capable of operating in such hostile environments as the Gulf of Alaska and north of the 62nd parallel in the North Sea. Both are being built in South Korea by Daewoo Shipbuilding & Heavy Machinery Ltd. at its Okpo Island shipyard near Pusan. Rig 135 will be delivered in November 1982 and Rig 140 the following March. Both of these \$80-million units are committed for work.

Rigs 127, 134, and 136. These three jackups, under construction at China Shipbuilding Company, Kaohsiung, Taiwan, are sched-

uled for completion in April 1983, December 1983, and June 1985. They are committed to work initially for Arco, Union Oil, and Gulf of Suez Petroleum Co., an affiliate of Standard Oil Co. (Indiana). They, like Rig 124, are modified versions of the L-780 series cantilevered jackups designed by Friede and Goldman. They are capable of drilling in

250 feet of water to depths 20,000 feet below the seabed.

Rig 132. This unit will go to work this summer as a swamp barge in the Orinoco Delta of Venezuela. Rig 132 is the former Santa Fe launch barge Shawnee. It is being renamed the Orinoco I, and is committed for three years to the Venezuelan oil company Lagoven.

The seven marine units and 13 land rigs being built for Santa Fe Drilling are being designed and rigged up by Santa Fe Engineering Services Company, another sister company. In addition, this Engineering Services group is designing and rigging up 11 other drilling rigs for outside clients. Nine are land units for two Ven-

(continued on page 42)

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Santa Fe Drilling's Seven Offshore Rigs To Cost \$350 Million

The contract oil and gas well drilling industry is enjoying an unprecedented boom, both on land and offshore, around the world. New construction of drilling units is announced almost daily. The

ability of drilling contractors to order offshore drilling units is often limited by the availability of construction slots in shipyards that build rigs.

The reasons for the boom in

drilling appear to be twofold. First, of course, is the higher price of crude oil on a worldwide basis. But this does not fully explain the story. The second reason is a compelling political drive by the producing countries—and the third world nations—to define

their ultimate reserves regardless of the near-term market for their oil.

As this assessment may take 10 years or more, the drilling contractors have been quite aggressive in ordering new rig construction. Some companies are building



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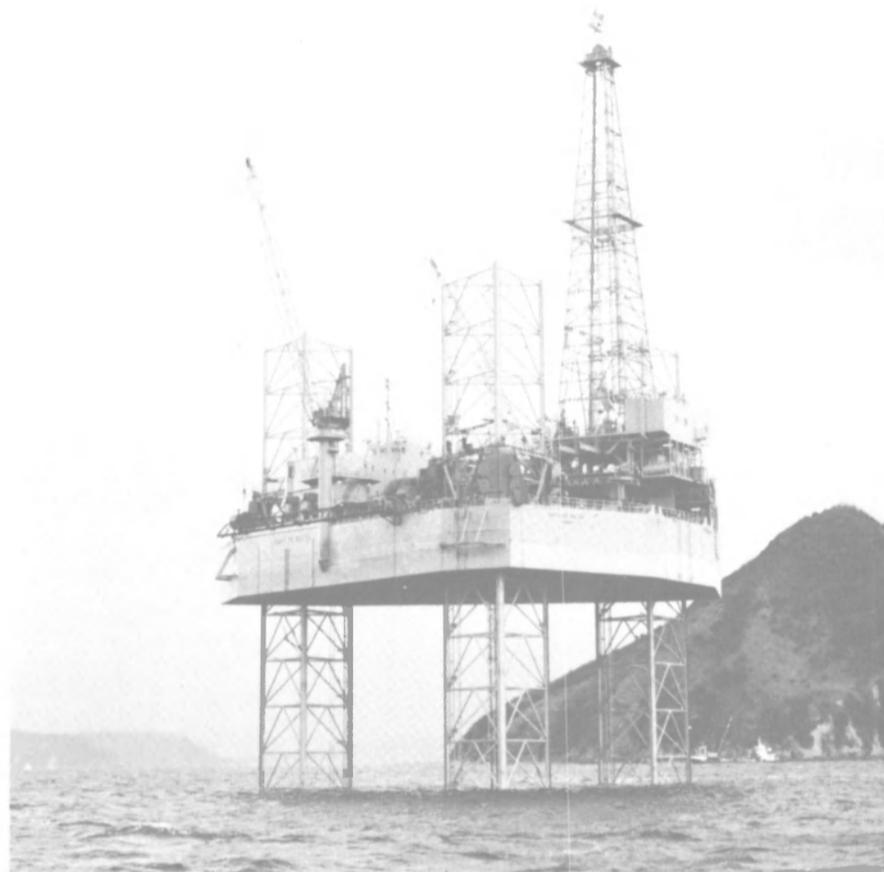
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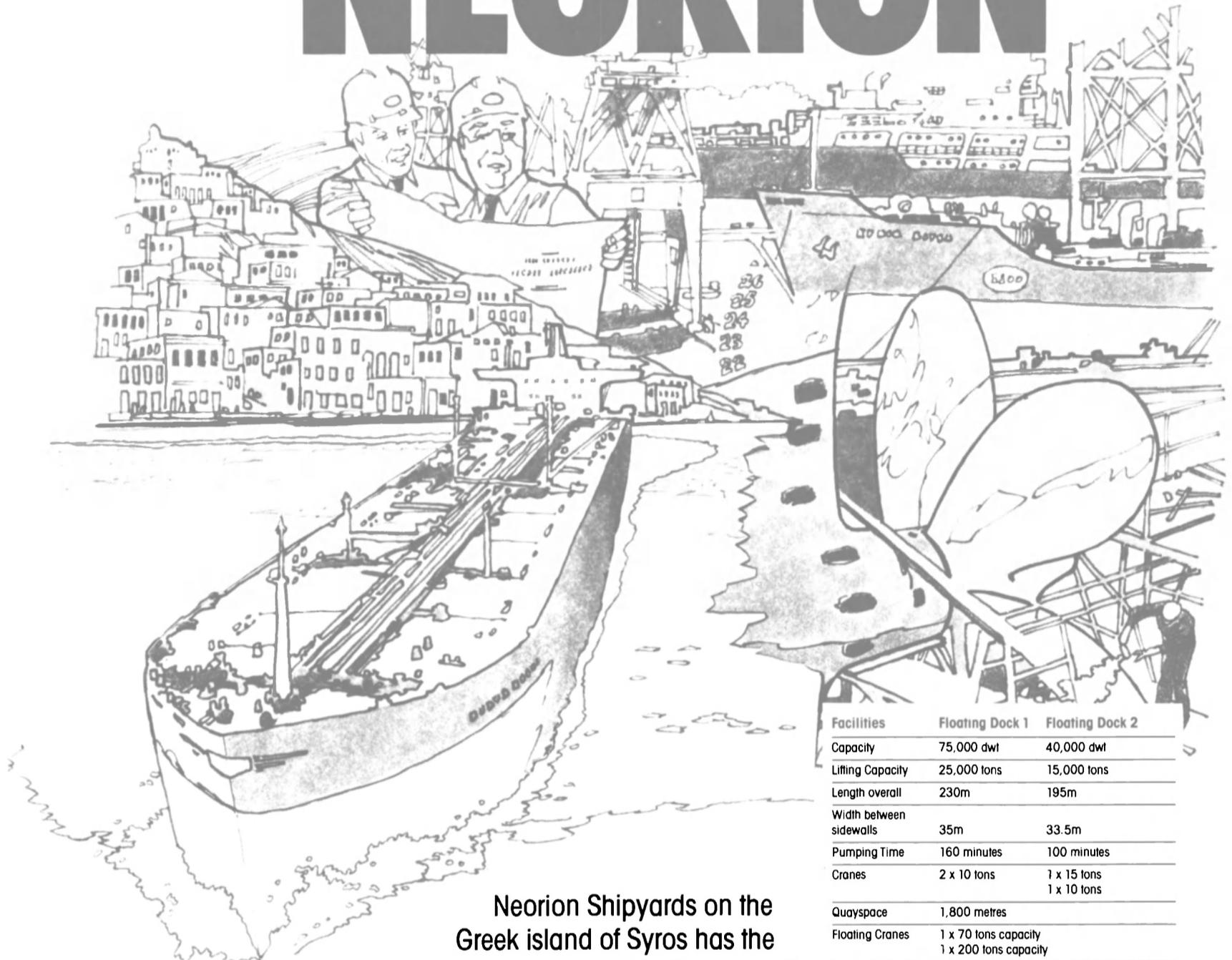
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Santa Fe Drilling Company's new three-leg jackup, Rig 124, arrived in Indonesian waters from Japan recently and went to work for Arco-Indonesia. The \$26-million unit, pictured here undergoing tests in the Inland Sea of Japan, was built by Mitsui Ocean Development & Engineering Co. (Modoc) at the Kanrei shipyard, Takushima, Japan.



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**SNAME New England
Section Hears Paper
On Thrust Bearings**

A recent SNAME New England Section meeting was held at the Faculty Club of the Massachusetts Institute of Technology in Cambridge, Mass. The speaker was **Lyssimachos Vassilopoulos**,

president of Maritech, Inc. He presented a paper titled "Stiffness and Damping of Thrust Bearings." Engineering procedures for determining thrust bearing stiffness and damping properties at the design stage, using simplified structural models and elementary lubrication theory, were discussed in detail by the author. The utility of the finite element method

for more refined assessments was also illustrated.

Mr. Vassilopoulos concluded his presentation by discussing some specific examples to show how the properties of existing bearings can be determined. Due to their simplicity, the methods suggested in the paper can be of great usefulness at the design stage. The presentation was followed by a

discussion period in which many members of the audience participated.

**O&K To Build Split
Hull Hopper Dredge
For Heinrich Hirdes**

O&K Orenstein & Koppel Aktiengesellschaft recently delivered a contract to supply a hopper suction dredger with a hopper capacity of 1,500 cubic meters. The contract was placed by Heinrich Hirdes GmbH, Hamburg. The dredger will be built to Germanischer-Lloyd class +100 A4 "Dredger" +MC AUT 16/24 at O&K's shipyard in Lubeck. Called a "split hopper," the hull is divided longitudinally and is opened for unloading.

The two side suction pipes with pressure-activated, trailing suction heads are designed for 73-foot dredging depth. The dredge pumps can be used for loading and unloading the hopper. For unloading, the pumps can be operated singly, connected in parallel or in series. The engine plant is designed for unattended engine room. Two main diesels will provide primary energy for propulsion, the dredge pumps, and the ship's mains. The diesels can be operated with heavy oil. The total diesel capacity installed will be 3,200 bhp.

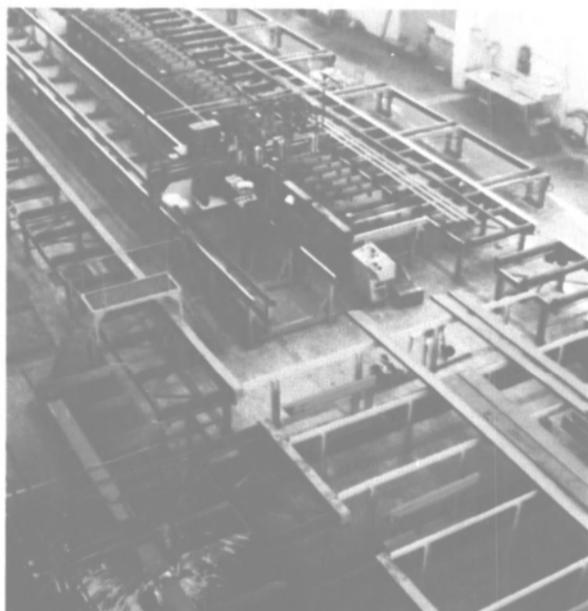
Two variable-pitch propeller systems and an O&K Tornado transverse thruster will provide for good maneuverability of the dredger in narrow estuaries. The fully laden dredger will reach a speed of more than 10 knots. Air-conditioned cabins will be provided for a crew of 11. The dredger could also be operated in tropical waters. Delivery is scheduled for the beginning of 1982.

**Roger Potash Joins
David J. Seymour, Ltd.
As Principal Associate**

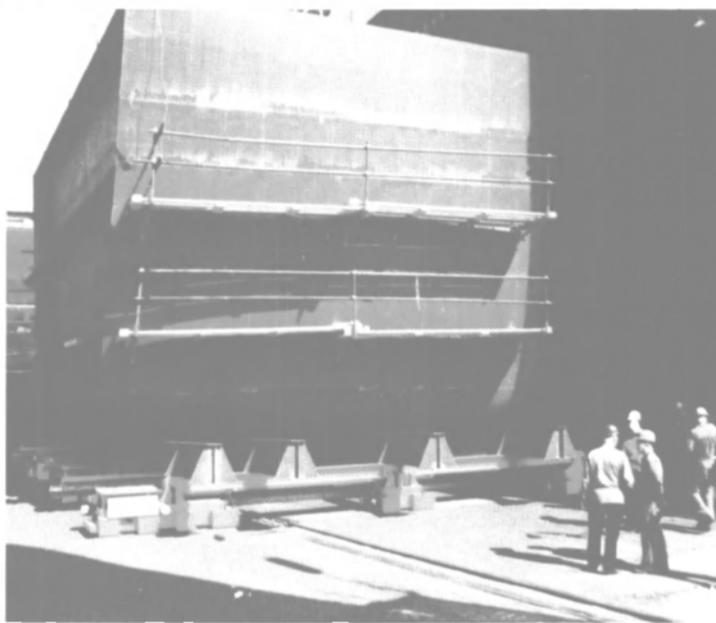
Dr. Roger L. Potash has joined the firm of David J. Seymour, Ltd., naval architects and marine consultants, as principal associate. In his new position he is responsible for project management, naval architecture, and ocean engineering design and analysis.

Formerly with Ocean Systems Division of Lockheed Missiles & Space Company for nine years, Dr. Potash has extensive experience in research and development in such diverse programs as OTEC (Ocean Thermal Energy Conversion), ocean mining, surface effect ships, offshore oil spill recovery, and 12-meter yachts. He conducted research in ship hydrodynamics at the Danish Ship Research Laboratory, and yacht design with Gary Mull and Sparkman & Stephens.

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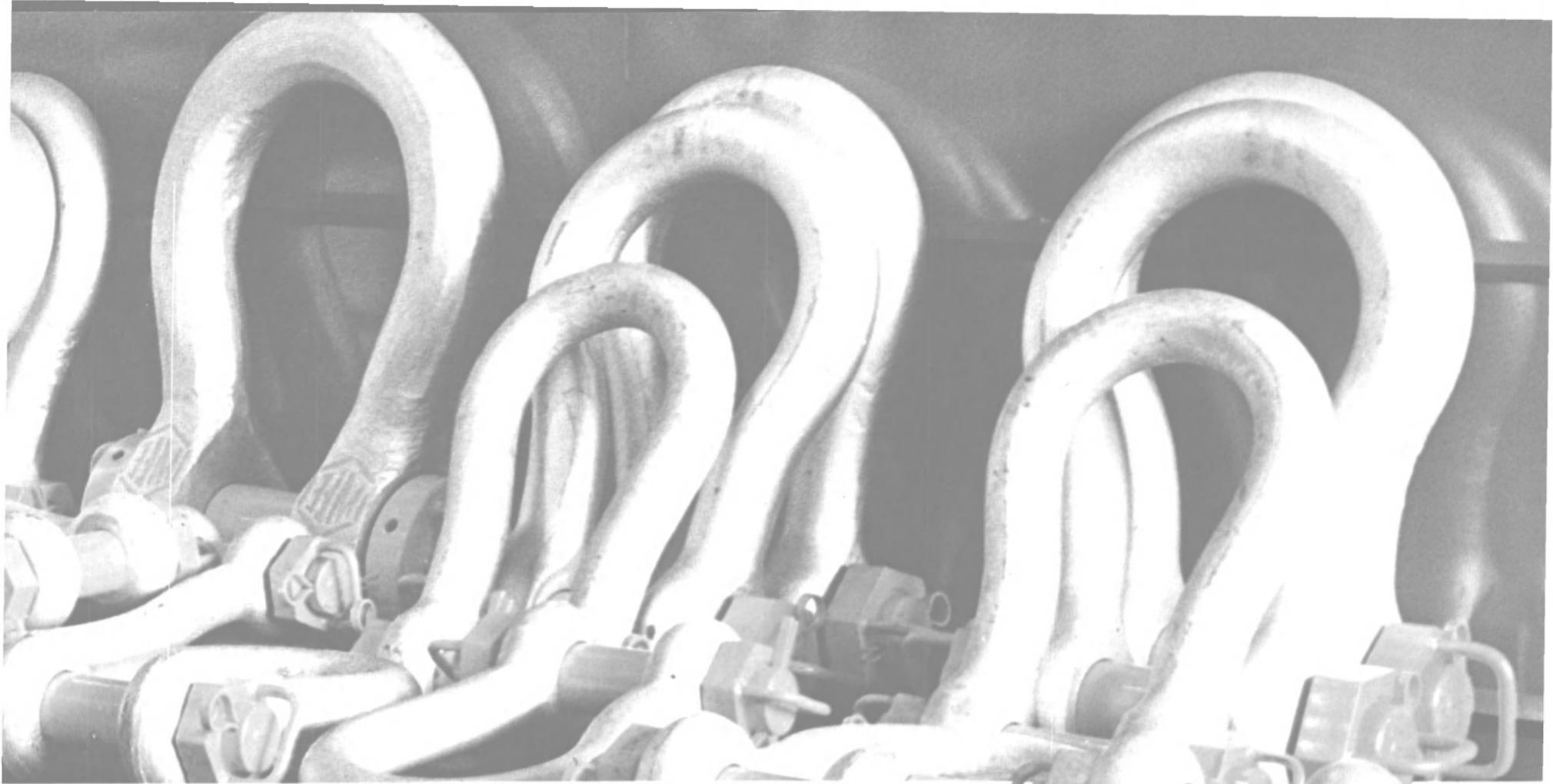
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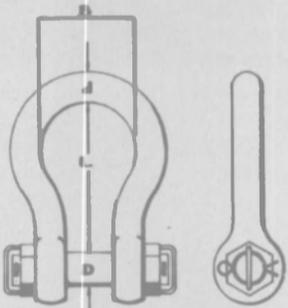


L SHACKLES

"HIGH CAPACITY" SHACKLES

DIMENSIONS IN MM (AND INCHES)							
Safe Working Load U.S. tons	Body Dia. d	Pin Dia. D	Inside Length L (Min.)	Inside Width at Pin W	Eye Dia. B (Min.)	Ordering Code	Approx. Weight Each Kgs (lbs.)
50	50 (2)	55 (2 1/4)	250 (9 7/8)	85 (3 3/8)	160 (6 3/8)	HCA 50	22 (48)
80	65 (2 1/2)	70 (2 3/4)	320 (12 5/8)	110 (4 3/8)	200 (7 7/8)	HCA 85	43 (95)
120	80 (3)	82.5 (3 1/4)	390 (15 3/8)	130 (5 1/8)	250 (9 7/8)	HCA 80	73 (160)
150	90 (3 1/2)	95 (3 3/4)	435 (17 1/8)	150 (5 7/8)	280 (11 1/8)	HCA 90	115 (260)
175	105 (4)	110 (4 1/4)	460 (18 1/8)	165 (6 3/8)	300 (11 3/8)	HCA105	175 (385)
200	110 (4 1/4)	120 (4 3/4)	520 (20 5/8)	175 (6 7/8)	330 (13)	HCA110	210 (460)
250	120 (4 3/4)	130 (5 1/4)	575 (22 5/8)	200 (7 7/8)	360 (14 1/8)	HCA120	290 (640)
300	130 (5 1/4)	145 (5 3/4)	650 (25 5/8)	210 (8 1/4)	400 (15 3/4)	HCA130	370 (810)
400	145 (5 3/4)	155 (6 1/4)	710 (28)	225 (8 7/8)	450 (17 3/4)	HCA145	520 (1140)
500	155 (6 1/4)	170 (6 3/4)	775 (30 3/4)	250 (9 7/8)	500 (19 3/4)	HCA155	630 (1380)
750	205 (8)	215 (8 1/2)	830 (32 3/4)	340 (13 3/8)	585 (23)	HCA205	1400 (3070)
1000	245 (9 1/4)	255 (10)	990 (39)	395 (15 5/8)	740 (29 1/8)	HCA245	2350 (5150)

DIMENSIONS SHOWN ARE NOMINAL



SAFETY ANCHOR

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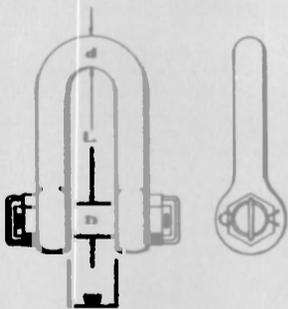
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DIMENSIONS IN MM (AND INCHES)						
Safe Working Load U.S. tons	Body Dia. d	Pin Dia. D	Inside Length L (Min.)	Inside Width at Pin W	Ordering Code	Approx. Weight Each Kgs (lbs.)
50	50 (2)	55 (2 1/4)	200 (8)	85 (3 3/8)	HCC 50	20 (46)
80	65 (2 1/2)	70 (2 3/4)	250 (10)	110 (4 3/8)	HCC 85	40 (90)
120	80 (3)	82.5 (3 1/4)	300 (11 3/8)	130 (5 1/8)	HCC 80	70 (160)
150	90 (3 1/2)	95 (3 3/4)	350 (13 3/8)	150 (5 7/8)	HCC 90	115 (250)
175	105 (4)	110 (4 1/4)	400 (15 3/8)	165 (6 3/8)	HCC105	170 (370)
200	110 (4 1/4)	120 (4 3/4)	450 (17 3/8)	175 (6 7/8)	HCC110	200 (445)
250	120 (4 3/4)	130 (5 1/4)	500 (19 3/4)	200 (7 7/8)	HCC120	280 (620)
300	130 (5 1/4)	145 (5 3/4)	550 (21 3/4)	210 (8 1/4)	HCC130	350 (780)
400	145 (5 3/4)	155 (6 1/4)	600 (23 3/4)	225 (8 7/8)	HCC145	500 (1100)
500	155 (6 1/4)	170 (6 3/4)	640 (25 1/8)	250 (9 7/8)	HCC155	600 (1330)
750	205 (8)	215 (8 1/2)	700 (27 3/4)	340 (13 3/8)	HCC205	1350 (2970)
1000	245 (9 1/4)	255 (10)	850 (33 1/2)	395 (15 5/8)	HCC245	2260 (4970)

DIMENSIONS SHOWN ARE NOMINAL

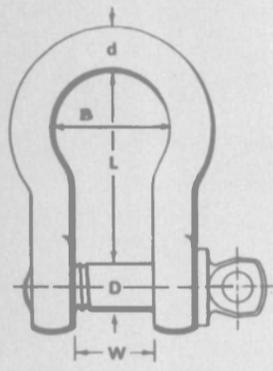


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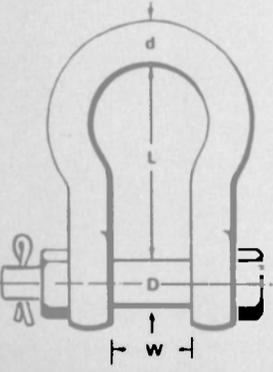
FORGED STEEL

"HIGH LOAD" SHACKLES



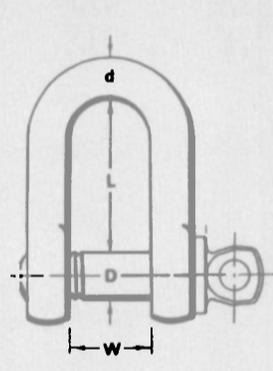
Safe Working Load U.S. tons	Body Dia. d	Pin Dia. D	Inside Length L (Min.)	Inside Width at Pin W	Inside Width at Bow B	Outside of eye Dia. (Max.)	Approx. Wt. per 100 in lbs.	Ordering Code Galvanized
1/3	3/8	1/2	1 1/2	3/4	1 1/2	1 1/2	5	UBG 1 1/2
1/2	1/2	5/8	1 3/4	7/8	1 3/4	1 3/4	12	UBG 2
3/4	5/8	3/4	1 7/8	1 1/8	1 7/8	1 7/8	18	UBG 2 1/2
1	3/4	7/8	1 7/8	1 1/8	1 7/8	1 7/8	30	UBG 3
1 1/2	7/8	1	1 7/8	1 1/8	1 7/8	1 7/8	49	UBG 3 1/2
2	1	1 1/8	2 1/8	1 1/8	2 1/8	2 1/8	76	UBG 4
3 1/4	1 1/8	1 1/4	2 3/8	1 1/8	2 3/8	2 3/8	149	UBG 5
4 1/2	1 1/4	1 1/2	2 7/8	1 1/4	2 7/8	2 7/8	222	UBG 6
6 1/2	1 1/2	1 3/8	3 1/8	1 1/2	3 1/8	3 1/8	343	UBG 7
8 1/2	1 3/8	1 3/4	3 3/8	1 3/8	3 3/8	3 3/8	534	UBG 8
9 1/2	1 3/4	1 3/4	3 3/8	1 3/8	3 3/8	3 3/8	746	UBG 9
12	1 3/4	1 3/4	3 3/8	1 3/8	3 3/8	3 3/8	988	UBG10
13 1/2	1 3/4	1 3/4	3 3/8	1 3/8	3 3/8	3 3/8	1,287	UBG11
17	1 3/4	1 3/4	3 3/8	1 3/8	3 3/8	3 3/8	1,749	UBG12
25	1 3/4	1 3/4	3 3/8	1 3/8	3 3/8	3 3/8	2,802	UBG14
35	2	1 3/4	4 1/8	1 3/4	4 1/8	4 1/8	4,134	UBG16
45	2 1/4	2 1/4	4 3/4	1 3/4	4 3/4	4 3/4	5,940	UBG18
55	2 1/2	2 1/2	5 1/8	1 3/4	5 1/8	5 1/8	8,412	UBG20
70	2 3/4	2 3/4	5 7/8	1 3/4	5 7/8	5 7/8	10,850	UBG22
85	3	2 3/4	6 1/8	1 3/4	6 1/8	6 1/8	11,948	UBG24
120	3 1/2	3 1/2	7 1/8	1 3/4	7 1/8	7 1/8	21,000	UBG28

DIMENSIONS SHOWN ARE NOMINAL



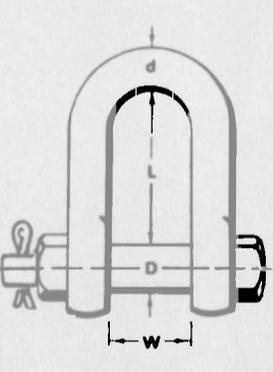
Safe Working Load U.S. tons	Body Dia. d	Pin Dia. D	Inside Length L (Min.)	Inside Width at Pin W	Approx. Wt. per 100 in lbs.	Ordering Code Galvanized
2	1/2	3/4	1 1/2	3/4	85	USBG 4
3 1/4	3/4	1	1 7/8	7/8	182	USBG 5
4 1/2	3/4	1	1 7/8	7/8	287	USBG 6
6 1/2	1	1 1/8	2 1/8	1 1/8	402	USBG 7
8 1/2	1 1/8	1 1/4	2 3/8	1 1/4	571	USBG 8
9 1/2	1 1/4	1 1/4	2 3/8	1 1/4	795	USBG 9
12	1 1/4	1 1/4	2 3/8	1 1/4	1,129	USBG10
13 1/2	1 1/4	1 1/4	2 3/8	1 1/4	1,536	USBG11
17	1 1/4	1 1/4	2 3/8	1 1/4	1,968	USBG12
25	1 1/2	1 1/2	2 7/8	1 1/2	3,140	USBG14
35	1 3/4	1 3/4	3 1/8	1 3/4	4,645	USBG16
45	1 3/4	1 3/4	3 1/8	1 3/4	6,750	USBG18
55	1 3/4	1 3/4	3 1/8	1 3/4	9,420	USBG20
70	2	1 3/4	4 1/8	1 3/4	12,000	USBG22
85	2 1/4	2 1/4	4 3/4	1 3/4	14,530	USBG24
120	2 3/4	2 3/4	5 1/8	1 3/4	25,080	USBG28
150	3	2 3/4	6 1/8	1 3/4	35,900	USBG32

DIMENSIONS SHOWN ARE NOMINAL



Safe Working Load U.S. tons	Body Dia. d	Pin Dia. D	Inside Length L (Min.)	Inside Width at Pin W	Outside of eye Dia. (Max.)	Approx. Wt. per 100 in lbs.	Ordering Code Galvanized
1/2	3/8	1/2	1 1/2	3/4	1 1/2	11	UDG 2
3/4	1/2	5/8	1 3/4	7/8	1 3/4	17	UDG 2 1/2
1	5/8	3/4	1 7/8	1 1/8	1 7/8	29	UDG 3
1 1/2	3/4	1	1 7/8	1 1/8	1 7/8	42	UDG 3 1/2
2	1	1 1/8	2 1/8	1 1/8	2 1/8	71	UDG 4
3 1/4	1 1/8	1 1/4	2 3/8	1 1/4	2 3/8	127	UDG 5
4 1/2	1 1/4	1 1/4	2 3/8	1 1/4	2 3/8	221	UDG 6
6 1/2	1 1/2	1 3/8	3 1/8	1 1/2	3 1/8	315	UDG 7
8 1/2	1 3/8	1 3/4	3 3/8	1 1/4	3 3/8	460	UDG 8
9 1/2	1 3/4	1 3/4	3 3/8	1 1/4	3 3/8	668	UDG 9
12	1 3/4	1 3/4	3 3/8	1 1/4	3 3/8	898	UDG10
13 1/2	1 3/4	1 3/4	3 3/8	1 1/4	3 3/8	1,220	UDG11
17	1 3/4	1 3/4	3 3/8	1 1/4	3 3/8	1,635	UDG12
25	1 3/4	1 3/4	3 3/8	1 1/4	3 3/8	2,550	UDG14
35	2	1 3/4	4 1/8	1 3/4	4 1/8	3,830	UDG16
45	2 1/4	2 1/4	4 3/4	1 3/4	4 3/4	5,500	UDG18
55	2 1/2	2 1/2	5 1/8	1 3/4	5 1/8	7,420	UDG20
70	2 3/4	2 3/4	5 7/8	1 3/4	5 7/8	9,850	UDG22
85	3	2 3/4	6 1/8	1 3/4	6 1/8	10,840	UDG24
120	3 1/2	3 1/2	7 1/8	1 3/4	7 1/8	19,250	UDG28

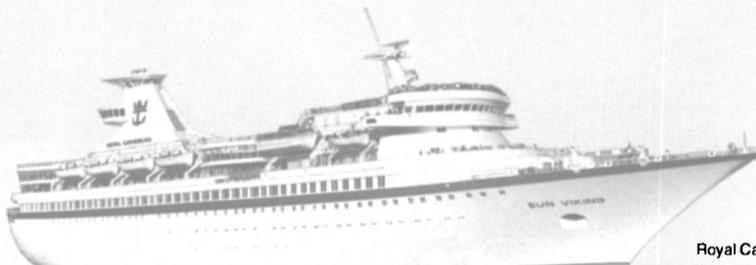
DIMENSIONS SHOWN ARE NOMINAL



Safe Working Load U.S. tons	Body Dia. d	Pin Dia. D	Inside Length L (Min.)	Inside Width at Pin W	Outside of eye Dia. (Max.)	Approx. Wt. per 100 in lbs.	Ordering Code Galvanized
2	1/2	3/4	1 1/2	3/4	1 1/2	78	USDG 4
3 1/4	3/4	1	1 7/8	7/8	1 7/8	160	USDG 5
4 1/2	3/4	1	1 7/8	7/8	1 7/8	269	USDG 6
6 1/2	1	1 1/8	2 1/8	1 1/8	2 1/8	372	USDG 7
8 1/2	1 1/8	1 1/4	2 3/8	1 1/4	2 3/8	544	USDG 8
9 1/2	1 1/4	1 1/4	2 3/8	1 1/4	2 3/8	738	USDG 9
12	1 1/4	1 1/4	2 3/8	1 1/4	2 3/8	1,038	USDG10
13 1/2	1 1/4	1 1/4	2 3/8	1 1/4	2 3/8	1,349	USDG11
17	1 1/4	1 1/4	2 3/8	1 1/4	2 3/8	1,655	USDG12
25	1 1/2	1 1/2	2 7/8	1 1/2	2 7/8	2,865	USDG14
35	1 3/4	1 3/4	3 1/8	1 3/4	3 1/8	4,128	USDG16
45	1 3/4	1 3/4	3 1/8	1 3/4	3 1/8	6,340	USDG18
55	1 3/4	1 3/4	3 1/8	1 3/4	3 1/8	8,465	USDG20
70	2	1 3/4	4 1/8	1 3/4	4 1/8	10,600	USDG22
85	2 1/4	2 1/4	4 3/4	1 3/4	4 3/4	12,380	USDG24
120	2 3/4	2 3/4	5 1/8	1 3/4	5 1/8	21,860	USDG28
150	3	2 3/4	6 1/8	1 3/4	6 1/8	31,100	USDG32

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Floating Desalination Plant Ordered From Krupp By Abu Dhabi

The Krupp-Owned Buckau-Walther group has been commissioned by Abu Dhabi's Water and Electricity Department to supply a floating seawater desalination plant worth about 21-million

Deutschemarks (about \$10.5 million). It is one of the first units of this kind in the world, and the first commercial contract of this magnitude awarded to a German company in the face of international competition. The complete unit will be handed over in the spring of 1982.

The self-propelled seagoing barge, 60 meters (196.85 feet)

long, 18.5 meters (60.69 feet) wide, and with minimal draft, employs two multi-flash seawater desalination units to produce a total of 2,500 cubic meters of drinking water per day. The barge has two 1,000-kw diesel generators for electricity required onboard. An emergency generator set, tanks for drinking water and diesel oil, workshop, laboratory, and accom-

modations for the crew of eight make up the remaining facilities. Separate pumps transfer the desalinated drinking water via floating pipeline to consumers on land-building sites and people living on the coast of Abu Dhabi.

Tacoma Boat Had Record Year In 1980—Backlog Is More Than \$300 Million

Tacoma Boatbuilding Company, Tacoma, Wash., has reported the best year in the company's 60-year history. The company's year-end backlog, at more than \$300 million, also is the highest recorded, said Frank B. Lynott, chairman. For the year 1980, Tacoma Boatbuilding had net income of \$4.6 million or \$3.86 per share on total revenues of \$119.4 million, compared with net income of \$3.4 million or \$2.91 per share on revenues of \$94.1 million for the prior year.

"Our revenues during the year increased 27 percent and net income increased 34 percent compared with 1979, and we expect to be able to continue or exceed this performance," Mr. Lynott reported. "The outlook for 1981 is excellent," he continued, "because of our substantially increased bidding activity for large commercial projects, particularly for the offshore petroleum industry, and defense-oriented vessels. Tacoma Boat's backlog now equals more than two year's revenues at our current rate."

Major repair work on a Washington State ferry and an Army ship and several construction contracts for oil company barges, amounting to a total of about \$15 million, have been started recently in the company's shipyards. The second of four 270-foot medium endurance cutters being built for the U.S. Coast Guard was launched March 19.

MarAd Approves Title XI On 15 Shearson Barges That Cost \$4 Million

The Maritime Administration has approved in principle an application from Shearson River Barge Associates IV, New York, for a Title XI guarantee to aid in financing 15 river barges. Built by Nashville Bridge Co., Nashville, Tenn., the 195-foot-long vessels were delivered in mid-1980 and are to be operated and managed by the Marine Equipment Corporation. The barges are expected to be used primarily in the carriage of grain, but also may be used to transport northbound cargoes such as coal.

The approved guarantee is for a maximum of \$3,637,000, which is 87½ percent of the total depreciated actual cost of \$4,157,457.

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World-renowned Schat Life Raft Davits are now approved for use on

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Slewing Arm Design. Schat's design features the slewing arm for maximum flexibility. The internal winch mechanism means that several fully-loaded inflatable rafts can be launched

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Raft Launching Davit is fitted on hundreds of ships, ferries, oil rigs and platforms around the world. Now it's made in America for American ships and offshore structures.

For full details on the Raft Launching Davits or other items of Schat lifting and transfer equipment, contact The Schat Davit Corporation, 226 West Park Place, Newark, Delaware 19711. Telephone: 302/366-1961. Telex: 835374.



SCHAT

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Stiles Appointed Marine Sales Representative-New York For Farboil



Wayne Stiles

Wayne Stiles has been appointed marine sales representative for Farboil Company in New York City, it was announced by Joseph F. Harrington, vice president of sales. Mr. Stiles has been a sales representative for Line Fast Corporation, New York, and Tidewater, New Orleans. Earlier, he served as captain and mate aboard various offshore supply vessels serving domestic and international oil drilling operations.

Allied Barge Seeks Title XI On \$2-Million Barge Reconstruction

Allied Barge, Inc., a subsidiary of Allied Towing Corporation, Norfolk, Va., has applied to the Maritime Administration for a Title XI guarantee to aid in financing the reconstruction of the oceangoing oil barge Matthew into a multiple product liquid chemical carrier.

Work on the 302-foot-long vessel was performed by Tampa (Fla.) Shipyards, Inc., and it was redelivered last December. The applicant said the reconstructed barge will be used along the East and Gulf Coasts of the United States.

The actual cost of the vessel was listed as \$2,000,000. The requested guarantee is for 87½ percent of that amount, or \$1,750,000.

Barges Carried Some 40 Percent Of U.S. Grain Exported In 1980

Barge shipments of grain destined for export reached a record 1.95 billion bushels in 1980, according to figures recently released by the U.S. Department of Agriculture. The share of all export grain carried by barges last year reached 40.3 percent, also a record.

"These impressive figures are testimony to the low-cost, fuel efficient freight service provided by our industry," said Ralph Van der Naillen, vice chairman of the

American Waterways Operators, Inc. "The U.S. farmer knows that, when accessible, large transportation offers the best means of getting the product to market." Mr. Van der Naillen is also vice president of Cargo Carriers Co., Minneapolis, Minn.

Compared with the previous year, barge carriage of export grain in 1980 increased 20 per-

cent. Total grain exports rose 6 percent, to 4.83 billion bushels, during the same period. "The barge share of grain exports has been rising dramatically since 1973," Mr. Van der Naillen said. "It is no coincidence that this has also been a period marked by soaring fuel costs and double-digit inflation. Just as when factors have increased consumer

awareness of fuel conservation and careful shopping, it has made barge transportation all the more attractive to shippers."

On the average, barges move a ton of freight 514 miles on a gallon of fuel, compared with 202 miles by rail. It costs only about 7 mills per ton-mile to ship by barge, far less than the average rail cost.



At Sea, Second Best Won't Do!

It takes tough men to withstand the rigors of the sea. Therefore the demanding requirements of equipment, to assist your personnel is carefully chosen. Certainly, past performance under the most trying conditions is usually the determining factor. *At Sea, Second best won't do.*

We of ISOLAMIN, are the homemakers of the seas. Our products proudly serve on over 250 ocean going vessels and 40 drill rigs, under many flags. We are ocean tough and tested.

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ISOLAMIN is fully approved by the U.S.C.G. as well as 19 other INTERNATIONAL MARITIME AGENCIES. It has further received recognition by both IMCO and SOLAS committees. Time-wise, the use of ISOLAMIN can REDUCE the manhours of INSTALLATION as much as 30%. We look forward to serving your onboard requirements and your joining those who believe as we. *At Sea, Second best won't do.*



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**New Brochure Describes
Dillon's New Line Of
Digital Crane Scales**

A four-page catalog of detailed engineering information describes the all-new digital crane scale available from W.C. Dillon & Company, Inc. Twelve capacities are featured, ranging from 0-2,000 pounds up to 0-50,000 pounds. Metric models are also offered, with capacities from 0-1,000 kilograms to 0-20,000 kilograms. Accuracy charts indicate plus/minus 0.1 percent for ranges through 10,000 pounds (5,000 kilograms). Higher capacities are rated at plus/minus 0.25 percent of full range.

Additional data presents a dimensional drawing of all models, detailing overall measurements, listing capacities, and showing net and gross weights for each range. A separate chart lists available tare compensation for

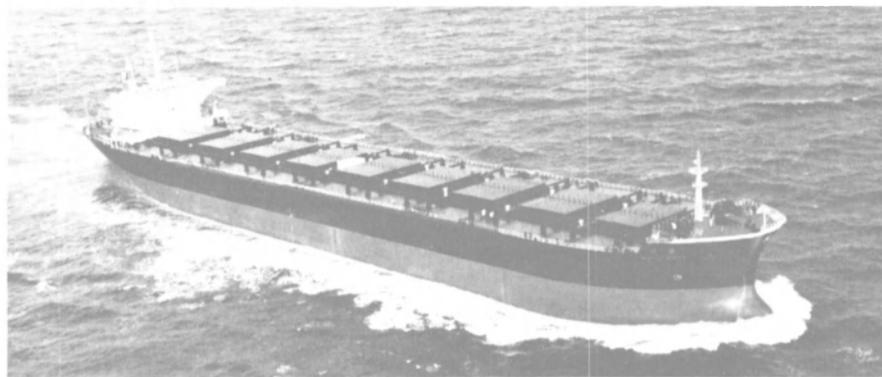
each model (20 percent of full range), and incremental breakdown by capacity. Electrical specifications and significant features are shown for all models, including battery ratings and charger voltage requirements.

For a free copy of Dillon's catalog DCS-1-1,

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**Kotelnikoff Appointed
Safety Director For
Matson Terminals**

Matson Terminals, Inc. has named Igor S. Kotelnikoff director of corporate safety. He succeeds Dino A. Dini, who has retired. Mr. Kotelnikoff formerly was manager of terminal services. He joined the company in 1961 after 14 years with Pacific Far East Line, Inc., including four years as a deck officer.



**B&W-Powered Bulk Carrier
Delivered By Hitachi Zosen**

The 133,361-dwt bulk carrier World Dulce (shown above) was completed recently at the Ariake Works of Hitachi Zosen for Kingdom Company S.A., Panama. This large-capacity bulker was developed specifically to meet world industry's growing raw materials needs. Ore and coal will be her main cargoes.

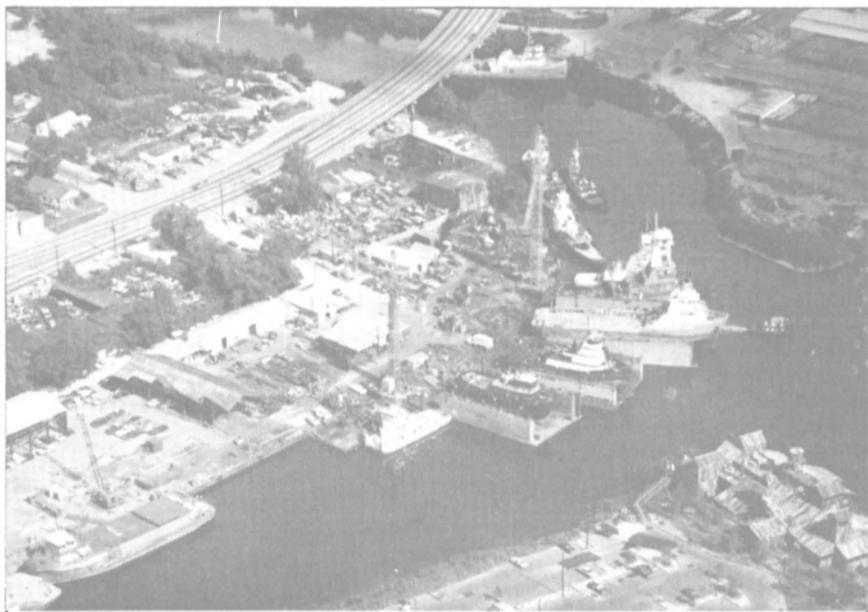
Her Hitachi/B&W 6L80GFCA main engine has a maximum continuous rating of 18,400 bhp at 106 rpm, which produced a trial speed of 16.50 knots. The ship is fitted with a special nozzle propeller, HZ Nozzle developed by Hitachi, for improved propulsion efficiency. Operation of the main engine is highly automated, as is deck machinery to simplify cargo handling and mooring. Built to Lloyd's Register of Shipping clas-

sification, the ship is operated with a complement of 35.

The World Dulce has an overall length of 270.88 meters, beam of 43.00 meters, depth of 23.80 meters, and full-load summer draft of 16.352 meters (888.7 by 141 by 78 by 53.6 feet).

**IBM Division Awarded
\$94.6-Million Navy Contract
For Sonar Systems**

IBM Corporation Federal Systems Division, Manassas, Va., has been awarded a \$94,573,000 firm fixed-price contract for AN/BQQ-5 sonars, conversion kits with applicable engineering services and data. The Naval Sea Systems Command is the contracting activity. (N00024-81-C-6030)



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Gems Offers Explosion-Proof Junction Boxes—Literature Available

Now offered as an option from Gems Sensors Division, Transamerica Delaval Inc., are level switches and level transmitters with explosion-proof junction boxes. This option is approved by

Factory Mutual (FM) for Class I, Division I, Group D hazardous areas.

The level switches offered with this option are the LS-800 as well as other standard models. The LS-800 is available in either brass or stainless steel with stainless floats. With one to six level stations, it is designed for multi-level monitoring. The LS-800 can

signal alarms or provide automatic control.

Two types of Gems level transmitters are offered with this option. Included are those offered as signal-conditioned components with 2-wire, 4-20 milliampere dc outputs, as well as those supplied as a complete system with display receiver modules. These units provide continuous monitoring or

control with direct level measurement of water, oils, process blends, fuels and chemicals.

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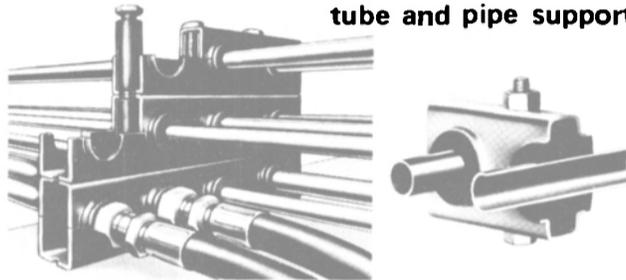
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Foremost Maritime Relocates To New Office In New York

Foremost Maritime Corporation, formerly located at 32 Broadway, has relocated its office to 50 Broad Street, Suite 834, New York, N.Y. 10004; telephone (212) 943-2335.

Foremost represents several shipowners in the Far East for a fleet of more than 45 vessels. Besides long-term contracts in chartering and newbuildings, the firm is heavily involved in ship financing.

Ferguson Retires As Chief Estimator At Bethlehem's Baltimore Yard

John M. Ferguson Jr., chief estimator in the estimating department of Bethlehem Steel Corporation's Baltimore yard, has retired after 34 years of service, it was announced by Milton H. Leubecker, general manager.



John M. Ferguson Jr.

Following a summer at sea as an oiler on a passenger ship, Mr. Ferguson worked for five years in the outside machine department of Newport News Shipbuilding and Dry Dock Company. He entered the U.S. merchant marine in 1940, served during World War II, attaining the position of chief engineer. Following the war in 1945, he was named an assistant general foreman when he joined the estimating department of Bethlehem's Baltimore yard.

He served for a short period as a ship supervisor manager before becoming an estimator in 1947. Mr. Ferguson was named a technical assistant in estimating in 1969, assistant chief estimator in 1974, and chief estimator in 1976.

Crowley Subsidiary Asks Title XI On Five Barges To Cost Of \$26.5 Million

The Maritime Administration has approved in principle an application by Trailer Marine Transport Corporation, a subsidiary of Crowley Maritime Corporation, San Francisco, for Title XI financing to aid in construction of five deck-cargo barges. The barges measure 400 feet in length, have a beam of 99 feet 6 inches, and a draft of 25 feet. They are intended for use primarily in the U.S. West Coast and Alaska trade.

Two barges are being built at Bethlehem Steel Corporation, San Francisco, and three are being built by FMC Corporation, Portland, Ore. Two have already been delivered, the others are scheduled to be delivered by mid-1981. The Title XI guarantee covers \$23,162,000, or 87½ percent of the estimated cost of \$26,471,945.

Fischer Named Sales Vice President-New York For Savannah Shipyard



Warren H. Fischer

David H. Green, president of Savannah Shipyard Company, recently announced the appointment of Warren H. Fischer as vice president, sales. Mr. Fischer is a former Naval officer. He is a member of The Society of Naval Architects and Marine Engineers. He will maintain the company's New York office at 74 Trinity Place, Suite 1800; (212) 432-0350.

Savannah Shipyard Company, a subsidiary of Aegis Corporation, is a full service overhaul, repair and conversion facility located in Savannah, Ga.

Tracor Introduces New Satellite Navigator —Literature Available

Tracor has introduced a new Satellite Navigator. Named after the North Star and the submarines which first tested the Transit system, the Polaris SatNav is a full-feature, total-performance system at a competitive price. Its housing is sleek yet functional

with a yoke that provides overhead, bulkhead, or tabletop mounting flexibility.

The large, two-line LED presentation clearly details the navigation data required to efficiently and safely sail anywhere in the world. Tracor chose the LED display because of fewer components and less power required,

the LED display has an inherent reliability. Second, the Tracor Polaris LED display can be read from across the bridge. Finally, only the necessary data is shown for clarity and simplicity. Other navigation data is instantly available at a touch of a button, but is not continuously displayed.

Polaris only draws 1.5 amps at

12 volts. The navigation program for Polaris is based upon the Tracor SatNav II, which has received international type approvals from Det norske Veritas, Norwegian Maritime Directorate, and Swiss PTT.

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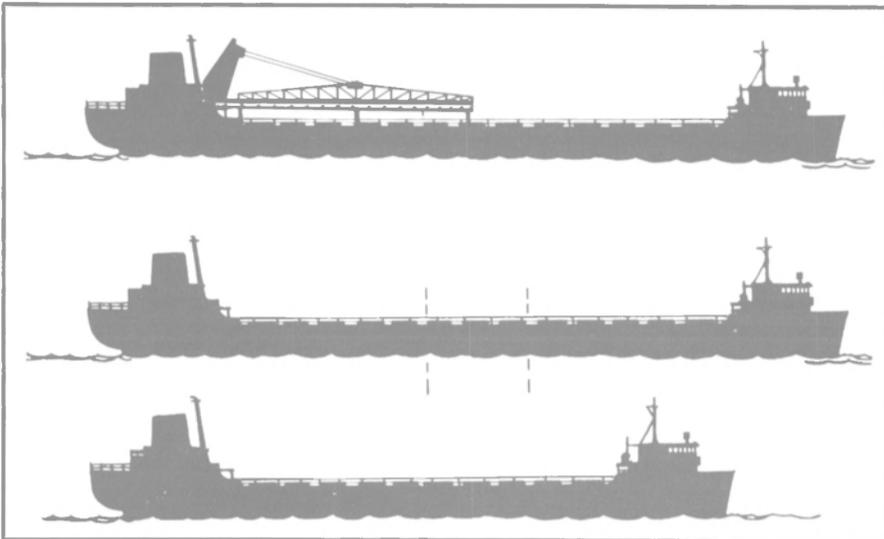
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Fraser Shipyard Will Convert Three U.S. Steel Ore Boats To Self-Unloaders

Boat watchers around the Great Lakes may be momentarily confused next year when three well-known U.S. Steel ore vessels appear on the horizon with new silhouettes (shown above, top). **Robert D. Goldbach**, vice president-shippping for U.S. Steel's Resource Development group, announced recently that the Steamers Cason J. Callaway, Arthur M. Anderson, and Philip R. Clarke will be outfitted with topside self-unloading gear for use during the 1982 sailing season. Fraser Shipyard Inc.,

in Superior, Wis., will perform the conversion on the three ore vessels.

According to Mr. **Goldbach**, when the boats were launched in 1952 they were 647 feet long with a cargo capacity of about 19,700 long tons. Each was lengthened to 767 feet in the mid-1970s, which increased their trip capacity to 26,500 long tons.

"Our first improvement in productivity for these vessels was the 120-foot lengthening and increased liftability. The addition

of the self-unloading equipment will further improve the boats' productivity by decreasing turnaround time at the unloading docks," Mr. **Goldbach** said. Currently, the ore freighters are unloaded by dockside equipment in approximately 17 hours. Fitted with new self-unloading equipment manufactured by Stephens-Adamson Division of Allis-Chalmers Canada Ltd., the cargo can be discharged in five hours.

"Additionally, these self-unloading modifications will afford U.S. Steel the added flexibility of scheduling the more efficient Callaway, Anderson and Clarke into

any and all U.S. Steel discharge ports," Mr. **Goldbach** noted.

Included in the modification plans are the installation of a hopper-type arrangement in each cargo hold, a belt conveying system under the hoppers, and a deck-mounted, 250-foot boom to transport the cargo to shoreside facilities. In addition, increasing generating capacity will be added to the boats to accommodate the extra power needs of the self-unloaders.

The new unloading equipment is manufactured by Stephens-Adamson, Division of Allis-Chalmers Canada, Ltd.

Billy Pugh Offshore Asks Title XI On Tug/Supply Boats To Cost \$6.7 Million

Billy Pugh Offshore Limited 1981, a subsidiary of Billy Pugh Offshore, Inc., Corpus Christi, Texas, has applied to the Maritime Administration for a Title XI guarantee to aid in financing the construction of two 180-foot tug/supply vessels. These 3,000-horsepower, twin-screw diesel-powered vessels are to be used in offshore oil exploration. Rysco Shipyard, Inc., Blountstown, Fla., is the proposed builder.

If approved, Title XI financing would cover \$4,800,000, or approximately 87½ percent of the estimated cost of \$6,743,865. Deliveries are scheduled for October 1981 and February 1982.

Newport News Shipbuilding Gets \$43.5-Million Navy Award For Carrier Work

Newport News Shipbuilding, Newport News, Va., has been awarded a \$43,479,700 modification to a previously awarded fixed-price incentive contract to modify CVN-71 (nuclear-powered aircraft carrier) shipbuilding contract to include improved structural changes. The Naval Sea Systems Command is the contracting activity. (N00024-80-C-2023)

Val Gandelsman Named Engineering Manager For EG&G Sea-Link Systems



Val Gandelsman

EG&G Sea-Link Systems of Herndon, Va., in a move to strengthen its new product development, has announced the appointment of **Val Gandelsman** as manager of engineering. Prior to joining Sea-Link Systems, he was employed by Coulter Electronics, Inc. He brings over 16 years of product development and engineering management experience to EG&G.

EG&G Sea-Link Systems manufactures a wide variety of underwater acoustic remote control/navigation and current meter products. These can be used in diverse applications from offshore drilling to ocean-bed mining, and from oceanographic research to tracking submarines and rescue operations.

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**J.J. McCarthy Appointed
Director Of Sales At
Waukesha Engine Division**



John J. McCarthy

John (Jack) J. McCarthy has been named to the newly created position of director of sales at Waukesha Engine Division, Dresser Industries Inc. In this position, he is responsible for all the division's product sales, including construction and industrial OEM, petroleum OEM, North American distributor, international distributor, and service parts sales worldwide. He reports to Peter C. Trombley, executive vice president of marketing & service.

Mr. McCarthy joined Waukesha Engine Division as director of domestic field sales in 1978. Prior to that he had been with Alco Power, Inc. for 13 years, where he was regional manager active in the marketing of diesel engines for various industrial applications.

Waukesha Engine is a manufacturer of heavy-duty diesel and gas engines for the marine, petroleum, off-highway, and power generation markets.

**Butterworth Systems
Opens Supply Center
In Piraeus, Greece**

Zervoudakis-Deka Marine Supplies Ltd. has been appointed as supply center for Butterworth portable tank cleaning machines and tank cleaning hose and accessories in Greece. They are located at 67 Akti Miaouli, Piraeus, Greece. Operators requiring equipment, parts, service, or accessories for Butterworth K series tank cleaning machines for vessels in Greek waters should contact Zervoudakis-Deka direct.

Butterworth Systems is an international company that manufactures equipment for tank cleaning, SCAMP® underwater hull cleaning machines, oil/water separators and high-pressure water jetting.

For additional information,
Write 42 on Reader Service Card

**Curry Named VP And
Ritch Secretary Of
Ogden Corporation**

Robert E. Curry Jr. has been named vice president and head of the Legal Department, and Kathleen Ritch has been named secretary of the Ogden Corporation, it was announced by Ralph E. Ablon,

Ogden chairman and chief executive officer.

Mr. Curry joined Ogden in 1975, and has been vice president and chief counsel, Ogden Transportation Corporation, since 1978. He will be responsible for the management of Ogden's legal staff and legal activities, reporting to Donald Krenz, executive vice president and chief legal officer.

Ms. Ritch joined Ogden in 1972, and has been assistant corporate secretary and administrative assistant to the chairman and president since 1973. She will function as secretary to the board of directors and committees of the board, with responsibility for shareholder relations and corporate contributions, in addition to her current responsibilities for headquarters services.



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**John Papp Appointed
Staff Meteorologist
At Fleetweather**

Tore H. Jakobsen and James F. Witt, owners of Fleetweather, Inc., have announced that **John Papp** has joined the staff as staff meteorologist. Mr. Papp's responsibilities will include preparation and dissemination of in-port and

offshore forecasts for the firm's customers.

Fleetweather, Inc. specializes in providing detailed weather consultation for safe and cost-effective terminal and offshore operations on the U.S. East and Gulf Coasts. The firm's customers include more than 100 steamship companies, stevedores, and agents. All operations originate at the firm's headquarters in Hopewell Junction, N.Y.

**\$5-Million Contract
Awarded By South Jersey
Port Corporation**

The South Jersey Port Corporation recently awarded a contract for \$5,152,500 to Raymond International Builders of Rochelle Park, N.J., the low bidder, for construction of the final 540 feet of the Beckett Street Terminal

Wharf extension, Camden, N.J. This contract is part of an overall \$16-million modernization and improvement program designed to increase the port's tonnage handling of bulk, general, and containerized cargo.

The major project is the 740-foot extension of the Beckett Street Wharf, which will give the terminal a fourth berth. Last year, using three berths totaling 1,550 feet, the terminal handled 1,085,786 tons of cargo, making it one of the most efficient terminals in the country.

South Jersey Port Corporation board chairman Edward J. McManimon said the total cost of the extension is approximately \$7 million, and the port spent an additional \$1.1 million for the removal of the collapsed Spruce Street Pier.

**William Ball Appointed
North American Sales
Manager For SRS**

William C. Ball has been appointed North American sales manager for Separation and Recovery Systems, Inc. (SRS) it was announced by **Joseph De Franco**, president of the company. Mr. Ball was formerly marketing manager of Western Filter Company, responsible for all sales and distribution activities, and prior to that was associated with Torite Filter Company, Jepco Sales, and Purolator Aerospace and Industrial Division.

SRS and its Sarex product line is based in Irvine, Calif., and is a leading manufacturer and distributor of oil pollution control equipment, with offices in London and Tokyo. Technical and service representatives are located in most major seaports.

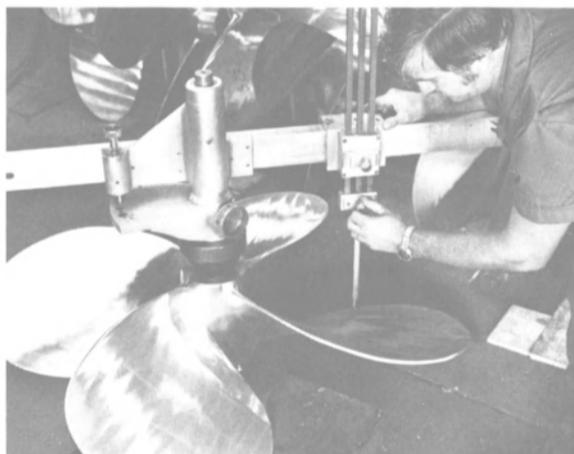
**New Publications Catalog
Available From SNAME**

The Society of Naval Architects and Marine Engineers has announced that its 1981 Publications Catalog is now available at its headquarters office. The handy-size booklet lists the many SNAME publications in print, and introduces by abstract, seven new technical publications from its Technical and Research program. The last two Spring Meeting/STAR Symposia are also abstracted. In addition, the catalog lists the Society's books, periodicals, and 97 previously published T&R guides, reports, and data sheets.

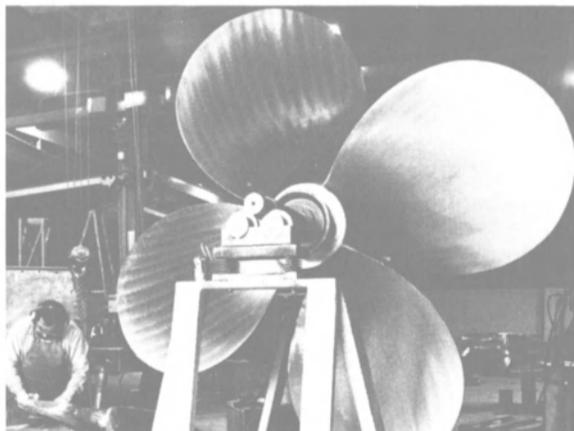
All SNAME publications are modestly priced, and almost all offer a 33-percent discount to SNAME members. For additional information, contact the Publications Department at One World Trade Center, Suite 1369, New York, N.Y. 10048.

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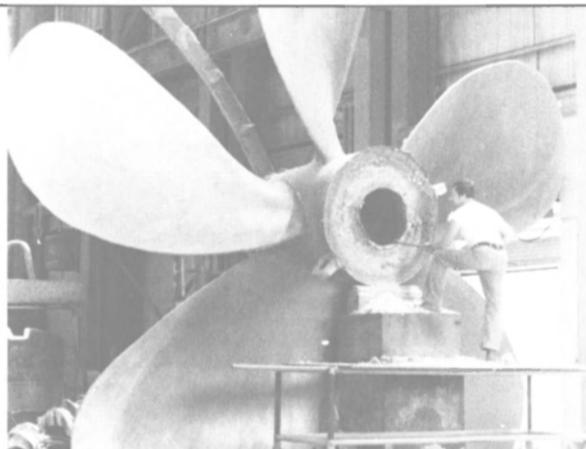
For the most part, power, efficiency, maneuverability and smoothness of operation depend upon what's on the business end of your power plant. And that's where Michigan Wheel goes to work for you. Whether your needs are small or large, rely on Michigan's free expertise and consulting service to assure correct fit to your engine, hull and use requirement. As a result, you can get the most from every drop of fuel and make even the most difficult maneuvers with ease. For example —



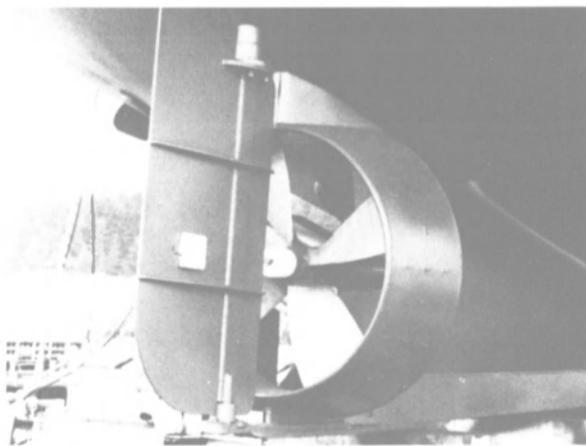
Michigan's Work-Horse™ is a tough 4-blade propeller with heavy cross-sections and heavy-duty leading edges designed to give you smoother operation than the 3-blade wheel it replaces. It is cast and available in three very strong materials: Michalloy K bronze and Ni-Bral through 30' dia., and CF 3 mod Stainless Steel in sizes through 18' dia. All offer exceptional resistance to corrosion and damage... could save costly haul-outs, repair and downtime.



Coolidge Propellers have earned a world-wide reputation for tough, yet readily repairable stainless steel propellers. That's because, with more than 60 years of experience, Coolidge has accumulated vast knowledge about casting stainless steel. Coolidge also claims a world reputation for efficient prop designs. 3-, 4-, or 5-blade styles up to 13' dia., as well as CP blades, are available in bronze or stainless. Our engineers will create custom designs to suit your need.



Michigan Wheel Gulf Coast is Michigan's newest facility, providing 64,000 sq. ft. of manufacturing area on 47.5 acres of easily accessible land. Furnace capacity is 10 tons for stainless and 75 tons for manganese bronze. Bronze propellers can be cast to 30' diameter, poured to your specifications or custom engineered by our Michigan staff. Stainless steel propellers can be cast to 18' diameter. Propellers are generally produced to ABS, Lloyds or Bureau Veritas, or other classification society standards.



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**Hanson Joins Simrad
As Manager-Technical
Service Department**



Dean Hanson

Dean Hanson has joined Simrad as manager of the technical service department. He brings to Simrad 15 years of varied and intensive experience in the electronic field. He has worked extensively as a field engineer, a design engineer in marine electronics, and as a marketing sales engineer.

Mr. Hanson has also served in the U.S. Navy as an electronics technician-radar specialist. He will visit Simrad dealers to hold equipment seminars, and develop higher levels of responsiveness to dealer and customer needs. Mr. Hanson will be stationed in Simrad, Inc.'s main U.S. office in Armonk, N.Y. He will also work closely with Simrad's branch offices in New Orleans, Houston, Seattle, and San Diego.

**Hoover Appointed Manager
Of General Electric's
Tidewater Service Shop**

William F. Hoover has been named manager of the recently established Tidewater Service Shop, Chesapeake, Va., for General Electric's Apparatus Service Division (ASD). The appointment was announced by Gerald S. Seay, manager of the division's Richmond Service Territory. Mr. Hoover was previously sales engineer for GE's Richmond ASD shop.

In his new position, he is responsible for service and sales to power plants, chemical manufacturers, and the paper and marine industries in southeastern Virginia and northeastern North Carolina. Currently, the shop provides mechanical repairs, with electrical and motor repairs scheduled for later in the year.

**Neorion Yard Expands
Its Gritblasting And
Coating Facilities**

Wesley D. Wheeler Associates of New York City has announced that Neorion Shipyards Syros Ltd. and Peiniger GmbH have formed a joint venture company,

NEPECOR, to offer shipowners internal gritblasting and coating facilities at Neorion Shipyard, which is on the island of Syros, Greece, a Mediterranean crossroads near the Suez Canal and the Dardenelles.

Shipowners will now be able to utilize Neorion's ship repairing expertise combined with Peiniger's extensive experience in the

coating field. Resident manager of the new company is R. Simmel, who has wide coating experience with Peiniger.

Among the major equipment to be available at the shipyard are three Munkebo abrasive recovery units, four Munters dehumidifiers, and six ventilators. A bulk handling system for the grit is being installed, and sheds will be

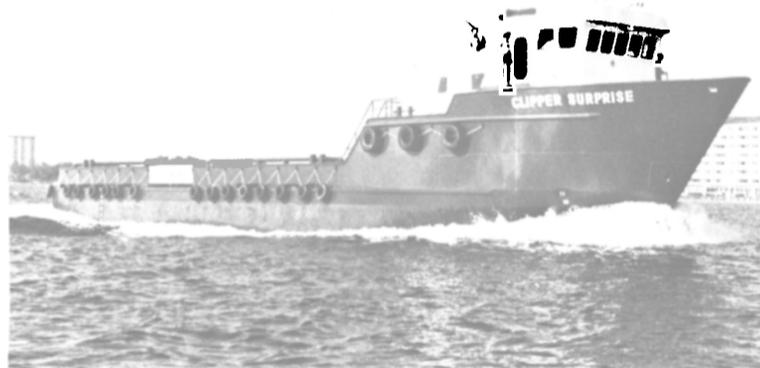
built to handle the gritblasting and coating of new steel, pipes, hatch covers, etc.

NEPECOR recently was awarded two contracts each involving 40,000 square meters of internal blasting and coating for a major U.S.-based oil company. The Wheeler firm is exclusive agent in the United States for the Neorion yard.

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Hayward Offers New Line Of Valve Operating Stands —Literature Available

A new series of welding type, fabricated valve operating stands, used to operate valves below decks, is now being manufactured by the Marine Products Division of Hayward Manufacturing Company, Elizabeth, N.J. Two stand-

ard heights, 14-inch and 24-inch, are available. Each can be supplied with stainless-steel stems in 1, 1¼, or 1½-inch diameters. Handwheels are available in several sizes, from 8-inch through 24-inch diameters. Bushings are self-lubricating bronze Oilite. An indicator on the stem moves up and down to show relative open or closed position.

Because of the flexibility of this design, many options are available. The stem may be modified to accommodate each rod or cable coupling for extension below decks. The indicator can be designed to coincide with the operation of the valve. Special modifications may be supplied on request, including flanged mounting to decks. Delivery is from stock

for marine repair jobs, retrofiting, or new construction.

For additional information,
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James Thrane Appointed VP-Capital Projects For Santa Fe Engineering



James C. Thrane

James C. Thrane, the man responsible for Santa Fe Engineering Services Company's new equipment construction, has been promoted twice recently. In December 1980 he was named vice president of construction; two months later, he was promoted to vice president of capital projects. He was succeeded as manager of construction and repair by Dennis Yenser. Mr. Thrane joined Santa Fe in 1973 as a construction superintendent. Prior to that he was general manager of PACECO's Gulfport, Miss., manufacturing plant.

Automatic Logging System Developed By NMS— Literature Available

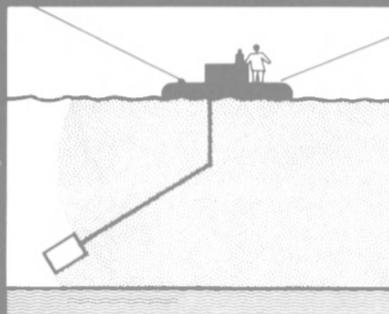
The tasks of logging ship's control commands, responses, and propulsion system operation can be completely turned over to an automatic printout logging system developed by National Marine Service Incorporated. The bell logger system automatically prints engine order telegraph commands, responses, throttle position, propeller pitch, and shaft rpm. Data and time are recorded for every control or function. The system is extremely flexible, and any parameters may be selected by the vessel operator. Customization to a specific vessel is said to be easy and economical.

The bell logger system is designed for the marine environment, including the printer, whose output is impervious to light, temperature, or humidity. Compatibility with National Marine's master clock system is designed into the automatic logger. According to a National Marine spokesman, the bell logger system is competitively priced and is also compatible with National Marine's monitoring systems for diesel-powered vessels.

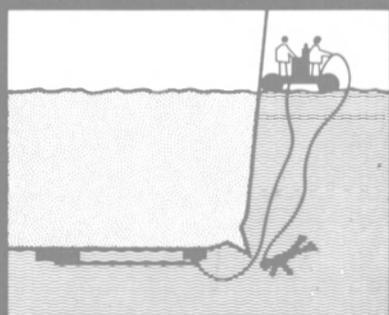
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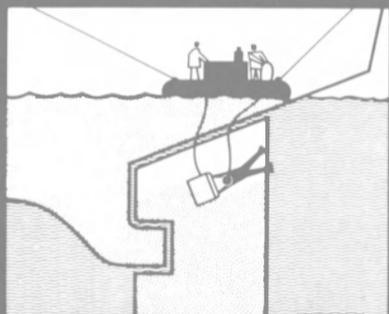
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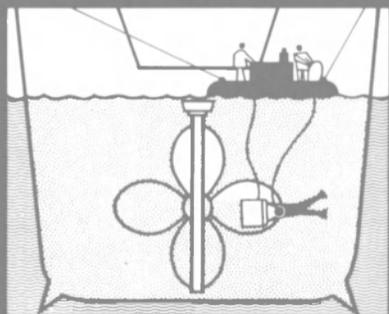
TRELLECLEAN® cleans hull sides (80% of all hull cleanings) from the water line to the bilge keel automatically at the rate of 1 metre per second.



TRELLECLEAN® cleans flat bottoms using a special arm brush controlled and powered from the surface with diver attendance for guidance only.



TRELLECLEAN® cleans areas such as the rudder, bilge keels and bulb bow with a purpose designed diver operated brush developed as an integral part of the system.



TRELLECLEAN® cleans propellers with a specially developed diver held brush, a part of the overall system.

TRELLECLEAN® —Underwater hull cleaning in a new and better way—efficient, economical, long lasting yet gentle to hull and paint.

Most ships need a hull cleaning now and then and whether it's considered a stop gap operation or part of a planned preventative maintenance programme, practical experience shows that hull cleaning accounts for fuel savings often in excess of 10% and pays for itself in a very short time.

So when you decide the time is right for hull cleaning you need to select a system that's fast, cost effective, efficient and at the same time gentle to the hull and existing marine coatings.

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TRELLECLEAN® gives you advanced brush design with multi-bristle layouts which coupled with high rotational speeds provide a smooth spore free surface without damaging the remaining fresh anti-fouling paint.

TRELLECLEAN® gives you clean hulls anywhere because it's almost fully automatic and requires only minimal diver intervention, so low visibility and currents make no difference to its cleaning performance.

TRELLECLEAN® is speedy, cleaning the sides of a VLCC in about 8-12 hours and the whole hull including the flat bottom in 24 hours.

TRELLECLEAN® is long lasting because its advanced design effectively removes marine growth spores to provide a smooth surface which inhibits further colonization.

TRELLECLEAN® is economical, providing excellent results at rates that make sense.

TRELLECLEAN® is available now at stations in Scandinavia, Rotterdam (serving Western European ports), Houston (serving Gulf Coast ports), Norfolk VA (serving U.S. East Coast ports), Singapore, Fujairah U.A.E. and more stations will be announced later.

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TRELLEBORG

IMCO's Work for Safety at Sea: **E.P. Srivastava**, secretary general, Inter-governmental Maritime Consultative Organization (IMCO). This talk will have a special bearing on IMCO's work on international requirements regarding standards of manning, certification, and watch keeping.

U.S. Coast Guard and International Work on Safety at Sea: Rear Adm. **Henry H. Bell**, U.S. Coast Guard, Chief, Office of Merchant Marine Safety. This paper will explain the difference between international regulations adopted or to be adopted by IMCO and those applied by the U.S. Coast Guard considering the impact of such differences on foreign vessels calling at U.S. ports.

IMIF's Contribution To Better Operating Standards: Dr. **Helmut Sohmen**, chairman, International Maritime Industries Forum (IMIF), and chairman of Marine Navigation Company Ltd. This presentation will deal with safety in human terms, elaborating on manning policies, morale and staff welfare, and safety consciousness.

Human Factors and Safety: **William O. Gray**, senior advisor, Petroleum Products Department, Exxon Corporation. This speech will deal with human errors defined as "competent" and "incompetent" errors, stressing the question as to where the responsibility primarily rests and how a major company like Exxon attacks these problems.

Accident/Incident Statistics for Safety: **K. Harold Drager**, principal research engineer, Det norske Veritas. The ultimate objective of statistics on marine casualties is to create a base for deciding priority as to where remedial actions should be put in. Safety at sea being an international matter, worldwide marine casualty statistics defining the causes of the accidents in a manner suited to an overall and systematic analysis is of paramount importance, this paper states.

Vessel Traffic Systems for Safe Navigation—Limited Guidance or Extensive Control?: **Frode Ringdal**, attorney at law. This speaker will question whether participation in shore-based monitoring systems should be voluntary or made mandatory. He will also discuss whether such systems should be of a passive, advisory type or be given the power to take direct action in the movements of the vessel. In the latter case the legal aspects, such as liability in case of wrong information or orders being given, have to be clarified.

Manning of the Bridge: Capt. **Erik Salvesen**, Norwegian Maritime Directorate. This paper will deal with the general basis for the existing manning rules applicable to Norwegian ships, particularly emphasizing rules and regulations related to navigational watchkeeping.



Liquefied Gas Minicarrier Delivered By Moss Verft

Moss Verft, a member of the Norwegian Kvaerner Group, recently completed the liquefied gas/ammonia carrier Hebe (shown above) for K/S A/S Helengas of Stavanger, Norway. The vessel will be operated by Rederiet Helge R. Myhre A/S, also of Stavanger. She is built to Det norske Veritas Classification +1A1, Tanker for Liquefied Gas, Ice C, EO, as well as the U.S. Coast Guard's Rules and Regulations for Foreign Flag Vessels, and IMCO's Code for Gas Carriers, Resolution A 328.

With a cargo capacity of 2,600 cubic meters, Hebe has an overall length of 246 feet, beam of 46 feet, depth of 26 feet, and maximum draft of 22.3 feet. Her main

engine is a 12-cylinder, turbo-charged diesel, Nohab Polar type F212V825, which has a maximum continuous rating of 2,638 bhp at 825 rpm. It drives a controllable-pitch propeller via a flexible coupling and a reduction gear. Auxiliary engines are four Volvo Penta diesels, each coupled to a Stamford generator with a rating of 215 kw.

Hebe is built with a single deck, transom stern, and bulbous bow. Accommodations and the engine room are located aft, while the reliquefaction plant is installed in the deckhouse amidship. Manufactured by Kvaerner Kulde A/S, the reliquefaction plant consists of twin unit, each comprising

three compressors able to carry two cooled cargoes simultaneously.

A combined inert gas/incinerator plant is installed in the engine room. The inert gas generator has a capacity of 500 cubic meters of nitrogen per hour. Both liquid and solid wastes can be burned in the incinerator. This combined plant was developed and built by Moss Verft. In function, the plant can supply inert gas to the cargo tanks, the hold spaces surrounding them, and all cargo-handling piping.

The ship has three cargo tanks in separate holds — one conical twin tank, one cylindrical twin tank, and one transverse cylindrical tank. Constructed of low-temperature steel with an external insulation layer of polyurethane, the tanks are designed to carry cargoes with temperatures down to minus 48 C.

Cargo may be arranged in two separate systems, with three different tank combinations. The tanks are fitted with vertical, centrifugal deepwell pumps supplied by Thune-Eureka A/S. Two different cargoes can be carried simultaneously. Calculated loading/discharging time is approximately 8 hours. Cargoes that can be carried include LPG as propane or butane, or mixtures of these; butadiene, vinyl chloride, propylene, propylene oxide, anhydrous ammonia, butylene, and isoprene.

Among the electronic gear are two Decca radars, Decca Navigator, echosounder, gyrocompass system, and a complete radio station supplied by STK. The ship will operate with a crew of 19.

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NOR-SHIPPING '81

(continued from page 20)

itime field. Leading representatives from government and private industry will discuss the possibilities of establishing a constructive framework for the future maritime relations between these sectors. Under the chairmanship of **Sven H. Salen**, chairman, Saleninvest AB, Stockholm, and president of the Swedish Shipowners' Association, the general theme for this section will be Cooperation in Shipping—the Need for an International Approach.

Developing and Developed Countries—Partners or Adversaries in the Future?: **Larime Fadika**, minister of shipping, The Ivory Coast; **Brian P. Shaw**, chairman, Committee of European National Shipowners' Association (CENSA); and a third speaker, to be announced, representing the International Chamber of Commerce (ICC).

Cooperation on the Industry Level—What Is in it for Developing Countries?: **Arsenio Carlos Nobrega**, director, Empresa de Navegacao Alianca, S.A., Brazil;

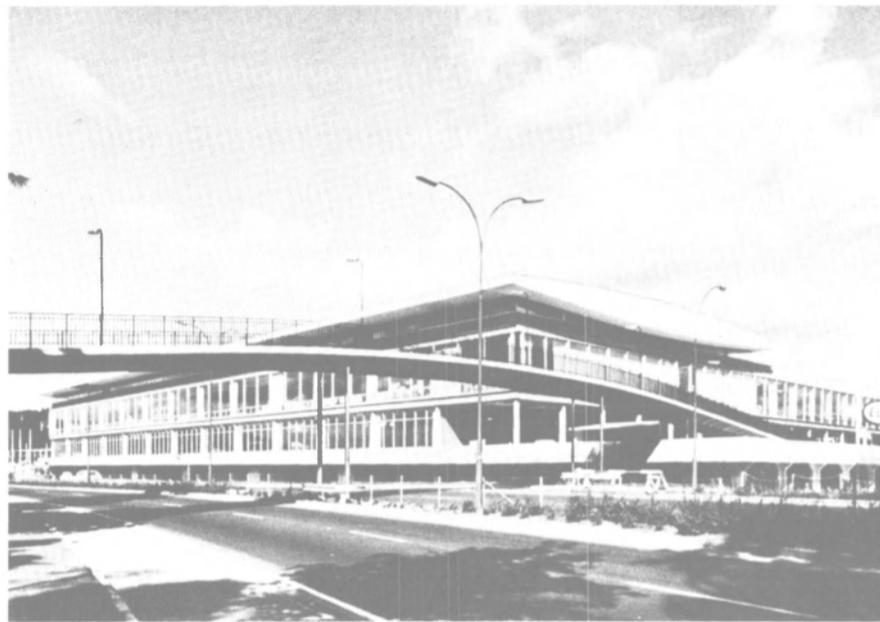
J.P.J. Besman, L.D. Travel International (Ship Freight) Ltd.; and **Atle Jehsen**, vice chairman, The Norwegian Shipowners' Association.

WEDNESDAY, MAY 13

Section III will focus on the current energy situation and address different ways of reducing energy bills. With the soaring cost of oil and rapidly rising prices for all sorts of energy supplies, the question of fuel economization has become a very important one. This section will be chaired by **Bjorn Wilhelmsen**, managing director, Nortank-Sigurd Sverdrup A/S.

Coal and Oil Reserves in the 80s: Prof. **Vidkunn Hveding**, C.E., Oslo. This presentation will contain estimates of the existing coal and oil reserves available this decade. Of particular interest are the North Sea reserves, which seem to be a vast resource where technical and political decisions could be a hindrance.

What Can Be Done To Existing Tonnage To Save Energy?: **Carsten Boe**, Det norske Veritas; and **Arnold Kr. Hansen**, managing director, The Ship Research



Sjolyst Exhibition Centre in Oslo is site of Nor-Shipping '81 8th International Shipping Exhibition and Seminar. Complex has total net exhibit area of approximately 10,000 cubic meters (9,500 indoors).

Institute of Norway. The two speakers will discuss possibilities of saving energy in existing tonnage, concentrating on methods to improve machinery performance and reduce hull friction.

Coal Burning as Fuel in New Vessels: **W.F. Ellis**, principal consultant, W.F. Ellis and Associates Pty, Ltd. There are different theories on how coal can be utilized as fuel in new ships, but very few vessels have actually been ordered and only a handful

are in service today. The speaker will report on the operation of coal-fired ships and the criteria needed for a successful project.

The final Section IV will deal with manning of ships, education of ship's personnel, and ship safety in general. The two introductory speakers and the four panelists are internationally well-known experts in this field. The session will be chaired by **Egil Abrahamsen**, president of Det norske Veritas.

NOR-SHIPPING '81 List of Exhibitors*

Aberdeen Harbour Board
Aker Group
Aker Products
Aker Trondelag A/S
Akerpanel A/S
Alfsen & Gunderson A/S
Andersen & Odegaard A/S
Ankerlokken Gruppen
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Arentz & Amundsen A/S
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ASEA A/S
Asec A/S
Atlantic Diesel A/S
Aukra Bruk A/S
Autronica Marine Automation
BT Cabindoors-Baggerods Treverefabrikk A/S
Beha-Hedo A/S
A.S. Bergens Mek Verksteder
Bergsli A/S
Berner & Larsen A/S
Bjorshol Mek. Verksted A/S
Blohm + Voss AG
Bolsones Verft
Brannvernlegg A/S
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British Shipbuilders
Brodr. Brunvoll Motorfabrikk A/S
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Daewoo Shipbuilding & Heavy Machinery
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A/S Edco
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Klockner-Humboldt-Deutz AG
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Norwegian Shipping News
Dusseldorfer Messegellschaft mbH
Pay & Brinck A/S
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Port Weller Dry Docks
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Skip og Maskin A/S
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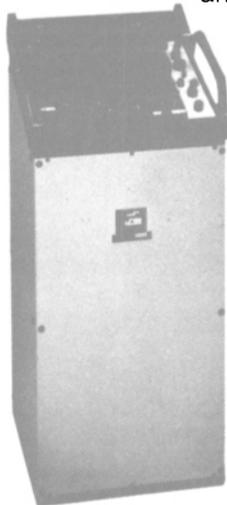
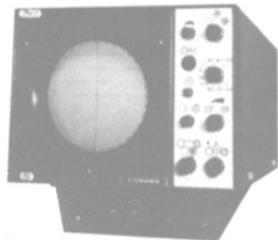
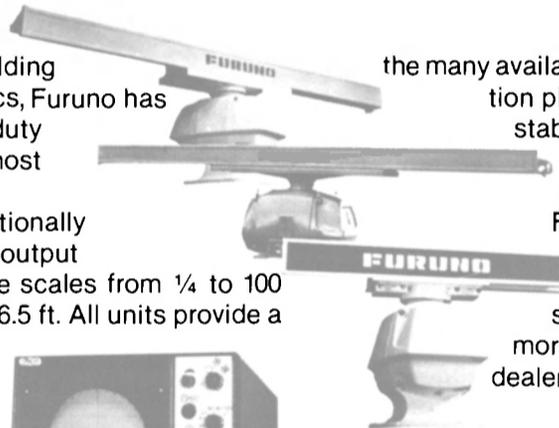
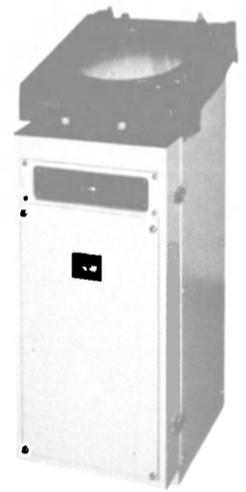
SERIES 7 radars are exceptionally compact units with available output power from 5 to 25 kW, range scales from 1/4 to 100 n.mi. and antennas from 3 to 6.5 ft. All units provide a 7" bright CRT, built-in VRM, 3 pulselengths for high discrimination, standard magnifiers and backlighted controls.

SERIES 10 radars offer the same basic performance features as

above, but have a 10" CRT. Each unit has provision for a second built-in VRM and displays are available in bulkhead, table-top, or free-standing console versions. Also, the 25 kW models include optional gyro stabilization and provision for a reflection plotter.

SERIES 12 radars combine a 12" CRT with 1/4 to 100 n.mi. range, 25 kW output and antenna length to 10' for operation anywhere. Standard features include digital VRM, circuit checkmeter, off-centering and three switchable pulse lengths for optimum performance in any situation. Among

the many available options are reflection plotter, gyro or azimuth stabilization, radar alarm, second VRM and performance monitor. For complete information on any of these outstanding radars, simply visit one of our more than 200 authorized dealer outlets; or return the coupon below.



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NOR-SHIPPING '81

Eighth Presentation Of This High-Quality Exhibition Is Booked To Capacity

Indications are that this year's Nor-Shipping Exhibition, to be held as usual at the Sjolyst Centre in Oslo, will attract great interest. All available exhibition space had been booked six months in advance, and the show's organizer, The Norwegian Fair Organization (Norges Varemesse), has also arranged an impressive seminar that will run for two days during the exhibition's May 11-16 schedule.

The first Nor-Shipping Exhibition took place in 1965, with subsequent shows held in 1968, 1971, 1973, 1975, 1977, and 1979. Nor-Shipping '79 was visited by about 9,000 people from 43 countries. A total of 266 exhibitors from 20 nations represented manufacturers from 25 countries. More than 500 commodity groups were represented, including banks and other financial institutions, classification societies, harbor and canal authorities, international maritime publications, marine insurance companies, private and public shipping and export organizations, salvage companies, shipbrokers, shipbuilding and repair yards, suppliers of marine equipment, stevedores and cargo-handling firms, suppliers of stores and bunkers, training and recruitment organizations, carriers, and others who serve or are associated with the shipping industry.

From the beginning, a seminar has been held in connection with the Nor-Shipping Exhibition. This

year it will take place on May 12-13. The goal of the seminar committee, chaired by **H.T. Gram**, honorary member of the board of R.S. Platou A/S, has been to let recognized experts present some of the current issues within shipping, thereby throwing light on these topics through internal panel discussions and possible contributions from the seminar participants.

At the Nor-Shipping '79 Seminar, most of the speakers expressed cautious optimism, which proved to be justified. Since then, the market has improved considerably in most trades. The future will, however, present new problems. Ways in which to deal with these problems will be subject to thorough discussion at this year's seminar.

Among the subjects to be taken up during the two seminar days will be the role of shipping in a turbulent world — politically and economically; cooperation in shipping — the need for an international approach; energy—another field in cost savings; and problems of manning, education, and safety.

SEMINAR PROGRAM TUESDAY, MAY 12

In Section I of the seminar, chaired by **Mr. Gram**, three papers will be presented by internationally known experts. The seminar committee anticipates that these presentations will in-

fluence strategic planning in sectors of the international marine industry.

The Unyielding 1980s: **Andrew Knight**, editor, *The Economist*. This presentation will cover the uncertain and turbulent international scene, with some direct references to energy, oil, and the role of shipping and shipping-related industries.

Reflections on the Shipping Policy of the OECD and its Coordination: **R.A. Humphrey**, head,

Maritime Transport Division, Organisation for European Economic Development.

Australian Export Potential of Raw Products — Visualized Demand for Transportation — Australia's Own Shipping Policy: **Ross Hawke**, general manager-transport, The Broken Hill Proprietary Company Ltd.

Section II will be devoted to the relations between developed and developing countries in the mar-

(continued on page 22)



His Majesty King Olav V touring the exhibition after the official opening of Nor-Shipping '79. Behind him in photograph is Crown Prince Harald.

Marepcon Named Exclusive U.S. Agent For Gotaverken Cityvarvet Of Sweden



Frederick A. Ganter

Gotaverken Cityvarvet AB, Gothenburg, Sweden, has announced the appointment of Marepcon Corporation International as its sole agent in the United States. **Frederick A. Ganter**, vice president of Marepcon, describes Cityvarvet as an exceptionally well equipped and manned repair facility located in an area convenient for vessels trading in North Europe. For additional information contact Mr. Ganter at Marepcon Corporation International, 65 Broadway, New York, N.Y. 10006; telephone (212) 269-3170, telex 129247, or

Write 57 on Reader Service Card

Kitamura Named Marine Sales Manager For Kubota America Corporation



Hirohisa Kitamura

Hirohisa Kitamura has been named a sales manager for marine products for Kubota America Corporation, New York, a wholly owned subsidiary of Kubota, Ltd. of Japan. He had been assistant chief, castings and industrial, Machinery Export Department, for Kubota in Tokyo.

Hiroshi Ito, president, Kubota America, said the company is expanding its sales force as a result of increasing business from Kubota's KCP line of cargo oil pipe. Mr. **Kitamura** will assist **Y. Seo**, Kubota America's vice president for marketing.

The KCP series has been installed in more than 500 Japanese-built tankers over the past 20 years and, since 1975, Kubota has also been marketing the product worldwide as a replacement for conventional pipe.

New Cummins Brochure Describes K Series Of Marine Diesel Engines

Cummins Engine Company offers a 12-page, four-color catalog containing specifications, design features, and marine applications for the company's latest K series diesels. Five models are available,

with marine continuous ratings ranging from 365 to 1,250 bhp.

The K series is available in a 6-cylinder in-line and in 12- and 16-cylinder V configurations. Turbocharged versions are offered on the 6- and 12-cylinder models. In addition, turbocharged/after-cooled configurations are offered on all three models.

All models have a 6¼-inch (159-mm) cylinder bore and a

6¼-inch piston stroke. The 6-cylinder model has a piston displacement of 1,150 cubic inches (18.9 liters), the V12 has a displacement of 2,300 cubic inches (37.8 liters), and the V16 has a displacement of 3,067 cubic inches (50.3 liters).

For a free copy of this brochure or information on other Cummins diesels,

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**New Tube-Cleaning Unit
Announced By Goodway
—Literature Available**

With the high cost of energy it has become more important than ever to clean tubes in condensers and heat exchangers on a regular schedule. Goodway Tools Corporation has developed the Ream-

A-Matic machine featuring an electric motor that turns a flexible shaft inside a nylon casing and ejects a water jet at the cleaning tool. This keeps the cutting tool or brush clean at all times and flushes out loosened deposits. The flexible shaft incorporates a quick disconnect coupling and can be supplied in various sizes to clean tubes from 5/16

to 1 inch in diameter and up to 100 feet long.

Goodway's new Model RAM-3 detaches from the dolly and has a handle for carrying into tight areas. The motor is turned on and off by a footswitch, and a solenoid valve is activated to provide automatic water feed. The self-contained Ream-A-Matic requires no special skills, and can

be handled easily by one man, cleaning from one end only with a minimum of space needed.

For additional information and free literature on the Model RAM-3,

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**Northern Radio Announces
New Line Of SSB Units
—Literature Available**

Northern Radio Company has recently introduced a new fully synthesized, moderately priced line of quality SSB/HF radios. Designated the N830 and the N835, these radios provide the user with 1.6-9 MHz and 1.6-18 MHz frequency ranges, respectively. Providing 150 watts of power (100 watts optional), advanced automatic squelch, speech processing, and 24-channel frequency selection, these units possess an unusual array of features in a one-half cubic foot package.

For additional information and a free brochure,

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**William Turner Named
Vice President For
Ryan-Walsh Stevedoring**

William J. Turner Jr. has been named by Ryan-Walsh Stevedoring Company, Inc. as vice president and managing director for its recently leased bulk terminal in New Orleans. He has extensive bulk handling experience reaching back several decades. Since 1977, he has been managing director of Ormet Corporation's Burnside Bulk Terminal, located approximately half-way between New Orleans and Baton Rouge.

In 1951, he joined the Port of Stockton (Calif.) as manager of freight warehouse and operations. In 1974, he was appointed port director, guiding a staff and port activities of various commercial and industrial facilities serving shipping-related businesses.

Mr. Turner's first responsibilities will be initial reactivation of the New Orleans Bulk Terminal, which has been inactive since previous contract management expired in September 1980. He will be working under the direction of Robert R. Barkerding Sr., senior vice president of Ryan-Walsh in New Orleans, and John L. McCarron Jr., executive vice president of Ryan-Walsh at its corporate offices in Mobile, Ala.

Ryan-Walsh plans to handle various bulk commodities compatible with the systems at the bulk terminal, which it is committed to improve and modernize with emphasis on coal and ores. The company expects to handle between 1.5 and 2 million tons during the first of the five years of the present contract, with tonnage rising to the 3.5 to 4-million ton range by the fifth year.

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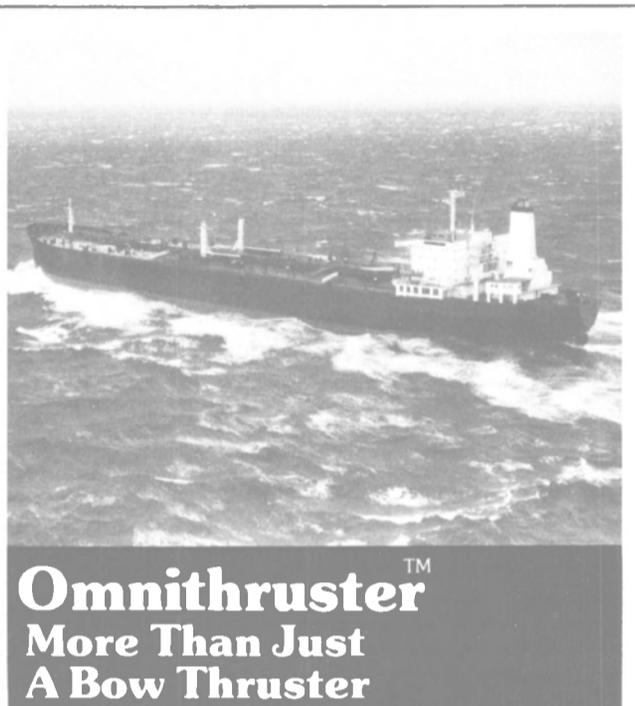
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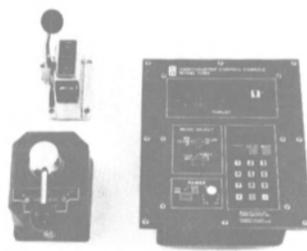


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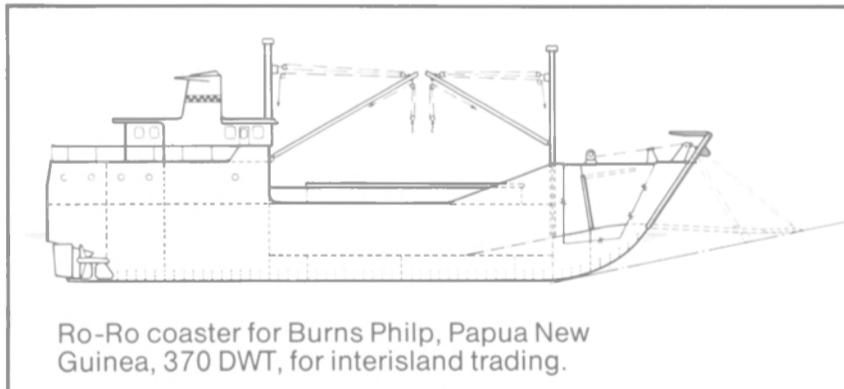
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Consortium To Offer New Container Service Between Canada And Europe

Three major shipowners — Canadian Pacific, Compagnie Maritime Belge S.A., and the C.Y. Tung Group's interests including Furness Withy — have announced that CP Ships, Dart, and Manchester Liners have agreed to coordinate on an equal basis the container services they now operate between Canada, the U.K. and Continental Europe.

The new coordinated service will employ four cellular container vessels, each of about 1,500-TEU capacity and will use Montreal's Racine Terminal as its Canadian handling facility. The ships will be the largest cellular container vessels to call regularly at the Port of Montreal. There will be several ports of call in Continental Europe and the United Kingdom.

CP Ships, Dart, and Manchester Liners will each own and operate one vessel, with the fourth to be provided jointly. As part of the arrangement, CP Ships will acquire the 1,500-TEU vessel Dart Atlantic. Each of the lines will continue to market under its own name and will be responsible for the handling of the traffic it generates. The capacity of each vessel will be shared by the lines to take full advantage of the economies of the large ships.

"This new arrangement will enable us to provide a more competitive and cost-effective Western Europe-Canada container service," said a spokesman for the lines. The coordinated service is expected to be fully operational by late summer of 1981. CP Ships and Manchester Liners currently provide a weekly container service to and from the Port of Montreal.

The existing Dart container service operating between Europe and the Port of Hali-

fax will be discontinued. Dart's new service to the Port of Montreal will be provided by Dart Canada, a new company established for this purpose.

Richard Caesar Named Marketing Vice President For Gleason Reel

Richard J. Caesar has been named to the new position of vice president, marketing, for Gleason Reel Corporation, P. Richard Schumann, Gleason's vice president and general manager, has announced. Mr. Caesar joined Gleason in May 1980 as Eastern regional sales manager. He came from Instruments Systems Corporation, Chicago, where he was national sales manager for the Markstone Division.

Gleason, a division of Maysteel Corporation, is a major manufacturer of cable/hose carriers, as well as spring and electric motor-driven cable and hose reels for diverse industries.

District Engineer James Ton Gets Philadelphia SAME Award

Col. James G. Ton, past president of the Philadelphia Post of the Society of American Military Engineers (SAME), received the SAME Board of Directors Service Award from Brig. Gen. William T. Meredith, USAF (ret.), regional vice president and a national director of SAME, and Dr. August Pistilli, current president of the Philadelphia Post of SAME, a professional engineering society comprised of military and civilian engineers who are dedicated to the defense of the United States.



Col. James G. Ton (center) receives the Society of American Military Engineers (SAME) Board of Directors Service Award from Brig. Gen. William T. Meredith, SAME regional vice president, and Dr. August D. Pistilli, president of the Philadelphia Post of SAME.

In receiving the award, Colonel Ton was praised for his efforts in revitalizing the Philadelphia Post of SAME, for his ability in establishing effective communication with regional headquarters, and for his accomplishments in developing the awareness of the American public to the military posture of the nation. He is the District Engineer for the Army Corps of Engineers, responsible for federal/civil works projects in portions of New York, Pennsylvania, New Jersey, Maryland, and Delaware.

Dr. Pistilli is president of the American Dredging Company with headquarters in Camden, N.J. He is a veteran of both World War II and Korean War, and he served as a special consultant to the Defense Department in Vietnam during the TET offensive. General Meredith is vice president of Parsons, Brinckerhoff, Quade, & Douglas, Inc. He has been the project manager for construction management of the \$260-million-dollar commuter rail connection in Center City, Philadelphia.

Maritime Reporter/Engineering News

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Naikai Zosen Delivers Versatile Cargo Ship For Philippines

The Galleon Agate (shown above), a 19,102-dwt cargoliner built for Galleon Shipping Corporation, Philippines, was delivered recently by the Setoda Shipyard of Naikai Zosen, an affiliate of Hitachi Zosen. She is the second of three ships of the same type ordered by Galleon from Hitachi. The first, Galleon Diamond, was constructed at the Hiroshima Works (Innoshima) of Hitachi; the third ship also will be built there.

The Galleon Agate is designed to carry general cargo, containers, lumber, and bulk cargoes between Philippine ports and North America. She will also be used to transport tobacco, coconut products, and hemp; for this purpose, all cargo holds are fitted with dehumidifiers. The ship is equipped

with three 16-ton cranes for handling general cargo, and one 50-ton, twin-type deck crane for heavy lifts such as construction machinery. Cargo hold capacity is 28,727 cubic meters.

Her main engine is the newly developed, long-stroke Hitachi/B&W diesel with constant-pressure turbocharging, type 6L67-GFC, which has a maximum continuous rating of 11,200 bhp at 119 rpm. Trial speed was 19.618 knots.

Classed by the American Bureau of Shipping, the Galleon Agate has a length between perpendiculars of 152.00 meters, beam of 23.10 meters, depth of 14.10 meters, and full-load design draft of 9.90 meters (498.68 by 75.79 by 46.26 by 32.48 feet).

Chesapeake Shipbuilding Constructing Third Vessel For American Cruise Lines

Officials of Chesapeake Shipbuilding, Inc., Haddam, Conn., announced that construction has begun on a new coastal cruise ship for American Cruise Lines. The ship, which is to be named America, will be the largest inland coastal cruise ship in the country, and is expected to be completed in the spring of 1982.

The America is being built at the Chesapeake Shipbuilding construction yard in Salisbury, Md. She will be powered by Caterpillar diesels for both the main propulsion engines and generators. The ship's bridge will be equipped with the latest safety and communication devices including radars, sonars, radios, telecommunications, and Loran navigation systems. All machinery is located below the main deck in acoustically isolated spaces employing the latest innovations in soundproofing in order to provide the quietest and most vibration-free operation.

Similar in appearance to its sister ship the Independence, the America will have 43 double, five single, and three triple staterooms. All of the cabins are outside and above the main deck, each with its own facilities and a large, opening picture window. The glass-enclosed Nantucket lounge located on the second deck will give the passengers a panoramic view of the ever-changing scenery, and access to the for-

ward sun deck at the bow of the ship.

The America's operation and schedules will be similar to those of the Independence and American Eagle, both of which are owned and operated by American Cruise Lines. The itineraries, yet to be scheduled, will be of 7, 10, and 14-day cruises and will include the New England Islands, the Chesapeake Bay, and the inland waterways of the East Coast.

Watts Named President And Chief Operating Officer Of Solus Ocean Systems



David H. Watts

David H. Watts, formerly executive vice president of the company's Americas Region, has been elected to the position of president and chief operating officer of Solus Ocean Systems, Inc., Houston. He joined the company in 1965, participating as a research diver in the company's €50-foot diving program. He became general manager for the Australian operation in 1969; in 1973, on his return to the U.S., manager of diving divisions; in 1975, vice president-operations; and in 1979, following the Ocean Systems/Solus Schall merger, executive vice president, Americas Region.

Solus Ocean Systems is an international offshore service company providing diving, underwater submersible inspection, non-destructive testing, and contract engineering services to the petroleum industry. The company is a wholly owned subsidiary of EN-SERCH Corporation, a diversified energy company based in Dallas.

New Brochure Available From Hydro Products

Hydro Products, Inc. has published a 1981 product catalog detailing the company's line of offshore and radiation-tolerant television and lighting systems, oceanographic instruments, and remote controlled vehicles. A unique feature of the catalog is the inclusion of technical selection guides, explaining factors for users to consider in choosing the best equipment to fulfill specific job requirements.

For a free copy of the new catalog,

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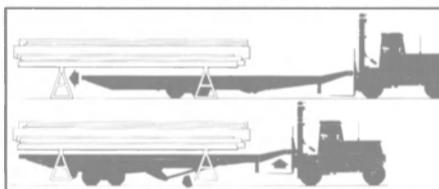
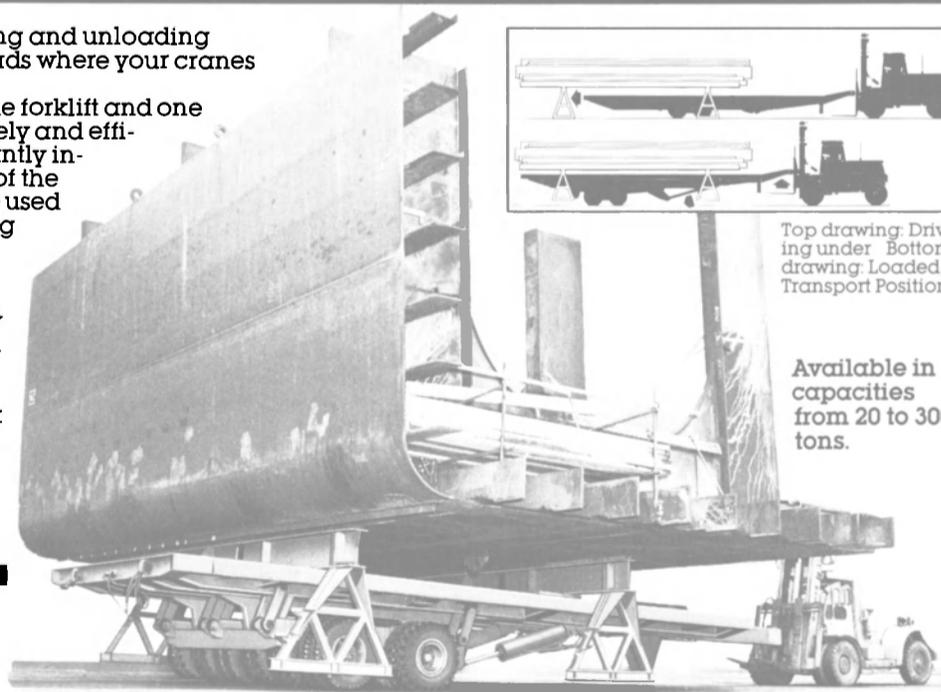
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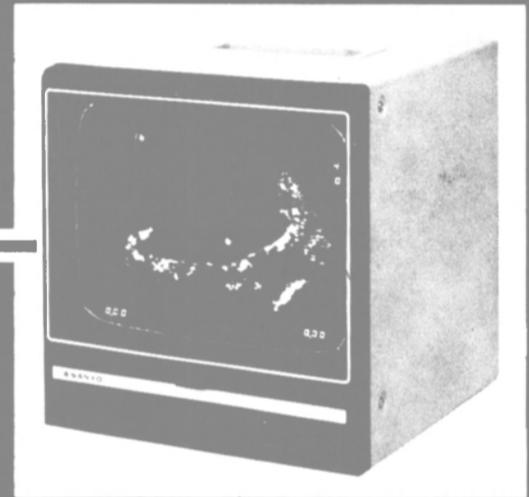
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**Rio Marine Asks Title XI
On Eight Tank Barges
To Cost \$4.8 Million**

Rio Marine, Inc., Houston, has applied to the Maritime Administration for a Title XI guarantee to aid in financing the construction of eight 200-foot-long, double-skinned chemical tank barges.

Each is to have a capacity of 10,000 barrels and will be operated on inland rivers and the intracoastal waters of the U.S. Gulf area.

Platzer Shipyard of Houston is building the vessels, with the first to be delivered July 1 and the others at one-month intervals thereafter. The estimated cost of the barges has been set at \$4,

860,519, with the requested guarantee for 87½ percent of that amount, or \$4,200,000.

**Marine Industries Corp.
Will Market NABRICO
Products In St. Louis**

Marine Industries Corporation has opened an office in St. Louis making Nashville Bridge Compa-

ny (NABRICO) products readily available in that area for the first time in several years. Located at 1544 Autumn Leaf Drive in Manchester, Mo., the office will be headed by **Lonnie Jacobs**, according to **Byron T. Bailey**, president of Marine Industries. The telephone number for the new office is (318) 225-6507.

With the opening of the new office, the company now serves the Upper Mississippi River area as well as the Ohio Valley area. Marine Industries Corporation, founded in 1978, is headquartered in Clarksville, Ind. The company has been a stocking distributor for NABRICO for approximately two years, handling winches, hatches, and all other standard deck fittings sold by Nashville Bridge Company.

NABRICO is a wholly owned subsidiary of The American Ship Building Company, Tampa, Fla. Headquartered in Nashville, Tenn., NABRICO has been in the marine field for more than 60 years and is primarily concerned with the design, engineering, and construction of barges, drydocks, and towboats. The company is a major supplier of marine deck hardware to the entire marine industry. NABRICO, which has plants in Nashville and Ashland City, Tenn., pioneered in the design and building of much of the modern equipment used on rivers today.

**American Aero To Build
New Facility That Will
Double Current Capacity**

American Aero, Inc., a subsidiary of Weatherford International, will more than double its current production capacity by building a new manufacturing plant, warehouse, and office complex in northwest Houston. The AAI plant proposal, more than a year in the planning stages, was approved by Weatherford's board of directors at its last meeting.

Although a site for the new plant has not been announced, company officials are considering several northwest Houston locations, all within 10 miles of the existing plant at 10950 Old Katy Road. AAI's operations currently occupy seven acres of land in five separate locations, but the new plant will put all of the company's Houston activities under one roof. The planned facility will most likely be constructed on a 25-acre tract.

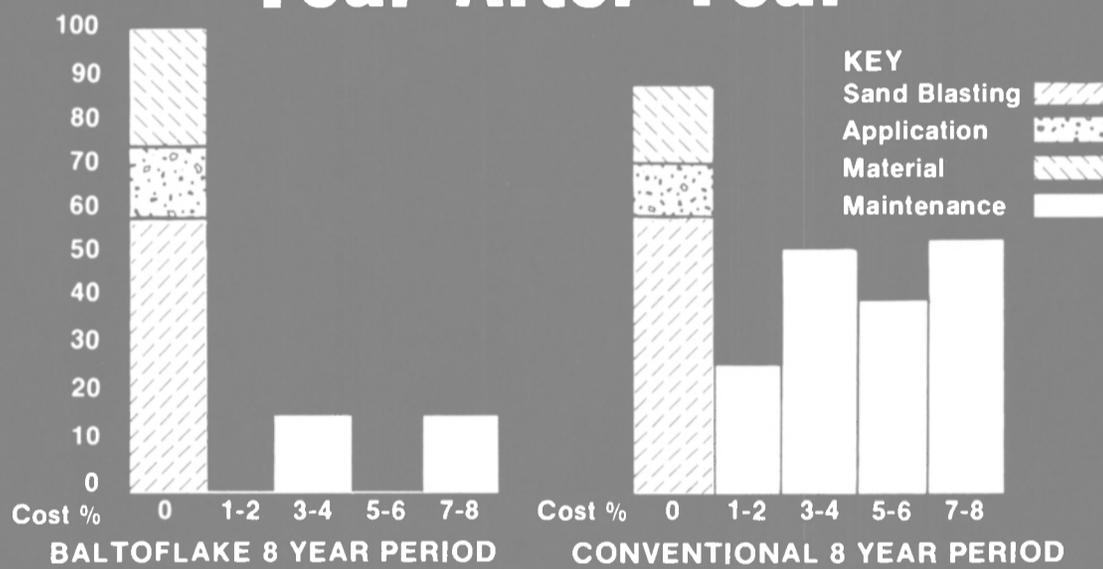
American Aero manufactures and markets hydraulic pedestal cranes and high-pressure water blasters. The company's cranes are approved for use aboard any marine vessel, but their compact design has proved particularly attractive to the offshore drilling industry. AAI's water blasters are used in a variety of industrial cleaning applications.

For more information,
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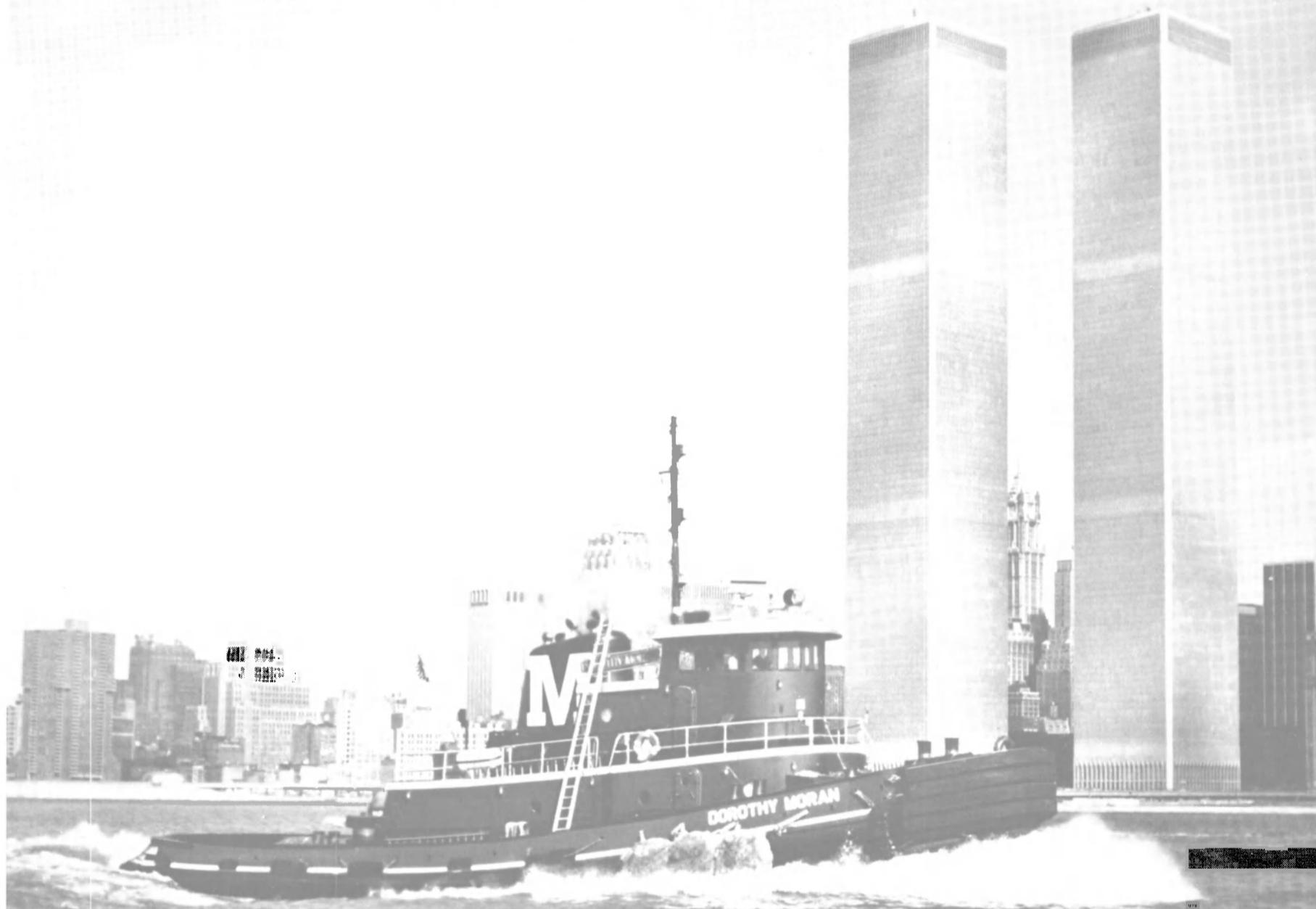
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**New Scanning Pyrometer
For Diesel Temperatures
—Literature Available**

National Marine Service has introduced a scanning pyrometer, which is a basic tool to help the operating engineer maintain full power and fuel economy while minimizing downtime by scanning

diesel engine cylinder temperatures automatically. This scanning pyrometer can be used for single- or twin-engine installations, and can display up to 40 individual zone temperatures. Zone enable/disable selection allows continuous use of the system even when one thermocouple has failed. Isolated alarm outputs

are available for high temperature and temperature deviation. On-site programming of zones enabled, alarm limits, thermocouple type, scan time, second engine scan, and degrees centigrade or Fahrenheit is standard. Simple 2-wire, party line remote displays are optional. The National Marine automatic scanning pyrometer meets the reduced engine

room manning regulatory body requirements for diesel cylinder temperature monitoring.

For more information,

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**Pisani Named Head Of
MarAd's Port And
Intermodal Office**

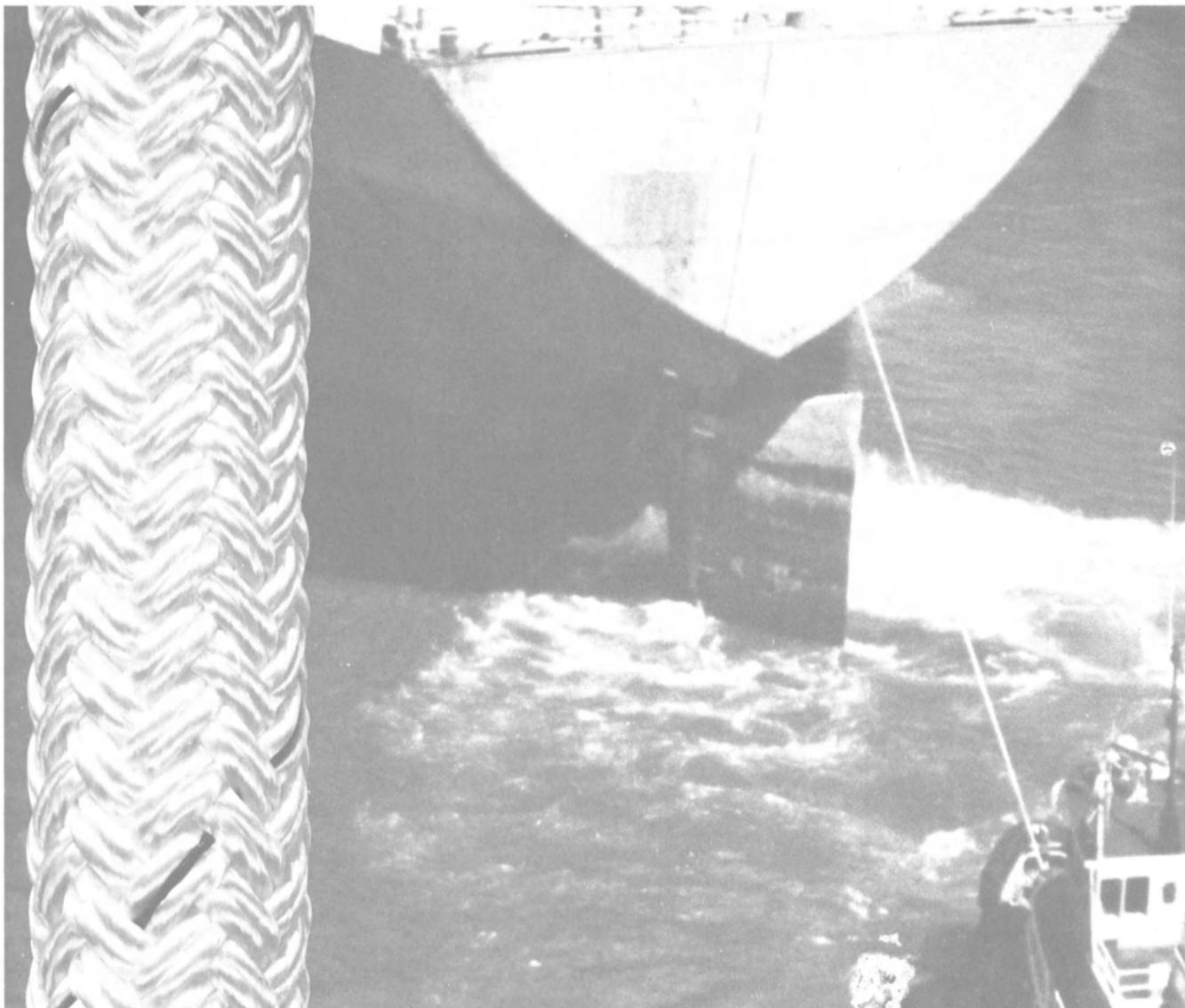
The appointment of **John M. Pisani** as director, Office of Port and Intermodal Development at the Maritime Administration (MarAd), was announced by **Samuel B. Nemirow**, Assistant Secretary of Commerce for Maritime Affairs. An employee of MarAd for 12 years, Mr. Pisani most recently was manager of the agency's port planning program. His responsibilities included coordinating research projects and technical assistance in port impact analyses and productivity, port planning studies, port finance, port promotion publications, emergency planning, data development, and intergovernmental programs.

In his new position, Mr. Pisani will provide technical guidance and leadership in promoting the development of improved port facilities and intermodal transport operations. He replaces **Armour S. Armstrong**, who has retired. Before joining MarAd, Mr. Pisani worked for three years for a New York international freight forwarder and customhouse broker. As an officer in the U.S. Army Transportation Corps, he directed marine terminal operations at several ports in South Vietnam.

**Delta Line Appoints
World Shipping As
Midwest Agents**

Delta Steamship Lines, Inc. announces the appointment of World Shipping, Inc. as its agents for the Midwestern territory, based in Chicago. World Shipping will assume the Chicago area office location held formerly by Delta Line at 3001 Butterfield Road in Oakbrook, Ill., and the current telephone and telex numbers will continue in effect. They are, respectively, (312) 789-0700 and 25-3213.

The World Shipping office will be under the direction of **Steven D. Hossa**, vice president, who will undertake sales and marketing responsibilities on behalf of Delta Line in the states of Illinois, Wisconsin, Minnesota, North and South Dakota, Iowa, and Missouri. **Irvin Bedrava**, formerly Delta's Chicago office manager, has been retained by Delta as its senior sales executive for the region, and will continue at the Oakbrook address reporting directly to Delta's senior management in New Orleans.



**Stronger, tougher
headlines with Samson
Duron II Fiber Ropes**

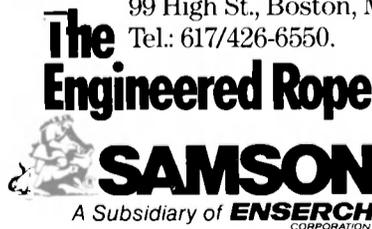
Samson Stable Braid is the strongest low-stretch rope you can use. Duron II fibers also make it the toughest—maximum resistance to abrasion, especially under wet and dry conditions. Check all the advantages:

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- Torque-free, no kinks or back turns.
- Fakes down and pays out smoothly, stores compactly.

- Low elongation for better control.
- Higher working loads.
- Conforms to NATO Specification 4020 Supp. 1972.

Find out how Samson Stable Braid with Duron II ropes can work harder for you.

Contact: Samson Ocean Systems, Inc.,
99 High St., Boston, MA 02110.
Tel.: 617/426-6550.



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William Bolte Named Manager Of Hannah's Transportation Division



William R. Bolte

Hannah Marine Corporation recently announced the appointment of William R. Bolte as manager of Hannah's Transportation Division. Mr. Bolte has been in the marine business for 20 years, having started in the accounting department of A.L. Mechling Barge Lines in 1961. He moved to the dispatch department in 1963, and came to Hannah as a dispatcher in 1974. At Hannah he was promoted to chief dispatcher in 1975 and traffic manager in 1977. He is presently serving as co-president of the Illinois River Association.

MarAd Study Details 'Multiplier Effect' Of U.S.-Flag Merchant Fleet

An updated, input-output, economic analysis of America's maritime industries just released by the Commerce Department's Maritime Administration indicates that each dollar in sales by the U.S. merchant marine adds another \$3.81 to the national economy. The study, "Economic Impact of the Maritime Industries on the U.S. Economy 1971-78 (An Interindustry Analysis)," was prepared by H.C. Chung, professor of economics at the University of Bridgeport, Bridgeport, Conn. It reports that the chain of purchases begun by the maritime activities of the U.S.-flag merchant fleet has a cumulative "multiplier effect" of 4.811 throughout the economy. This means that each dollar in merchant fleet sales ultimately generates a total of \$4.81 in sales and other business activity.

It should be noted that the dollar amounts used in the study were expressed in terms of 1972 dollars. In 1979 dollars (adjusted for inflation) the figures would be 50 percent higher.

Applying the 4.811 multiplier to the U.S. shipping industry, Professor Chung found that the \$1.5 billion in merchant fleet sales reported in 1972 induced nearly \$7.5 billion worth of business activity in the nation's economy. Similar multiplier effects increased the American shipping industry's contribution to the Gross National Product of the same year to \$3.5 billion.

The multiplier for the Ameri-

can shipbuilding industry in 1972 was 4.701, thus the \$2.8 billion government and business invested in shipbuilding services in 1972 had a \$13.3 billion impact on the entire economy.

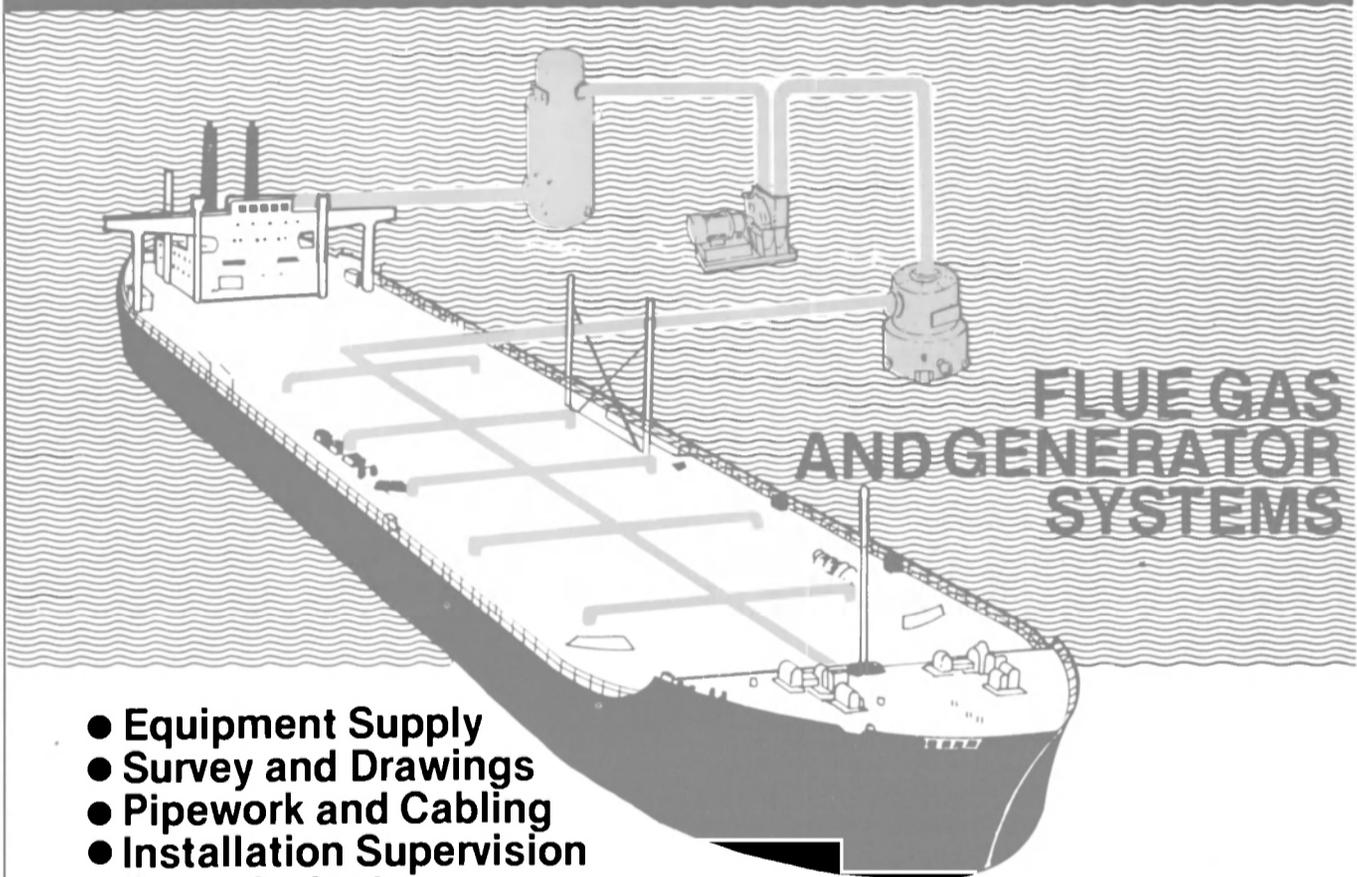
Limited copies of the report are available through MarAd's Public Affairs Office, Room 3895, Main Commerce Building, 14th & E Streets, N.W., Washington, D.C. 20230; telephone (202) 377-2746.

Title XI Asked For Bulk Carrier Conversion To Cost \$8 Million

Allied Barge, Inc., a subsidiary of Allied Towing Corporation, Norfolk, Va., has applied to the Maritime Administration for a Title XI guarantee to aid in financing the reconstruction of the bulk carrier Seadrift into a multiple product liquid and dry-bulk carrier.

Allied Repair Service, Inc., Norfolk, has been proposed to perform the reconstruction work on the 523-foot-long, diesel-powered vessel, with delivery set for March 1981. The applicant plans to use the vessel along the East and Gulf Coasts of the United States. The estimated cost of the work is \$8 million. The requested guarantee is for 87½ percent of that amount, or \$7 million.

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The savings we delivered 4 years ago are FOUR TIMES GREATER today!

At today's high fuel costs these savings can be up to \$1,000,000 per vessel,** making SCAMP® hull cleanings an essential part of your profit program.

If your vessel has been in service six months or more contact us immediately.



This ad appeared in major marine publications in 1976.

fuel savings up to \$228,000* demonstrated as a result of regular hull cleanings with **SCAMP** underwater hull cleaning services

An Exxon Corporation study determined actual cash savings from regular hull cleanings with SCAMP® equipment.

** NET FUEL SAVINGS ATTAINABLE 24 MONTH DRY DOCK CYCLE			
At Constant Speed of	21 MDWT Diesel	50 MDWT Steam	250 MDWT Steam
11 Knots	\$31,000	\$127,000	\$144,000
12 Knots	\$33,000	\$141,000	\$161,000
13 Knots	\$35,000	\$157,000	\$188,000
14 Knots	\$38,000	\$185,000	\$228,000

The net savings represent total fuel savings from regular hull cleanings and delay costs based on 4 to 16 hour cleaning periods. For example, for a VLCC, the savings amounted to 6 tons of fuel per day or \$36,000 per round trip.

The following chart illustrates typical fuel savings of a 50 MDWT vessel operating at a reduced speed of 11 knots as an example.

* Source: Exxon Corporation study of various vessel sizes.

A limited number of copies of this Exxon Corporation study are available. Please write on your company letterhead to: Donald Powell, Vice President—Marketing, Butterworth Systems Inc., P.O. Box 9 Dept. 11, Bayonne, N.J. 07002, USA.

Increase of shaft horsepower and fuel consumption become necessary to hold speed at 11 knots due to loss of hull and propulsion plant efficiency as time elapses. Since regrowth of fouling takes place after each cleaning, maximum net savings are realized from a regular SCAMP hull cleaning program. In the preceding example, net savings (fuel savings less SCAMP hull cleaning costs) were \$127,000.

Optimum cleaning programs are every round trip for long-haul VLCC's and every four months for smaller vessels commencing at the onset of fouling, about 10 to 12 months after dry dock.

A SCAMP hull cleaning program returns fuel savings many times greater than the cost of the cleanings even when operating at reduced speeds.

Since its introduction, over 1600 vessels have been cleaned by SCAMP units. Many ship operators bank on it.

Workboat arrives and the SCAMP unit is lowered into water.

SCAMP unit "swims" to hull.

Working deep.

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VISIT US AT THE 3rd INTERNATIONAL SHIP REPAIR & MAINTENANCE EXHIBITION
& CONFERENCE, NEW ORLEANS MARIOTT HOTEL, BOOTH 32, APRIL 13-15 1981.

Donald Caldera Named Senior VP-Marketing For Midland Affiliated



Donald L. Caldera

Eastern Gas and Fuel Associates, Boston, has named **Donald L. Caldera** to the new post of senior vice president, marketing of its Cincinnati-based marine subsidiary, Midland Affiliated Company. Midland, one of the nation's largest barging operation on the inland and coastal waterways, with shipbuilding, terminalling, and harbor towing affiliates, had 1980 revenues of \$211 million.

Formerly executive vice president of Interocean Management Corporation, Philadelphia, Mr. Caldera has held other executive positions in the marine and land transportation industry in operations, administration, and finance. He is a graduate of Yale Law School, and also earned a bachelor of science degree from Webb Institute of Naval Architecture. He is a member of the American and New York Bar Associations, The Society of Naval Architects and Marine Engineers, and the Society of Maritime Arbitrators.

Eastern Gas and Fuel Associates is a diversified energy company with operations in bituminous coal production, natural gas distribution, barge transportation, and oil and gas exploration.

Corrosion-Inhibiting Coating Brochure Offered By A.W. Chesterton

Chesterton Rust Transformer, a product of the A.W. Chesterton Company's Industrial and Marine Maintenance Division, changes iron oxide (rust) into a corrosion-inhibiting coating. The product eliminates the need for special equipment to sandblast or acid-treat metal for painting.

Rust Transformer provides a protective film against flash rusting. It is applied by (1) brushing or washing loose scale, flaking, paint, dirt or oils from a rusted surface; (2) brushing, rolling or spraying the Rust Transformer over the remaining rust on the surface; and (3) hosing down the excess Rust Transformer a day later, when the rust has turned blue-black.

What had been a rusted surface has become a protective molecular film that inhibits further

rusting. It can be coated with a primer immediately. The product has been used successfully in marine applications on seagoing shipping.

Rust Transformer is sold in 3.8-liter (one gallon) plastic bottles, 20-liter (5.3 gallons) plastic pails and 208-liter (55 gallons) drums.

For further information and free brochure,

Write 56 on Reader Service Card

Breland Named Manager Of Gulf Fleet's Gulf Coast Towing Division

Gulf Fleet Marine Corporation, headquartered in New Orleans, has named **B.B. Breland** manager of the company's Gulf Coast Towing Division. He will assume management responsibilities for both tug and barge operations in the Gulf of Mexico.

Mr. Breland has experience in both sales and operations in the petroleum industry, and most recently served as manager of Gulf Fleet's Gulf Coast Supply Boat Division.

Gulf Fleet Marine, one of the Houston Natural Gas group of companies, operates more than 100 vessels in support of the offshore petroleum and offshore construction industry.

FOUL WEATHER GEAR

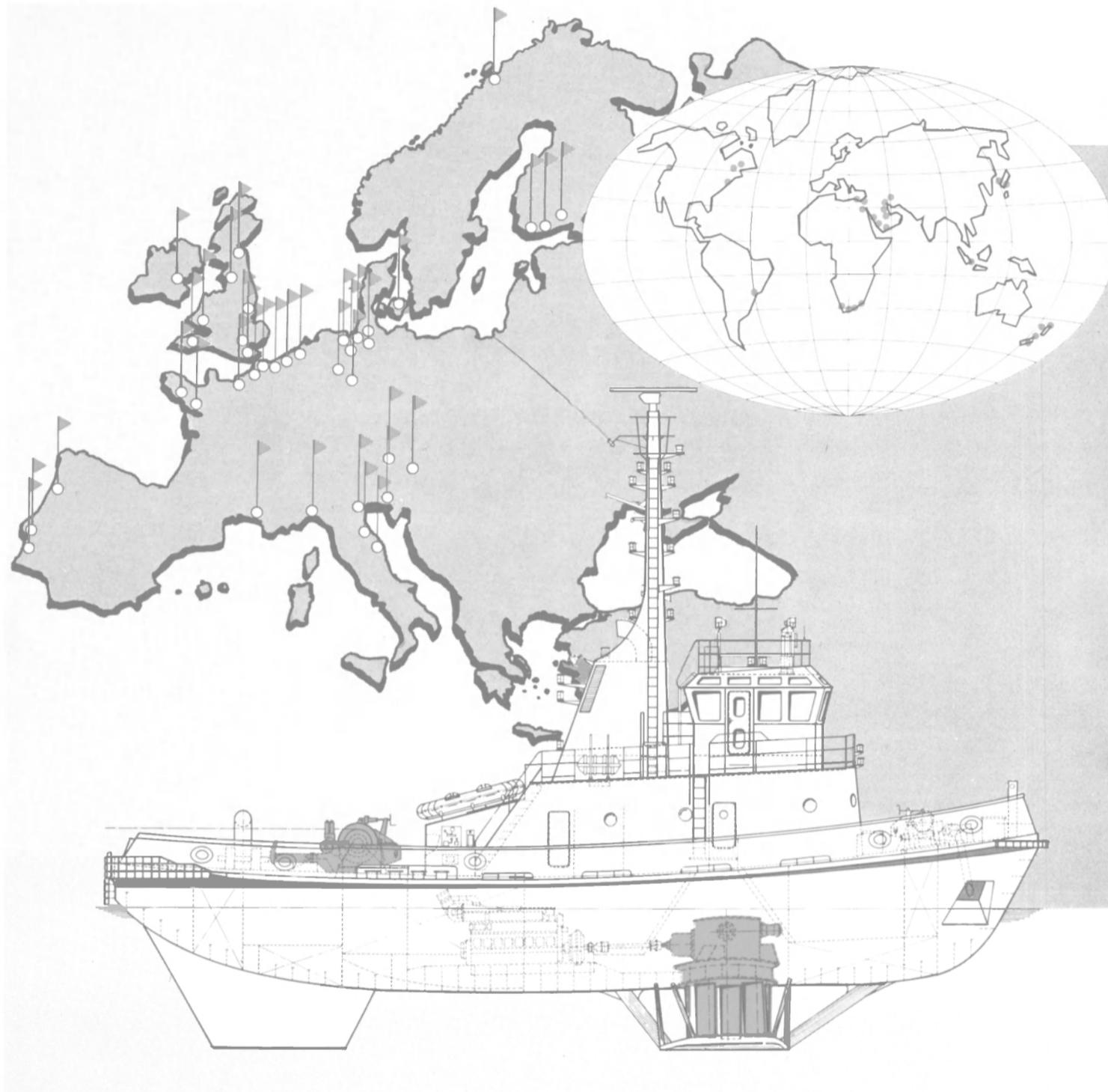
When the others can't get there, the Jetfoil can. Fast. It can take the whole crew and necessary equipment. It adapts easily to existing transfer systems. And with the Relative Motion System

we're developing, transfers will be even easier in rough weather. Write Boeing Marine Systems, P.O. Box 3707, Seattle, WA 98124.

BOEING MARINE SYSTEMS First family of hydrofoils



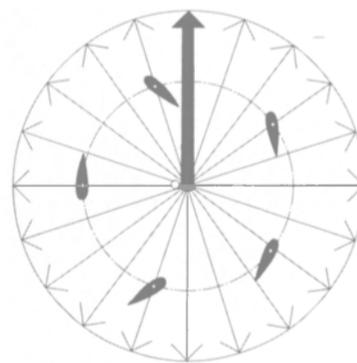
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Technical
Revolution
in Ship
Handling**

Voith Water Tractor means:
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fore and towing gear aft.

This conception has proved a
worldwide success in many years
of operation. Today, hundreds of
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The Case for BLENDED ROPES

vs.

100% POLYPROPYLENE ROPES



Sure, blended ropes cost more than polypropylene ropes! But, they are more durable, perform better, in some cases are even stronger...so in the long run, THEY COST LESS!

Compare these data for 600' coils of 8" rope:

SQUARE BRAID OR 3-STRAND	WEIGHT	MINIMUM TENSILE STRENGTH
POLYPROPYLENE	720 lbs.	81,000 lbs.
PNX	798 lbs.	81,000 lbs.
SSR-300	768 lbs.	98,000 lbs.

PNX costs 50% more than polypro, SSR-300 62½% more but you can expect to receive enough extra service from these blended ropes to make them economical in spite of their higher initial cost.

WHY? Because sun is one of the greatest enemies of polypropylene while our blended ropes are of ultraviolet resistant construction. Blends contain Dacron, nylon and in some cases black polypropylene on the surface, plus an application of RESISTEX, a patented compound developed in our laboratory to increase resistance to wear and abuse. American developed blends to increase heat resistance*, to reduce friction and thereby reduce the possibility of a rope sticking to a bitt or capstan.

SSR-300 is better than most blended ropes because it has surface yarns of 100% DuPont type 77 Dacron, as opposed to a very thin veneer of Dacron in some other blends. Additionally, SSR-300 is very pliable and has a pre-fuzzed surface which gives it a good hand and better wearing properties.

WANT US TO PROVE OUR CASE?

We can guarantee that a blended rope is as economical as any polypropylene rope for most operations. **Contact American for an unusual offer.**

*The melting point of Dacron is 482°F, of nylon 480°F and polypropylene 330°F.

Look for AMERICAN ROPES with the Red & Green Markers ▶



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MANUFACTURING COMPANY, INC.

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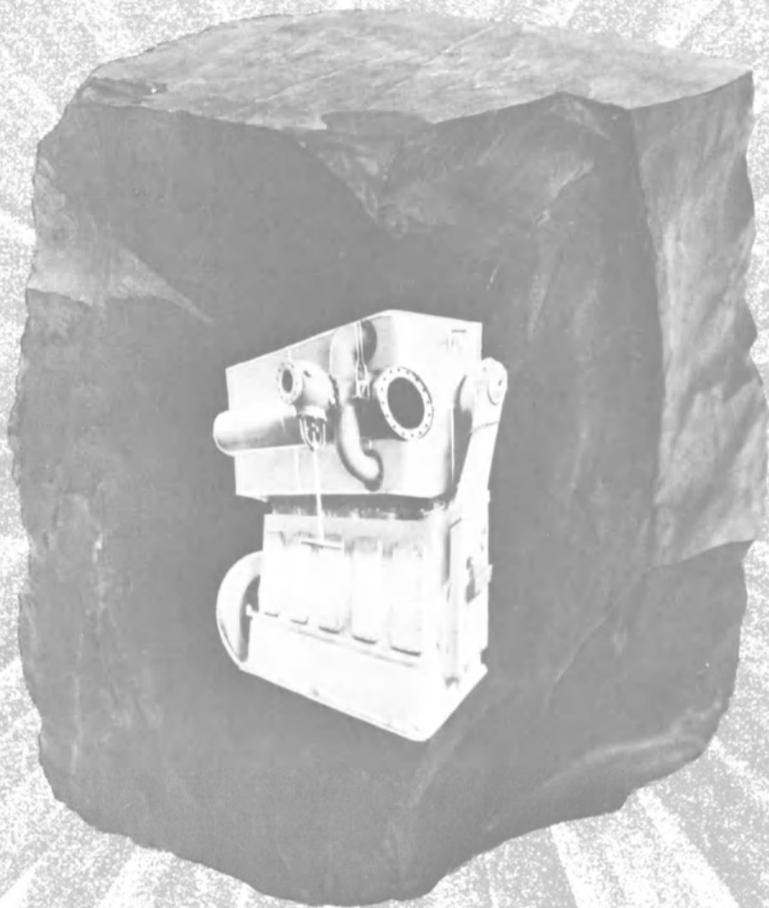
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Skinner started building steam engines 112 years ago, and never really stopped. They just put one in for Lord Corporation in Erie, PA, that will generate enough electricity and low pressure steam to pay for the equipment in three years.

When coal was the fuel for marine vessels, steam engines by Skinner were first in performance and first in preference. Now that owners are considering a return to available, affordable coal, Skinner know-how is only a phone call away. Ask Dick Whiting how coal power fits in your future.



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**MARITIME
REPORTER**
AND
ENGINEERING NEWS

(USPS 016-750)

No. 7

Volume 43

**107 EAST 31st STREET
NEW YORK, N. Y. 10016**
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ESTABLISHED 1939

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

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

ALL MATERIAL FOR EDITORIAL CONSIDERATION SHOULD BE ADDRESSED TO ROBERT WARE, EDITOR.

ON THE COVER

Preview—13th Annual Offshore Technology Conference

Astrodomain Complex
Houston, Texas

Page 47

Preview—Nor-Shipping '81

Sjolyst Exhibition Centre
Oslo, Norway

Page 20

Additions To Tidewater Fleet Valued At More Than \$50 Million

Tidewater Inc. has announced that its marine subsidiary, Tidewater Marine Service, Inc., is supplementing its global offshore oil and gas support fleet by 20 vessels having an aggregate cost of approximately \$50.6 million.

Fourteen vessels costing about \$31 million have recently been acquired as a supplement to the 1981 fiscal year capital spending program that ended on March 31, 1981. Included in the fiscal year 1981 additions are four towing/supply vessels (two of which are leased with an option to buy), three supply vessels, one crewboat, two anchor handling tugs, three oceangoing tugs (which are leased with options to buy), and one construction barge. In addition, six vessels costing about \$19.5 million have recently been committed to construction. Two are towing/supply vessels, two supply vessels, one geophysical vessel, and one fuel barge.

Tidewater's fiscal year capital spending program for marine equipment originally called for the delivery of 20 new vessels at a total contract price of \$31.4 million by March 31, 1981. Eighteen of the 20 vessels have been delivered and the remaining two, inland tugs, are expected to be delivered soon. The new acquisitions and construction commitments, when combined with the original fiscal 1981 program, aggregate a total capital expenditure of about \$82 million.

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When the leaning light is to larboard, you're not far from Gulf.



© Gulf Oil Corporation 1981

When a vessel calls at Los Angeles on her maiden voyage, she's given a plaque with the L.A. Harbor Lighthouse etched on it.

The city's official greeter has stood two miles out at the tip of the San Pedro Breakwater since 1913.

And for a good part of that time, it's stood with a slight list shoreward, the result of a brutal five-day storm that settled the stones of the jetty beneath it.

But it still stands firm and fast and mariners rely on its light, foghorn and radio signal.

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

These highly alkaline cylinder lubricants are for use in all low-speed crosshead diesel engines burning residual fuel oils. They're manufactured from highly refined base oils having maximum film strength and high oxidation stability, compounded with oil-soluble additives to provide the alkaline reserve needed to neutralize the acidic

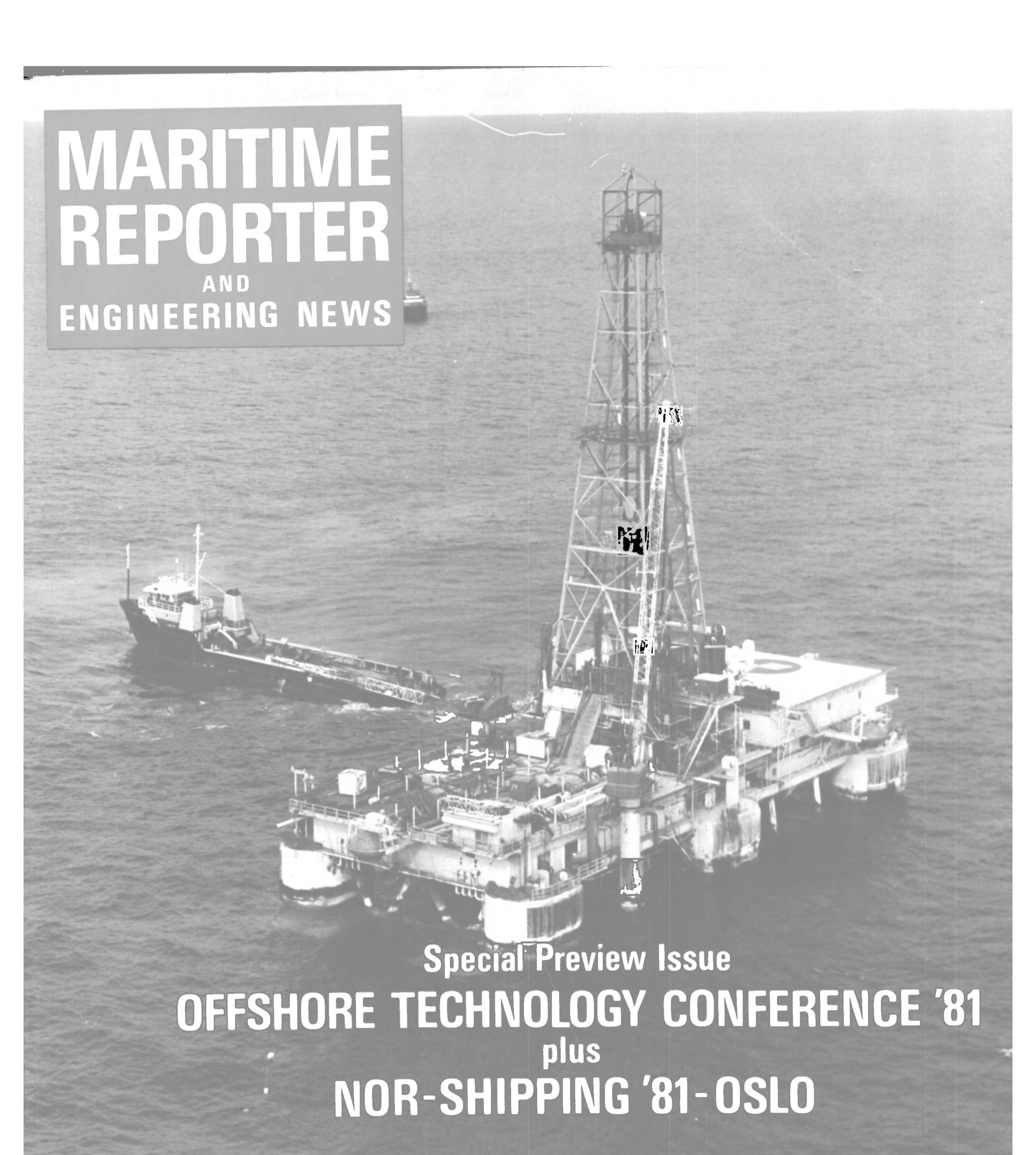
products of combustion and a high level of detergency to ensure maximum component cleanliness.

All of Gulf's marine products give you maximum quality, performance and bottom-line economy. They're available, backed by a complete and comprehensive service capability, at ports of call throughout the world. For specifics, please contact your local Gulf representative.



Gulf Trading and Transportation Company
A Division of Gulf Oil Corporation

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An aerial photograph of an offshore oil rig in the middle of the ocean. The rig is a complex structure with a tall derrick and various platforms. To the left of the rig, a long supply vessel is positioned, likely providing support. The water is dark and textured with small waves. The overall scene is industrial and maritime.

MARITIME REPORTER

AND
ENGINEERING NEWS

Special Preview Issue
OFFSHORE TECHNOLOGY CONFERENCE '81
plus
NOR-SHIPPING '81-OSLO

Photo Courtesy of Santa Fe International

Thirteenth Annual OTC-Houston
(SEE PAGE 4)

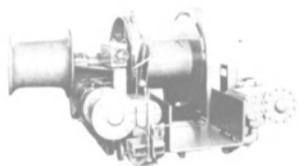
Nor-Shipping '81 - Oslo
(SEE PAGE 4)

APRIL 1, 1981

GM 3-268A 100 KW DIESEL GENERATOR SETS
 ENGINE: GM 3-268A — 6½"X7" — 1200 RPM — 80% PF — electric starting. GENERATOR: 100 KW — 440/3/60/1200 RPM — 161 amps. Drip-proof — open — self-ventilated. (Class A insulation stator — class B insulation on field). EXCITATION: 2 KW DC unit — 9' 1¾" long — 37" wide.

WINCHES

STEAM MOORING WINCHES

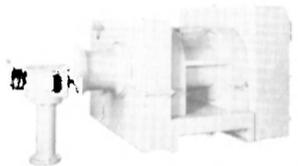


12" X 14" — AUTOMATIC TENSIONING with foot brake & declutchable gypsy head 20,000 LBS @ 100 FPM — FIRST LATER ALSO HANDLES 16,000 @ 150 FPM OR 50,000 @ 8 FPM.

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ALL UNITS CAN BE DEMONSTRATED RUNNING

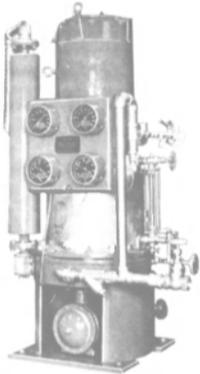
MODEL U1 UNIT WINCHES



7450 Lbs. @ 223 FPM. G.E. 50 HP Motor — 230 VDC. With controls and master switch.

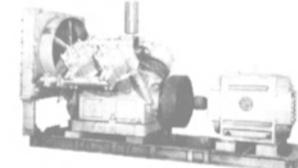
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NASH MULTI-PHASE CONTROL AIR COMPRESSOR 50 CFM — 100 PSI



Model MV-673. Continuous pressure maintained by pressure control valve. Complete with motor, heat exchanger, separator, silencer, pressure control valve, water seal pressure control valve. CAPACITY: 50 CFM @ 100 PSI — 3500 RPM. Motor 27 HP — 440/3/60. Cooling water flow 35 GPM — relief valve set for 110 PSI. Vertical configuration. Pressure switch: on 80 PSIG — off 100 PSIG. Just removed from AT&T Vessel "Long Lines". Excellent condition.

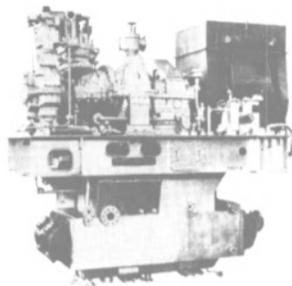
MARINE SHIPBOARD AIR COMPRESSOR V-TYPE — TS-22820



160 CFM @ 125 lbs — two stage 870 RPM — 8X8¼X8¾ — air cooled — with intercooler. Direct — connected air compressor #2261021. MOTOR: 50 HP 440/3/60 — mfg by U.S. Motor. AIR COMPRESSOR: Mfg by Air Pumps Ltd. Excellent condition — formerly used on AT&T Vessel "Long Lines" and removed only because they needed a larger unit. Complete with inter- and after-cooler. Very good condition.

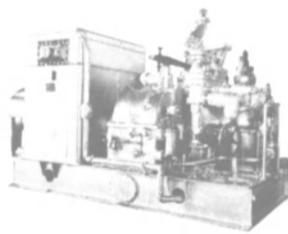
TURBO GENERATORS STEAM TURBINE — GEARS

1000 KW DELAVAL ALLIS-CHALMERS GEARED TURBO GENERATORS



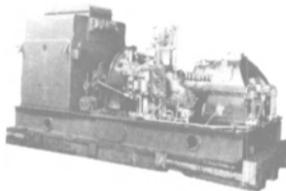
DeLaval turbine 1442 HP — 10019 RPM — class GJN — 9-stage — 1050 PSI — 950° TT. GEAR: 10019/12000. GENERATOR: Allis-Chalmers 1000 KW — 450/3/60/1200 — static excitation. Complete with condenser & switchgear optional. Send for brochure.

750 KW G.E. 7-STAGE TURBINE



450/3/60/1200 RPM — type FN3-FN24 — 10033 RPM. GEAR: 10033/1200 RPM. GENERATOR: type ATL — 6-pole — 450/3/60/1200 RPM — 0.80PF. EXCITER: 10KW 120 volts DC. Steam inlet 2½" — 125% load — 2 hour normal steam condition. Normal steam condition 525 lbs/825°TT — 1 lb absolute back pressure at turbine exhaust flange. Steam flow 100% load 7870 lbs. OAL 11' 4½" — OAW 6' ½" — OAH 6' 4". Total weight 24,500 lbs.

MARINER CLASS TURBINE & GEAR ONLY



G.E. 700KW DRV618-MR73 — 10938/1200 RPM 850 PSI — 850°TT — GEI-90755 CONDENSING. Complete with rotor bearings, diaphragms, packing, etc. Gear complete — type S — 432 — Form B — 10938/1200 RPM.

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G.E. 700KW DRV318-MR1 — 10938/1200 RPM — 850 PSI — 850°TT — 24 PSIG exhaust pressure. Rotor, diaphragms, packings, bearings available.

AUXILIARY TURBO GENERATORS ROTORS ETC.

● 400KW DELAVAL ROTOR — 7-STAGE — CLASS CD — 5910 RPM

835 lb W.P. — 840°TT — ex-Esso: Gloucester — Dallas Class — some Beth Sparrows Point & Quincy vessels, & Newport News Hulls 499-504 — in Book 820.

● 750KW DELAVAL ROTOR — 7-STAGE — CLASS G.J.

9823 — 585/865# steam pressure

● GEARS

Class KD — 9283/1200 — ex-City Service "Alton Jones" type vessels

GE ROTOR

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750 KW

Type FN-3-FN24 — 7-stage — 10033 RPM

WESTINGHOUSE

NEW

1250 KW

540# — 825°TT — 8050 RPM

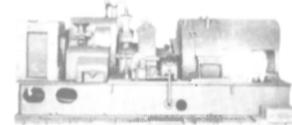
● FOR G.E. T2 VESSELS

G.E. DORV-325M — 5654 RPM — T2 tanker

● WESTINGHOUSE 538KW

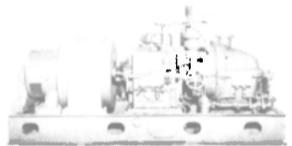
5010 RPM — T2 vessel

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New DeLaval type H.D. Turbine — #245204 — gear type KDC — 730 HP — 440# — 740°TT — 9977 RPM — with reduction gear output 1200 RPM. Turbine serial #245204.

G.E. 300KW TURBO GENERATOR & GEAR

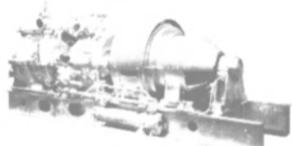


G.E. 300KW generator & 40KW D.C. exciter — 450/3/60/1200 RPM — ex USN D.E. vessel. TURBINE: DORV-325N — 4873 RPM — 400# — 50°F superheat.

300KW WESTINGHOUSE — LOW PRESSURE TURBINE & GEAR ONLY

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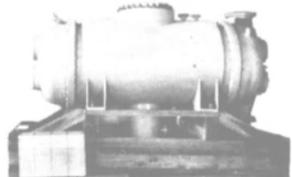
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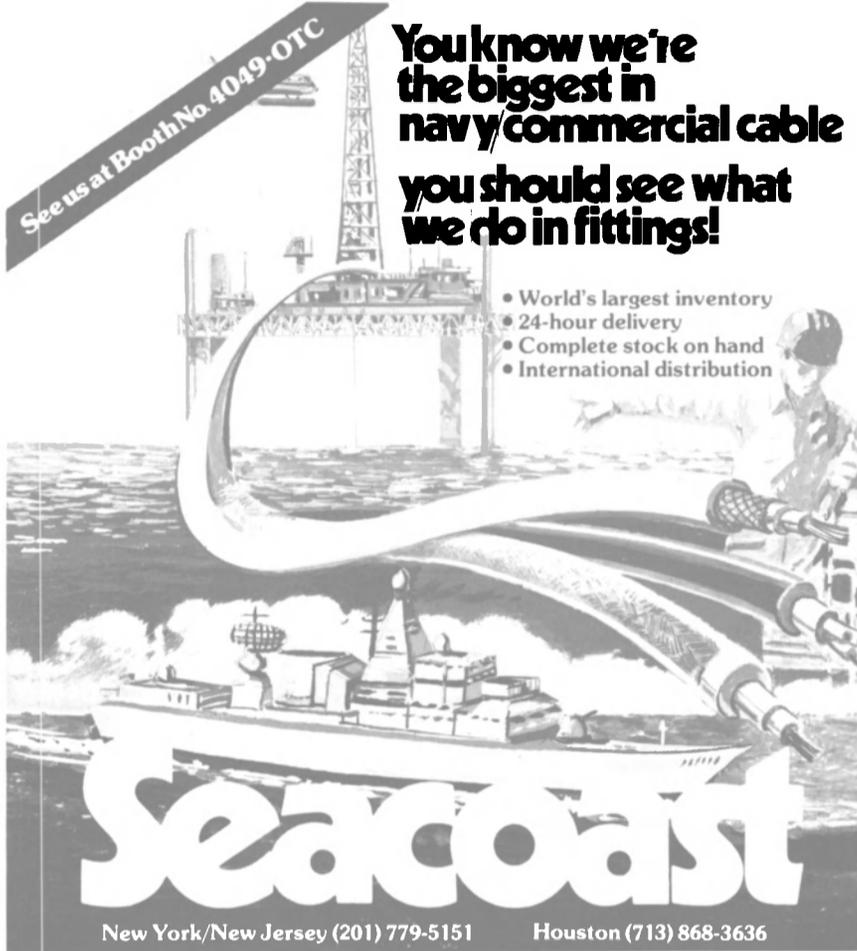
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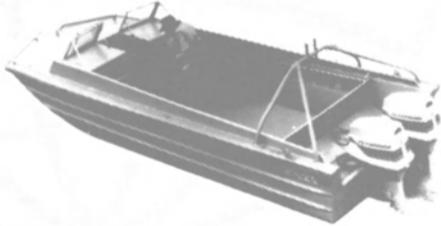
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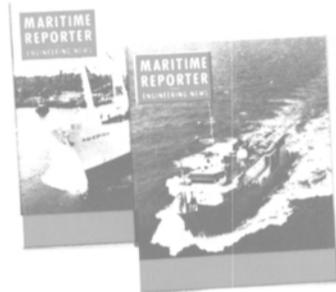
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C-E VETCO Services	4329	CENTRICO, Inc.	6665	Dresser Clark, Div. of Dresser Industries, Inc.	2503, 9201
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C.F.E.M. (Compagnie Francaise D'Entreprises Metalliques)	2133, 2233	Centrilift-Hughes, Inc.	2305	Climax Lubricants & Equipment Company	4056
Cabot Corp.	6800	Chantiers de France Dunkerque	2133, 2233	Clyde Iron, A Unit of AMCA International Corporation	4266
Cam-Lok Division, Empire Products, Inc.	3796	Chartres, Corp.	4254	Colt Industries, Quincy Compressor Division	6106
CAMCO, Inc.	3639	Chemetics Systems, Inc.	2794	Columbian Bronze Corp.	4028
Cameron Iron Works, Inc.	2401, 9402	Chemgrate Corporation	1173	Columbian Division, Trico Industries, Inc.	4044
Canoean Resources Ltd./Formerly Lockheed Petroleum Services Ltd.	1247	Chesson Oil Company	6501		
Carboline Company	1813	Chicago Bridge & Iron Company	2711		
		Christensen	1531, 1538		
		Chromalloy Petroleum Service Group	4138		
		Chromium Corporation	6548		

(continued on page 70)

OTC '81

List Of Exhibitors

(continued from page 62)

Exhibitor	Booth
Alstom Atlantique	2133, 2233
Amarillo Gear Company	6512
American Aero, Inc.	1433
American Bureau of Shipping	3564
American Coldset Corp.	3605
Amhoist American Hoist & Derrick Company	4833
Ameron, Protective Coatings Division	1156
AMETEK, Inc.	4418
AMF Tuboscope, Inc.	1431
Amsterdam Offshore Port	1475
Anchoring International, Inc.	2862
Andrews Bearing Corporation, Subsidiary of MPB Corporation	6510
Anixter Bros., Inc.	2692
Appleton Marine, Division of Appleton Machine Co.	2689
Aqua-Chem	2005
Aqua-Dyne Inc.	4040
Aquatic Equipment and Engineering, Inc.	6316
Aquila Favco Cranes Ltd.	9739
Aramco Services Company	6648
ARCO Solar, Inc.	9137
Arnold & Clark Chemical Co. Division of Chromalloy	4138
ASEA	2275
Associated Fabricators, Inc.	6316
Ateliers et Chantiers de Bretagne (A.C.B.)	2133, 2233
Atlas Copco	1375
Dresser Atlas, Div. of Dresser Industries, Inc.	2503, 9201
The Atwood Group, Inc.	9535
Atwood Oceanics, Inc.	4757
Automatic Power, Inc.	2713
Avco Industrial Engine Operation	3275
Avicon Corporation	7302
Avon Inflatables Ltd.	3347, 3351
Avondale Shipyards, Inc., A Sub. of Ogden Corporation	3283
Aydin Controls	6745
B & W Incorporated	4527
Baker Oil Tools Company	3307
Baldt Incorporated	2698
Bass Oil Ltd.	4012
Baylor Company	4372
B.C. Manufacturing Co., Inc.	9805
Beebe Bros, Inc.	2734
Bekaert Steel Wire Corporation	3547
Best Industries, Inc.	3688
Best-Hughes, Inc.	2305
Bethlehem Steel Corporation	2001
BF Goodrich Company	4115
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Birdwell Division, Seismograph Service Corp.	3584
BJ-Hughes, Inc., Services Division	2305
BJ-Hughes Inc., Service Division	4407
BK Products, Inc.	1375
Blackburn Marine Supply Company	3684
Blue Water Marine Supply, Inc.	2749
Boeing Vertol Company	4144
Boele's Shipyards & Engineering Co. Ltd.	1473
Boston Insulated Wire & Cable Co.	2740
Bowen Tools, Inc.	
A Big Three Industry	4307
Braden Winch Co., Div. of Paccar Inc.	4034
Bridgestone/Lord Kinematics	3762
Brinkerhoff Signal, Inc.	3319
Brisam, Inc.	4313
Brissonneau et Lotz Marine	2133, 2233
British Hovercraft Corporation Ltd.	3347, 3351
British Petroleum Limited	3347, 3351
British Ropes Ltd.	3347, 3351
British Shipbuilders	3347, 3351
British Steel Corporation	3347, 3351
Brown & Root, Inc.	3401
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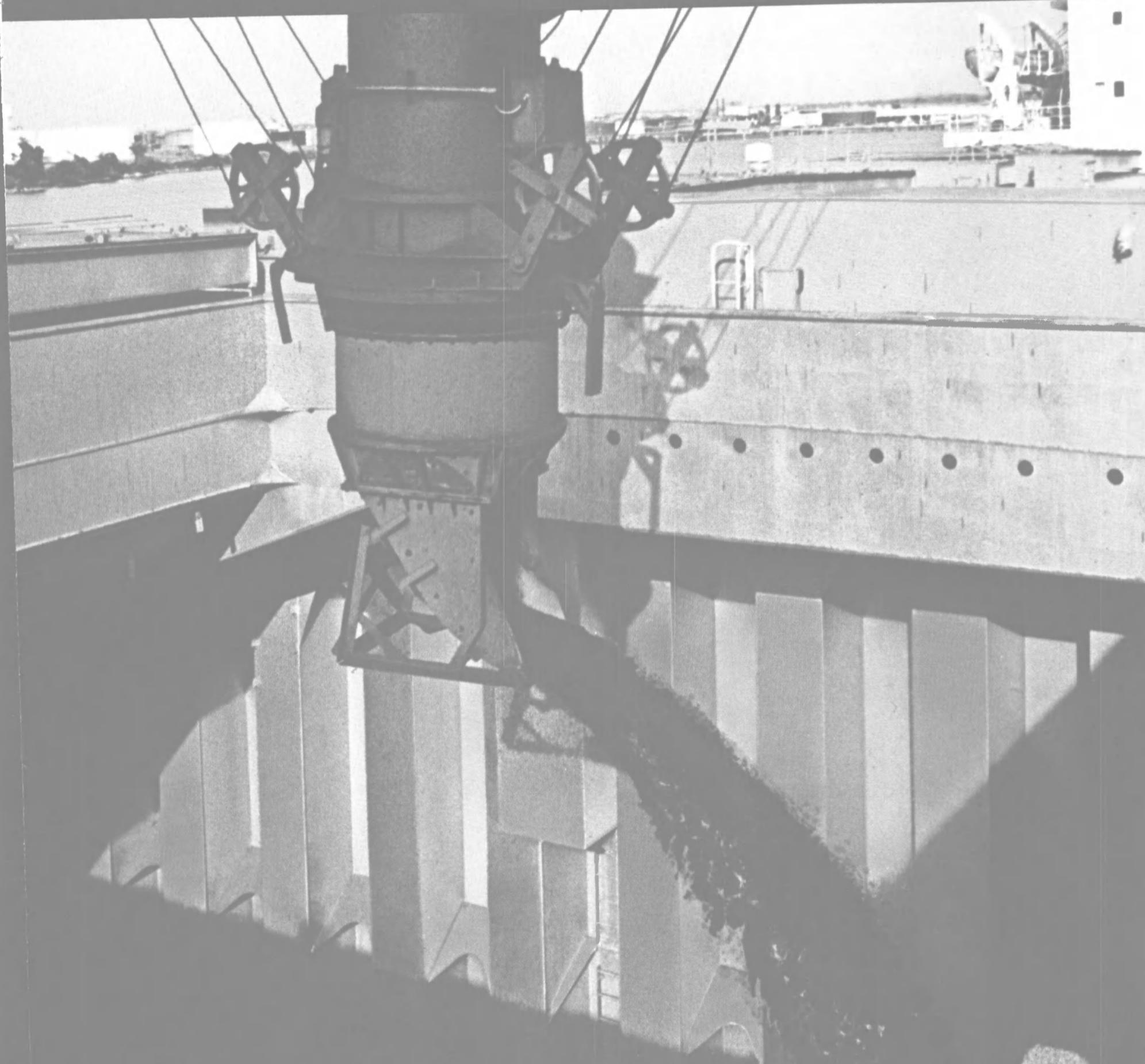
For more about the C-E marine boiler that's returning coal to the high seas, contact C-E Marine Power Systems, Combustion Engineering, Inc., Windsor, CT, U.S.A. 06095.

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(continued from page 67)

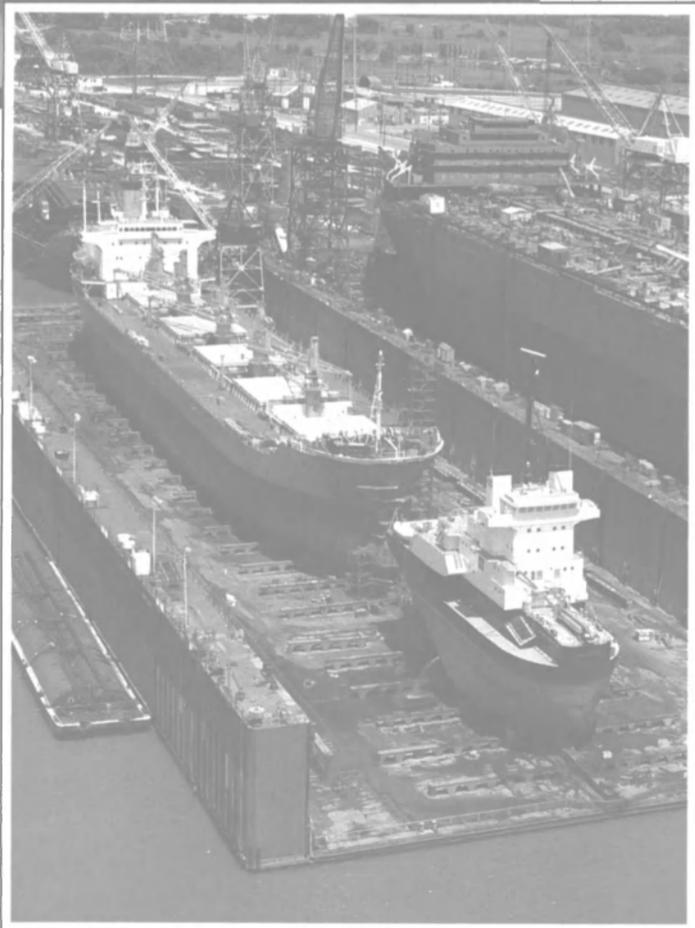
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Compressor Engineering Corporation	7228
Comsat	4141

Exhibitor	Booth
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Construcciones y Equipos Latino Americanos S.A.	2784
Constructora Protexa S.A. De CV	2784
Continental EMSCO, An LTV Company	4229
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Control Data Corporation	6230
Control Flow, Inc.	4016
Crawford Fitting Co.	2742
Cromemco, Inc.	6342

Exhibitor	Booth
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Crouse-Hinds Electro	1634
Culligan International	6309
Cummins Sales & Service, Inc.	4475
Custom Cable Company	2851
D & W International, Inc.	9638
Dalmine Anchor Pipe	4150
DAMCO-Offshore	1473
Daniel Industries, Inc.	2479
Daspit Bros. Marine Divers, Inc.	2849
The David Taylor Naval Ship R&D Center	7023
Davie Shipbuilding Ltd.	6841
De Groot International Contractors B.V.	1473

Exhibitor	Booth
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TRW Defense & Space Systems	2335
Delft Hydraulics Laboratory	1475
Delong Corporation	4009
Delta Mud, Division of Chromalloy	4138
DEMCO, A Division of Cooper Industries, Inc.	3619
Derrick Equipment Company, Div. of Derrick Manufacturing	6751
Derrick Service International	4372
Detector Electronics Corporation	1177
Di-Chem Magcobar Operation, Div. of Dresser Industries, Inc.	2503, 9201
The DiaLog Company	2640
Digicourse, Inc.	3779
Digitran, Inc.	7234
Disco International	6314
Dorbyl Marine (Pty.) Ltd.	2854
Dorman Long Swan Hunter (Pty.) Ltd.	2854
DOTCO Fishing Tools	4025
Dover Corp./Norris Div.	4655
Dowell Division of Dow Chemical U.S.A.	2313
Dowell Schlumberger Corporation	9503
Draco Spring Mfg.	4033
Dresser Industries, Inc.	2503, 9201
Dreyfus Supply & Machinery Corporation	2698
Drilco, Div. of Smith International	2405
Drilling & Service Limited	3347, 3351
Drilling Tools, Inc.	3319
Dunlop Limited	3347, 3351
Dyna-Drill, Div. of Smith International	2405
E.T.P.M.	2133, 2233
Eagle Mud Service, Inc.	4629
Earl & Wright	1401
Eaton Corporation, Engineered Polymer Products Division	2764
Eckel Manufacturing Company, Inc.	3763
EDO Western Corporation	1549
Elder International	9529, 9542
Electro-Motive Division, General Motors Corporation	6324
Electronic Systems Division	4964, 9711
Emerson & Cuming	
W.R. Grace & Co.	4217
Endeco (Environmental Devices Corp.)	7202
Enerpac	6201
Engelhard Industries Div.	2585
Engine Equipment Mfg. Co., Inc.	9730
Engineered Steel, Inc., Marine Crane Division	3692
Engineering Service Associates	4363
Engineering Specialties, Inc.	7229
Environmental Elements Corp. (Sub. Koppers Co., Inc.)	1632
Ergon, Inc.	1540
Esco, Inc./Dow Corning Corporation	2880
Esgard, Inc.	3773
Eureka Chemical Company	2858
Evans & Sutherland	3793
Everpure, Inc.	2780
Farr Oil Tool, Inc.	1169
Federal Republic of Germany	1755, 1773
Federal Signal Corporation	7345
Fibergrate Corporation	2365
Fine Tubes Limited	3347, 3351
Finsider	4150
Fisher Controls Company	4953
Fishing Tools, Inc.	3319
Flakt Limited	3347, 3351
Flexitallic Gasket Company Inc.	7301
Flexservice	2133, 2233
Flo Trend Systems, Inc.	6851
Flocon Products, Inc.	4016
Flopelrol Schlumberger	9519
Flow Products Division, Daniel Industries, Inc.	2479
GH Fluid Services	2359, 9625
Fluor Corporation	3607
FMC Corporation	1403
Foley Drilling Tools, Inc.	7465
GH-Foster	2359, 9625
Foster Marine Div., Foster Refrigerator Corp.	6318
French Exhibitions Inc.	2133, 2233
G.E.P.	2133, 2233
GAF Corporation	6110
Gai-Tronics Corporation	7128
The Galigher Co., Div. of Baker International Corp.	2847
Gall Thomson Maritime Ltd.	3347, 3351
Galveston-Houston Company	2359, 9625
Gardner-Denver Cooper Industries	1209
The Garrett Corporation	3255
Gasco Pumps, Inc.	6700
Gates Rubber Company	1149
L. F. Gaubert & Co., Inc.	3137
Gearhart Industries	3247
Gem Hersent	2133, 2233
Gemoco, Division of Chromalloy	4138
General Electric Company	1263
Geophysical Research Corporation	3644
George Wimpey Ltd.	3347, 3351
Geoservices	7134
Geosource Inc.	4964, 9711
Geveke Motoren en Grondverzet B.V.	1475
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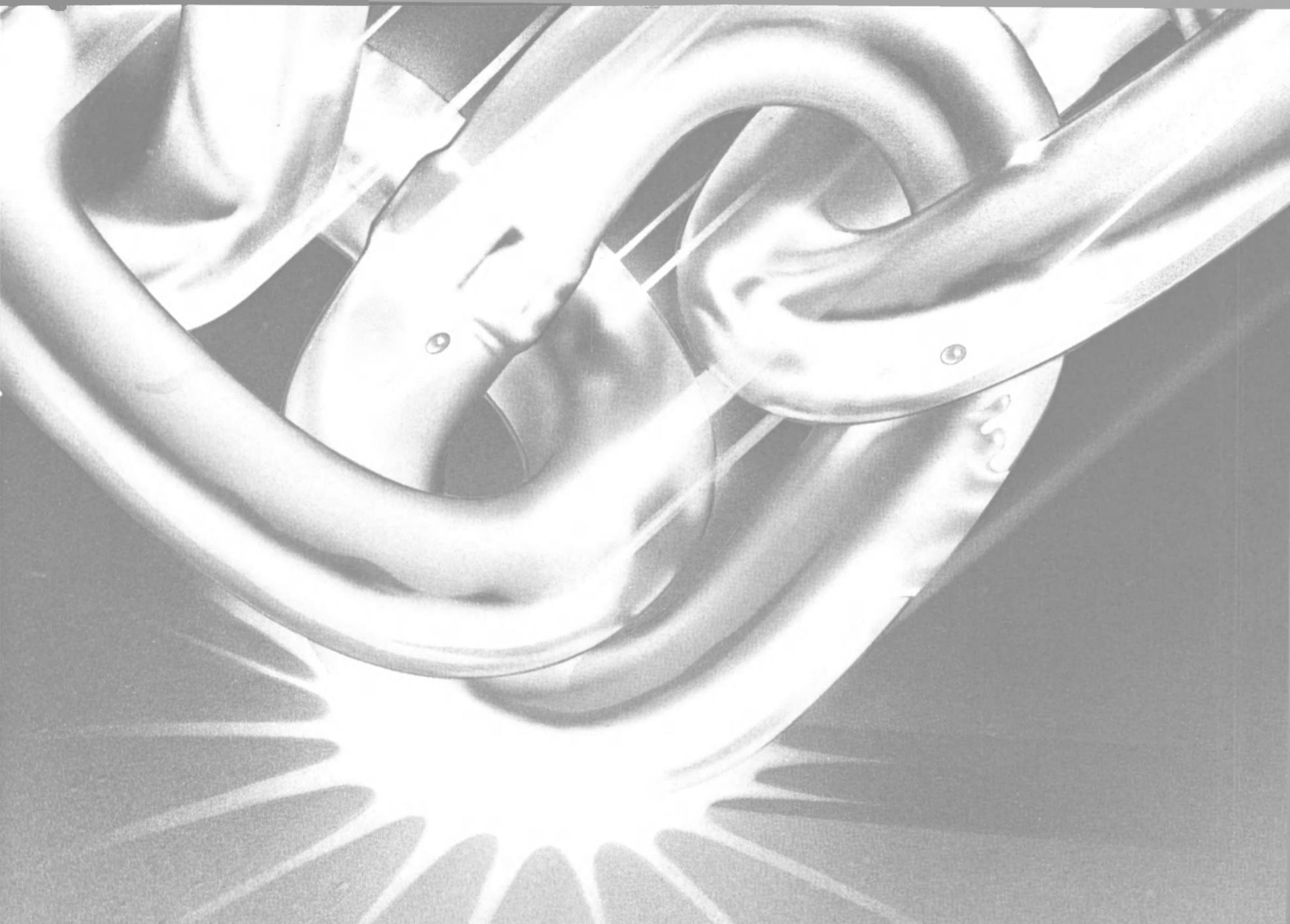


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(continued on page 72)

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Maritime Reporter/Engineering News



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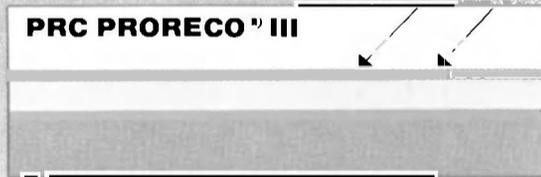
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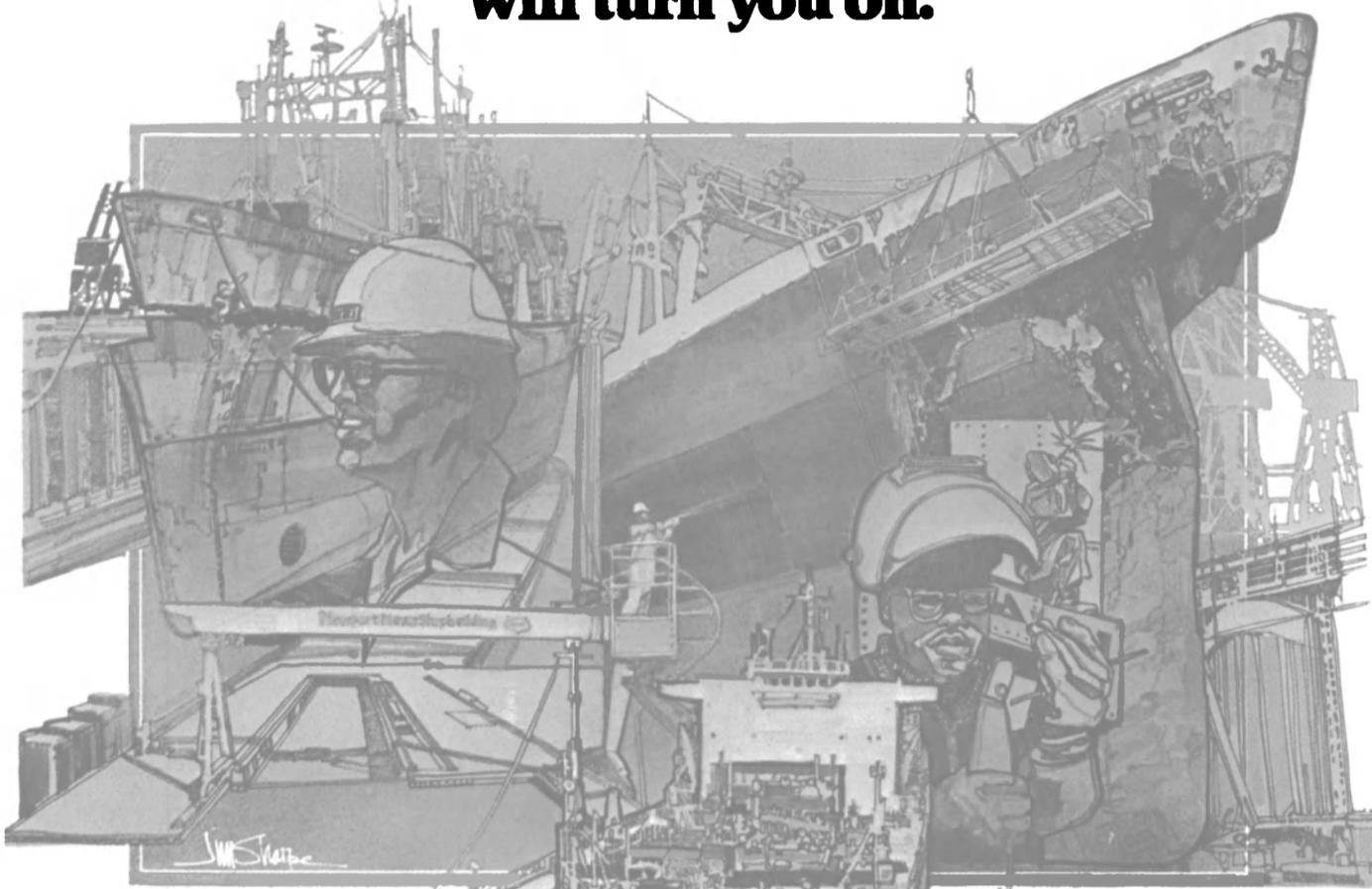
List Of Exhibitors

(continued from page 70)

Exhibitor	Booth
Gotco International, Inc.	2000
GP Elliott Electronic Systems	3347, 3351
Grant Oil Tool Company	4357
Gray Tool Company	4944
Greer Hydraulics	2642, 9628
Griffin-Woodhouse	2280

Exhibitor	Booth
Grundy Environmental Systems, Inc.	2758
Guiberson, Div. of Dresser Industries, Inc.	2503, 9201
Gulf Electroquip, Inc.	9605
Gulf Radiotelephone and Electronics, Inc.	3655
Gulco Industries, Inc.	6409
Gulfport Shipbuilding Company	1709
Hagglunds	2275
Halliburton Company	3401
Halliburton Services	3401
Halter Marine Inc.	6401
Hamanaka Chain Mfg. Co. Ltd.	2280
Hamblin Oilfield (Services) Ltd.	6549
Harco Corporation	2688
Harris Corporation	
RF Communications Division	3689
Harrisburg, Inc.	4475
The Harshaw Chemical Co.	4008
Hawkins & Tipson Ropemakers Ltd.	3347, 3351
HBL-Industries	1137
H.C.G. B.V. Offshore Division	1475
Heerema Engineering Service	1473
Hempel's Marine Paints, Inc.	4347
Hercules Energy Corporation	
Division LSB Industries Amex	9103
Hewitt Hose	3347, 3351
Hewlett-Packard	4145
Hill Graham Controls Ltd.	4661
Hilman, Inc.	2591
Hitachi Zosen	1573, 1673
Hitachi Zosen International, S.A.	1573, 1673
Hitachi Zosen U.S.A., Ltd.	1573, 1673
Holland Repair & Services B.V.	1473
Honeywell	2333
The Hotsy Corporation	1697
Houston Systems Manufacturing Co.	2669
Howe-Baker Engineers, Inc.	4050
Hughes Tool Company	2305
Humphrey, Inc.	1542
The Hunt Company	9320
Hutchison-Hayes International, Inc.	4447
Hydradyne Hydraulics	9825
Hydranautics	1741
Hydril	3901, 9502
Hydro Manufacturing & Sales	7305
Hydro Products	3561
Hydrodynamics Corporation	6845
Hydronautics, Incorporated	2635
Hyundai Heavy Industries Co., Ltd./Hyundai Corporation	6735
IDECO, Div. of Dresser Industries, Inc.	2503, 9201
IMCO	3401
IMCO Services, A Division of Halliburton Company	3811
IMODCO, A Unit of AMCA international Corporation	4268
Ingersoll-Rand Company	2375, 9614
INMARSAT, A Division of COMSAT Instrumentation Services Division, Daniel Industries, Inc.	2479
Intercontinental Ropes, Inc.	4030
International Grating Inc.	9624
International Paint Company, Inc.	2676
International Tool Company, Inc.	2678
International Underwater Contractors, Inc. (IUC)	2285
Interocean Systems, Inc.	1555
Interstate Electronics Corporation	2869
Ishikawajima-Harima Heavy Industries Co., Ltd.	1573, 1673
Italian Steel Finsider Group	4150
ITT	3673, 3674
Ivy Electronics, Inc.	7029
TRW J. H. Williams	2335
Jackson Marine Corp.	3401
Japan Ocean Industries Association	1573, 1673
JMR Instruments, Inc.	7323
John Wood Group Engineering	3347, 3351
Johnson Division, UOP Inc.	2878
Johnston-MACCO	
Division of Schlumberger	1405
Jordan Valve Richards International	2763
Joy Manufacturing Company	
Petroleum Equipment Group	4509
Kawasaki Heavy Industries, Ltd.	1573, 1673
Kawasaki Heavy Industries, Ltd.	9632
Kawasaki Steel Corporation	1573, 1673
Kelco Oil Field Products	1597
Kemlon Products	6102
Kendavis Industries International, Inc.	4475
Keystone Engineering/Affiliate	6102
Klampon Corporation	6528
Kobe, Inc.	1113
Kobelt J. Manufacturing Co. Ltd.	3598
The Kongsberg Group	2298
Koomey Inc.	6517
Krupp Atlas Elektronik/Division of Krupp International Inc.	4250
Lamarche Mfg. Company	2657
Lantana Boatyard, Inc.	2685
Lanzagorta International, Inc.	4360
Lasalle Marine, Inc.	9724
TRW Lawrence Cable	2335
Lebus International, Inc.	3742
Levingston Shipbuilding Company	1709
Linnenbank International, Inc.	2280
Lister Diesels Inc.	6302
Ljusne Chain Company	3261
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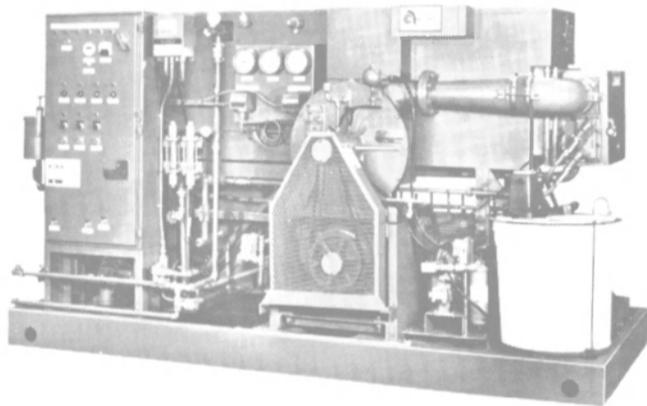


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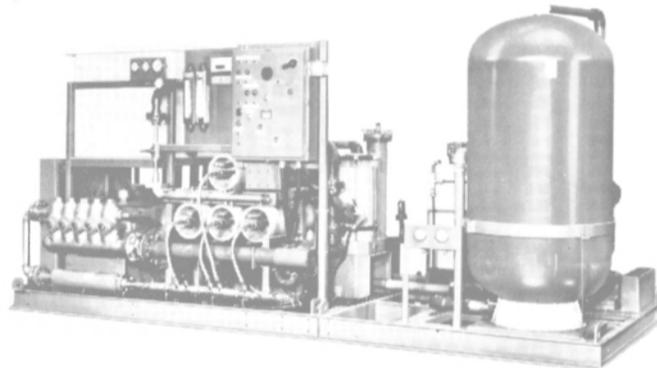
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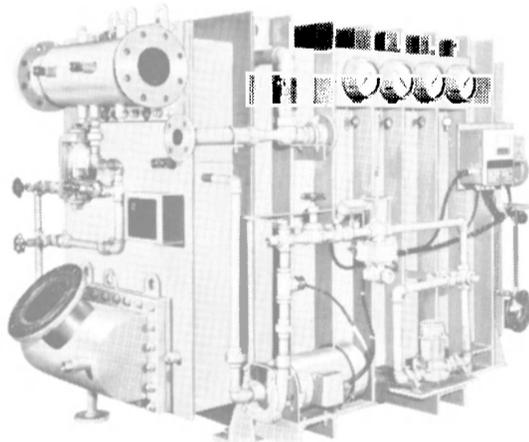
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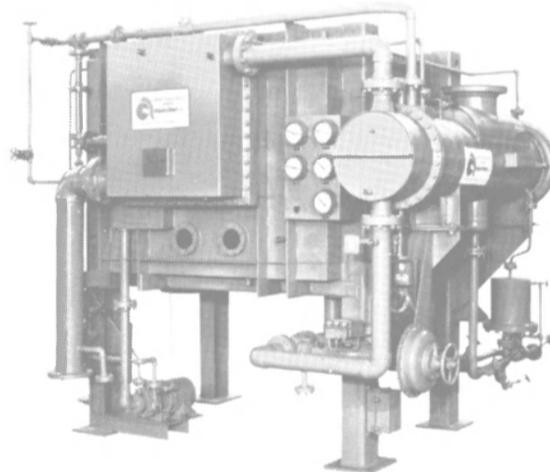
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List Of Exhibitors

(continued from page 72)

Exhibitor	Booth
Lone Star Screw Co.	
Protective Coatings Inc.	7353
Lorac Service Corporation	3584
Lord Kinematics/Bridgestone	3762
Lufkin Industries, Inc.	4366
Lynn International, Inc.	1141

Exhibitor	Booth
M & J Valve Division Daniel Industries, Inc.	2479
Magcobar, Div. of Dresser Industries, Inc.	2503, 9201
Magnavox Advanced Products & Systems Co.	1738
Malta Drydocks	2854
Mammoet Transport B.V.	1475
Mampaey Marine Engineering	2749
Manitowoc Engineering Co.	3423
Marathon LeTourneau Offshore Company	2403
Marcon B.V. Marine Consultants	1475
Marine & Industrial Electric Company	3138

Exhibitor	Booth
Marine Concrete Structures, Inc.	2762
Marine Moisture Control Company, Inc.	2890
Marsh Instrument Company A Unit of General Signal	3659
Martin-Black Offshore, Inc.	4032
Martin-Decker	1605
Matcote Company, Inc.	4737
Matra Offshore	6553
McAuto-McDonnell Douglas Automation Company	3746
McDermott Incorporated	1811
McEvoy Oilfield Equipment Company	2901
McMillan Equipment Company	6140

Exhibitor	Booth
Mechanical Equipment Company, Inc. (MECO)	2295
J. H. Menge & Company, Inc.	3734
Messina Incorporated	4023
Micoperi	6128
Midland Marine Corporation	2854
TRW Mission Manufacturing Co.	2335
Mitsubishi Heavy Industries, Ltd.	1573, 1673
Mitsui & Co., Ltd.	1573, 1673
Mitsui Engineering & Shipbuilding Co., Ltd.	1573, 1673
Mitsui Ocean Development & Engineering Co., Ltd.	1573, 1673
MOM Offshore Ltd.	3347, 3351
Monark Boat Company	4625
Morrison-Knudsen Company, Inc.	4209
Motorola Communications & Electronics, Inc.	1901
Frank W. Murphy Mfr., Inc.	7109
Mustang Power Products, Inc.	9642
Nance Industries, Inc.	3560
Napko Industrial Marine & Pipe Coatings Divisions	4027
National Marine Service Incorporated/ Products Division	2637
National Offshore Supply Co., Inc.	7101
National Supply Company	1503
NDT Systems, Inc.	6542
Neddrill (Nederland) B.V.	1473
Nedlloyd Group	1473
Nelson Electric, A Unit of General Signal	2888
New Mar Oil Services Ltd.	3347, 3351
Newpark Shipbuilding & Repair	4629
Newport News Shipbuilding	6831
Nippon Chain & Anchors Co.	2280
Nippon Kokan K.K.	1573, 1673
Nippon Steel Corporation	1573, 1673
NL Petroleum Services	2111, 3501
Nohab Diesel	1375
North American Turbine Corp.	2298
Norwalk-Turbo, Inc.	6234
The Export Council of Norway	2433, 2449
NRP/Hose Products	2575
The O'Brien Corp.	4027
D. G. O'Brien, Inc.	4410
OBI-Hughes, Inc.	3739
OBI-Hughes, Inc.	2305
Ocean Drilling & Exploration Company	1355
Oceaneering International, Inc.	2381
Odom Offshore Surveys, Inc.	4410
Offshore Logistics, Inc.	9238
Offshore Navigation, Inc.	2839
Offshore Safety/Survival Div.	2749
Offshore Supplies Office	3347, 3351
Offshore Supply Association Limited	3553
Offshore Technology Corporation	2870
Oil Tool Div.	4964, 9711
Omnipure	2280
Oncor Corporation	9411
Orbit Valve International, Inc.	1903
Osprey Electronics Ltd.	3347, 3351
Otis Engineering Corp. A Halliburton Company	3401
Pacific Roller Die Company, Inc.	6565
Par Industries, Inc.	4372
Parker Hannifin Corporation Seal Group	4006
Parker Industry Corporation	4018
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Peabody International Corp.	2769
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Peerless Mfg. Co.	4014
Pengo Industries, Inc.	3737
Penrod Drilling Company	2709
Perforaciones Maritimas Mexicanas S.A.	2784
Perry Equipment Corporation	6120
Perry Oceanographics, Inc.	4719
Pettibone Corporation	9321
Petty Ray Geophysical	4964, 9711
Philadelphia Gear Corporation	6305
Philadelphia Resins Corporation	4725
Phillips Petroleum Company	3640
Phoenix Products Co., Inc.	2264
The Pipe Line Development Co. (PLIDCO)	1900
TRW Pleuger	2335
Posi-Seal International, Inc.	3572
Power Systems Operation	4961, 9711
Prefomed Marine	6132
Premium Threading Service A Division of Otis Engineering	7244
Pressure Control, Inc.	9110
Priestman Brothers Ltd.	3347, 3351
Prince Valve, Inc.	3774
Production Specialties Division Daniel Industries, Inc.	2479
Products Research & Chemical Corporation (PRC)	6124
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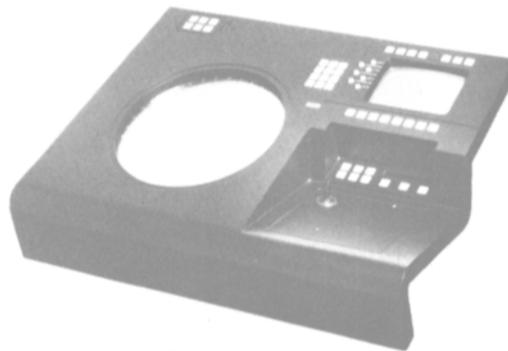
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List Of Exhibitors

(continued from page 74)

Exhibitor	Booth
Raymond International Inc.	3539
Raytheon Company	3585
RCA Avionics	6601
Reading & Bates Corporation	1331
REAMCO, Inc.	4543
Red Fox Industries, Inc.	3933

Exhibitor	Booth
TRW Reda Pump Co.	2335
Regan Offshore International, Inc.	2311
C. A. Richards & Associates, Inc.	4410
Rig-A-Lite Company, Inc.	4475
Rigging International Europe Ltd.	3347, 3351
Riley-Beaird	2811
Rockwell International Flow Control Division	2797, 9317
Rolls Royce Ltd.	3347, 3351
Ross Hill Controls Corporation	4651
Rowan Companies Inc.	3552
RSV Offshore	1475
Ruston Gas Turbines Ltd.	3347, 3351
S & N Pump Co.	2649
S.E.M.T. Pielstick	2133, 2233

Exhibitor	Booth
S.M.F. International (Creusot Loire Groupe)	2133, 2233
Safety Service & Supply Co., Inc.	4254
Sahara Oilfield Services Ltd., S.A.	4313
Saipem (ENI Group)	7125
Samson	2280
Samson Ocean Systems, Inc.	3660
Santa Fe International Corporation	3713
Saut du Tarn Ball Valve Co.	6900
Schlumberger	1405
Schlumberger Offshore Services	1405
Schottel of America, Inc.	4031
Schramm, Inc.	9720
Schumacher Company, Inc.	1737
Scientific Drilling Controls	2743
SD Marine Ltd.	3347, 3351

Exhibitor	Booth
SDC Products Group	1532
Sea Data Corporation	6746
Sea Tank Co.	2133, 2233
Seacoast Electric	4049
Seaforth Maritime Ltd.	3347, 3351
Seahorse, Inc.	3319
Seal-Tite Mfg. Co.	6310
Seaward International, Inc.	4221
Sedco Drilling Division	1401
Sedco Energy Corporation	1401
Sedco, Inc.	1401
Sedco-Hamilton Production Services	1401
Selby, Battersby & Co., A Sub. of Quaker Chemical Corp.	2667
Sembawang Engineering (Pte.) Ltd.	2854
Sembawang Shipyard Ltd.	2854
Sepco Industries Inc.	1731
Serck Audco Valves International	3347, 3351
Servco, Div. of Smith International	2405
SHIPCO, Inc.	7116
Sigma Enterprises, Inc.	4021
Signal Oilfield Service, Inc.	3319
Single Buoy Moorings Inc.	3211
Skagit Corporation	4647
SKF Steel	1375
Skinner Bros. Co., Inc.	3642
The Skytop Brewster Company	4035
Smit International	1457
Smit International Marine Services	1457
Smit International (Americas) Inc.	1457
Smit International Ocean Towage and Salvage Co.	1457
Smit International Transport	1457
Smit Lloyd B.V.	1457
Smit Tak International Salvage Company	1457
Smit-Lloyd	1457
Smith International, Inc.	2405
Smith Meter Operation	4964, 9711
Smith Tool, Div. of Smith International	2405
Snamprogetti (ENI Group)	7125
Snap-On Tools Corporation	7137
Societe Alsacienne de Const. Mecaniques de Mulhouse	2133, 2233
The Society of Naval Architects and Marine Engineers	1115
Society of Petroleum Engineers of AIME	4000, 4001
SOPEC, Inc.	3267
Solar Turbines International	1501
Solus Ocean Systems, Inc.	3759
Sound Powered Telephone Co. Ltd.	3347, 3351
Southern Spring Mfg. Inc.	6522
Span Instruments Inc.	4215
Spearhead Group	3347, 3351
Special Products Division of Otis Engineering Corporation	7242
Specialties Company and Copper State Rubber Co.	4005
Specific Equipment Company	2754
Sperry Marine Systems	3693
Sperry-Sun, Inc.	4525
St. Louis Ship Div. of Pott Industries Inc.	1175
Stal-Laval, Inc.	2275
Standco Industries, Inc.	2495
The Stanwick Corporation	2581
State Boat Corporation	3548
Stewart & Stevenson Services, Inc.	3511
Stork Werkspoor Diesel B.V.	1475
Sturm Machine Company Division of Chromalloy	4138
Sub-Sea Systems, Inc.	1734
TRW Subsea Petroleum Systems Inc.	2335
Sullair Corp.	7247
Sulzer Brothers, Ltd	4565
Sumitomo Corporation	1573, 1673
Sumitomo Heavy Industries, Ltd.	1573, 1673
Sumitomo Metal Industries, Ltd.	1573, 1673
Sumitomo Ocean Development & Engineering Co., Ltd.	1573, 1673
Superior Division Trico Industries, Inc.	4044
Swan Hunter (Trinidad) Ltd.	2854
Swedish Chain Sales Corp.	3261
Swedyards Development Corp.	1375
TAM International, Inc.	2675
Taylor Diving & Salvage Co.	3401
Taylor Oil Tools	3534
TBW Industries, Inc.	1435
Tech-Carbides, Inc.	9439
Tejas Controls, Inc.	3639
Teleco Oilfield Services Inc.	6334
Teledyne Inc.	1307
Tellurometer	4363
Tellurometer - U.S.A.	4363
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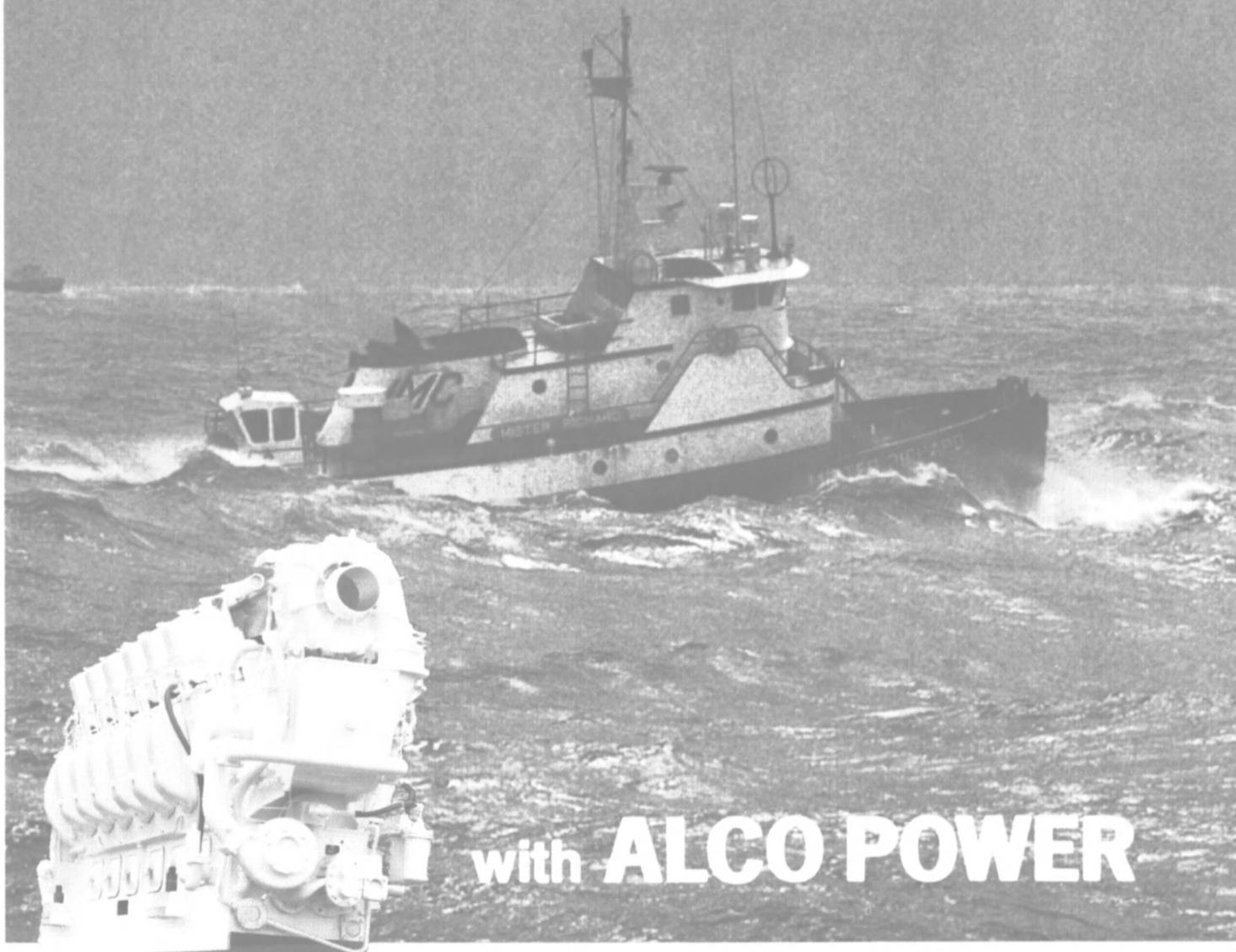
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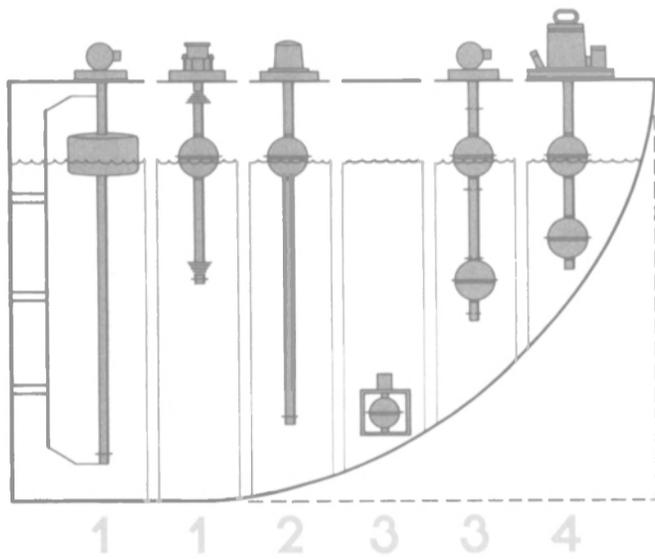
(continued from page 76)

Exhibitor	Booth
Tideland Signal Corporation	4547
Tidewater Marine Service, Inc.	4011
TK Valve & Manufacturing, Inc.	2121
The Torrington Company	1159
Trans-Tow Limited	6505

Exhibitor	Booth	Exhibitor	Booth
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Tri-Flo Industries International, Inc.	9715	United States Coast Guard	6202
TRW Inc.	2335	United States Gypsum Company	6817
GH-TTE	2359, 9625	The United States Navy	7023
Tungsten Carbide Mfg. Div. of Smith International	2405	United States Steel	3637
Turbomeca	2133, 2233	United Technologies Corporation	4112, 9333
Turmeric, Ltd.	3593	Universal Joint Service, Inc.	3698
Twin Disc, Incorporated	3147	Universal Metals & Machinery, Inc.	3131
UDI Group Ltd.	3347, 3351	Valve Control Company	3901, 9502
Union Carbide Corporation, Linde Division	4054	D. Van Beest	2749
Union Wire Rope	1503	Van Leeuwen Pipe & Tube	1473
Uniroyal, Inc.	2857	Vector Cable Co.	1405
		Verolme Dock and Shipbuilding Company B.V.	2854

Exhibitor	Booth
Vetco Offshore Inc., A Sub. of Combustion Engineering, Inc.	4425
Vicinay International Company, Inc.	2634
Victoria Machine Works	2863
Vrijhof Ankers B.V.	1475
Vulcan Iron Works Inc.	1740
W-K-M Division, ACF Industries, Incorporated	4208
W. L. Gore & Associates, Inc.	9443
W.B. Arnold Co., Inc.	4846
W.B. Arnold Co., Inc.	3261
WABCO - American Standard	2379
Wanlass Technologies, Inc.	9712
Warren Automatic Tool Company	2697
Washington Chain & Supply, Incorporated	2698
Watercraft America, Inc.	4846
Waukesha Engine, Div. of Dresser Industries, Inc.	2503, 9201
Weatherby Engineering Co. Protexa	2784
Weatherford International	1433
Well Control, Inc. A Thermotics Company	2733
Western Company of North America	3636
Western Gear Corporation	1539
Wilson Walton International Ltd.	3347, 3351
Wheatley-Flow Control Operation	4964, 9711
Whico Atlas Company	6500
Whittaker Corporation Survival Systems Division	2211
Widder Corporation	2363
Wijsmuller B.V.	1475
Wilson & Hayes, Inc.	1636
Wm. B. Wilson Mfg. Co.	6217
Womack Machine Supply Co.	2775
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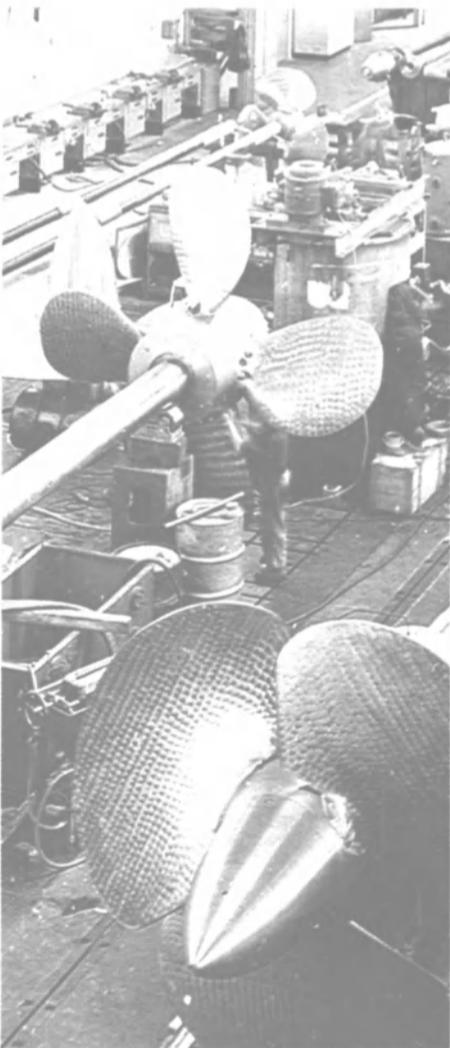
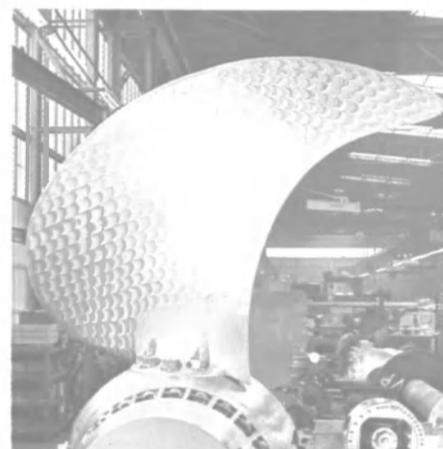
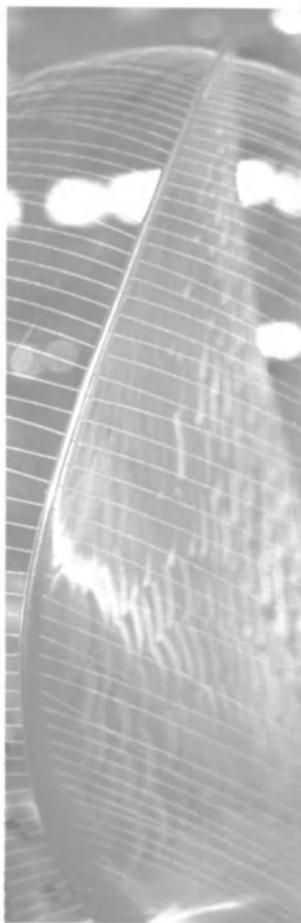
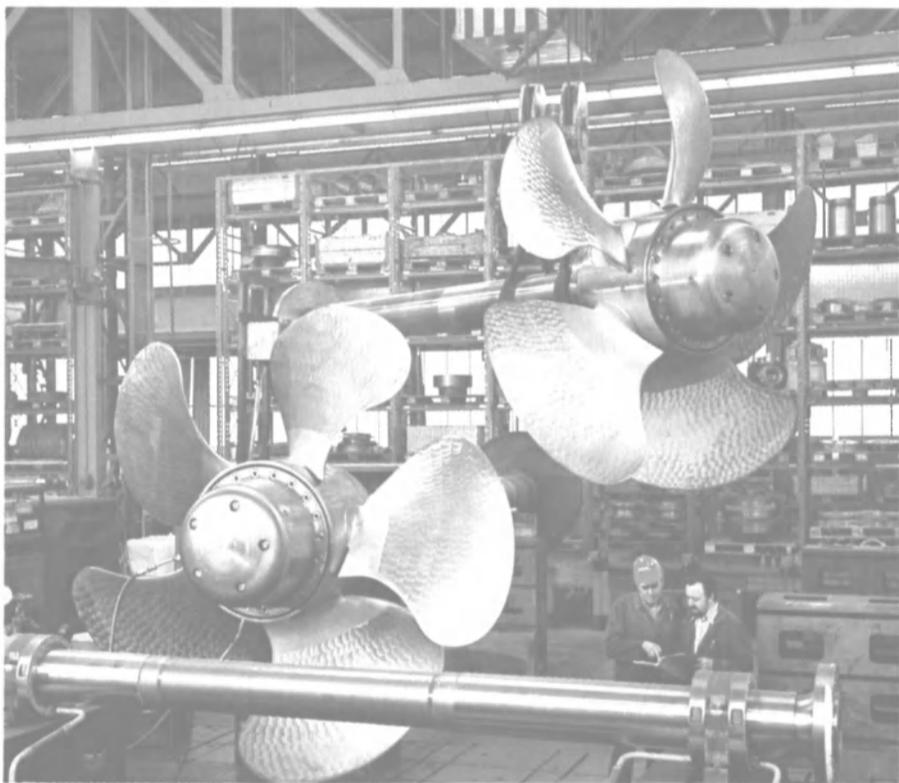
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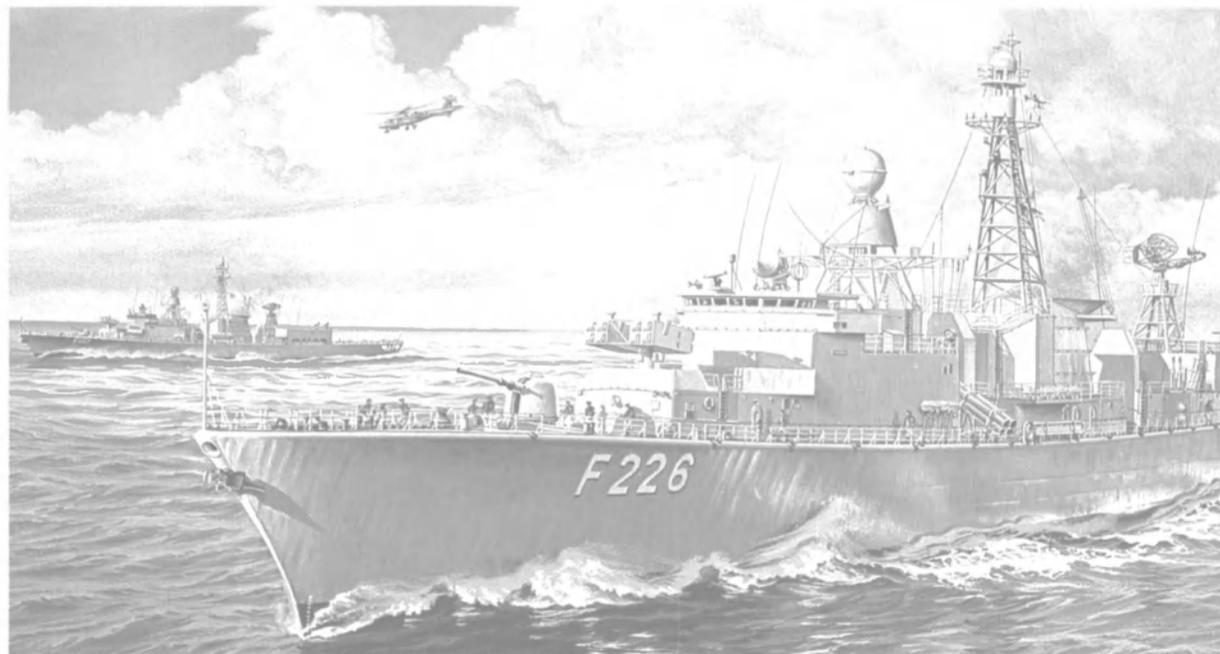
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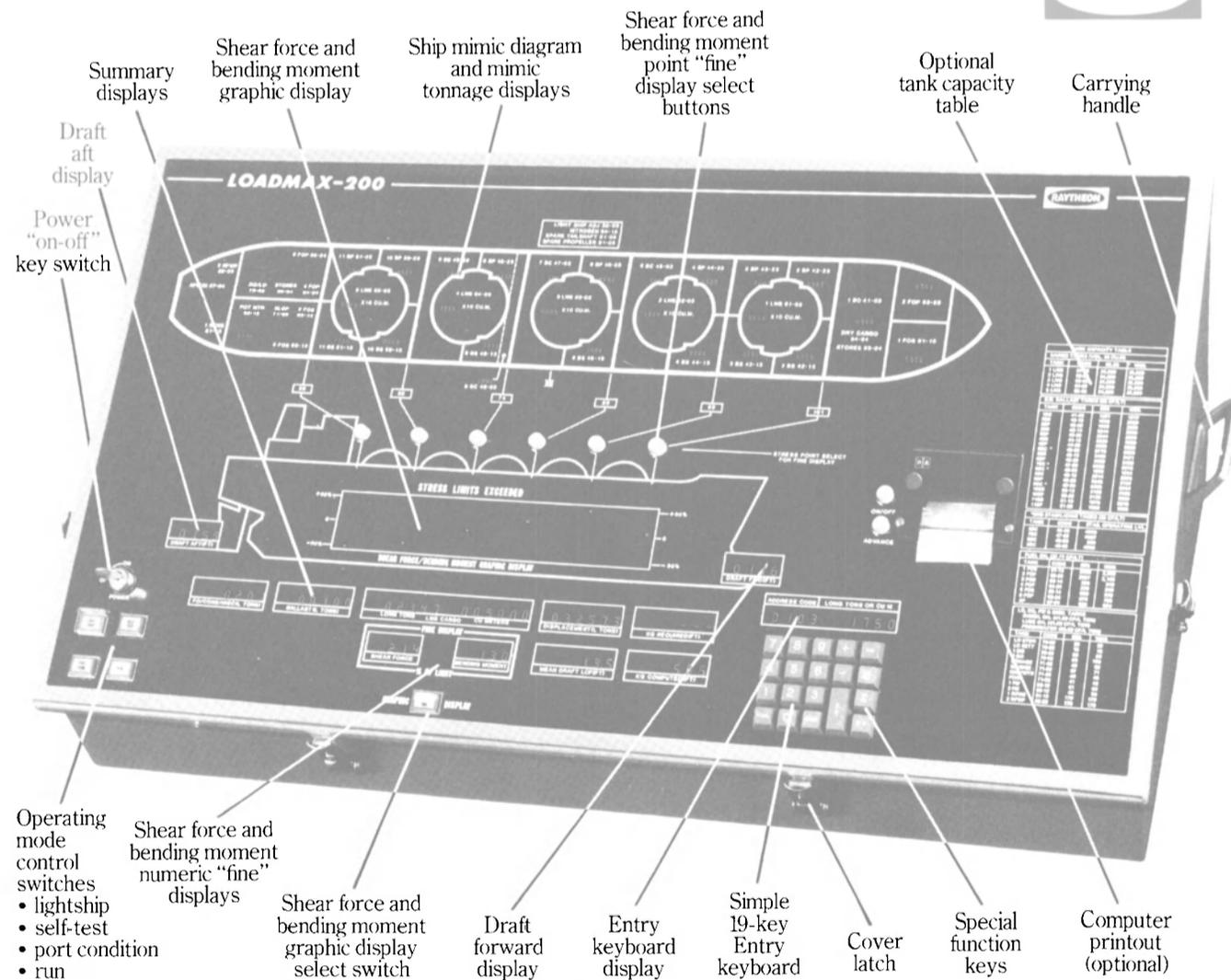
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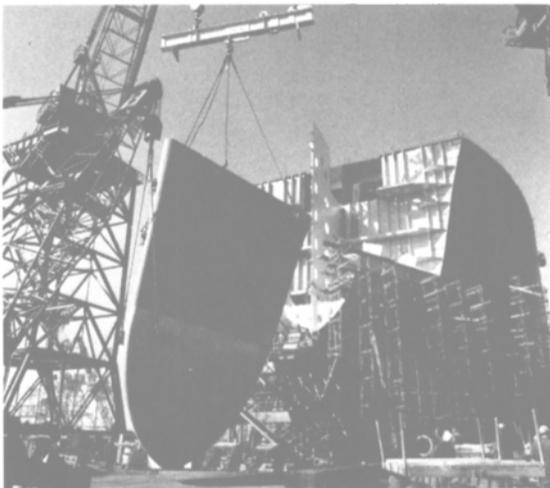
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Its fuel-efficient GE power plant came aboard with over 50 million hours of proven service.

The fuel-efficient General Electric Diesel Engine brings an enviable reputation of excellent performance in propulsion, drilling, and auxiliary power service to the drilling industry.

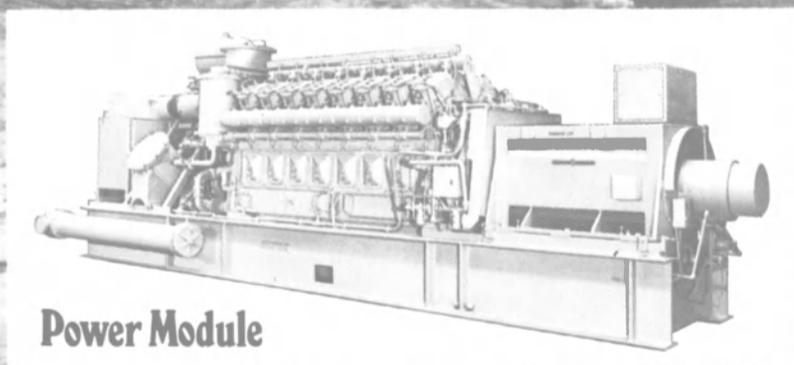
This engine's record for dependable service, based on more than 6000 engines in operation worldwide, is verified daily in the tough tasks being accomplished by that industry.

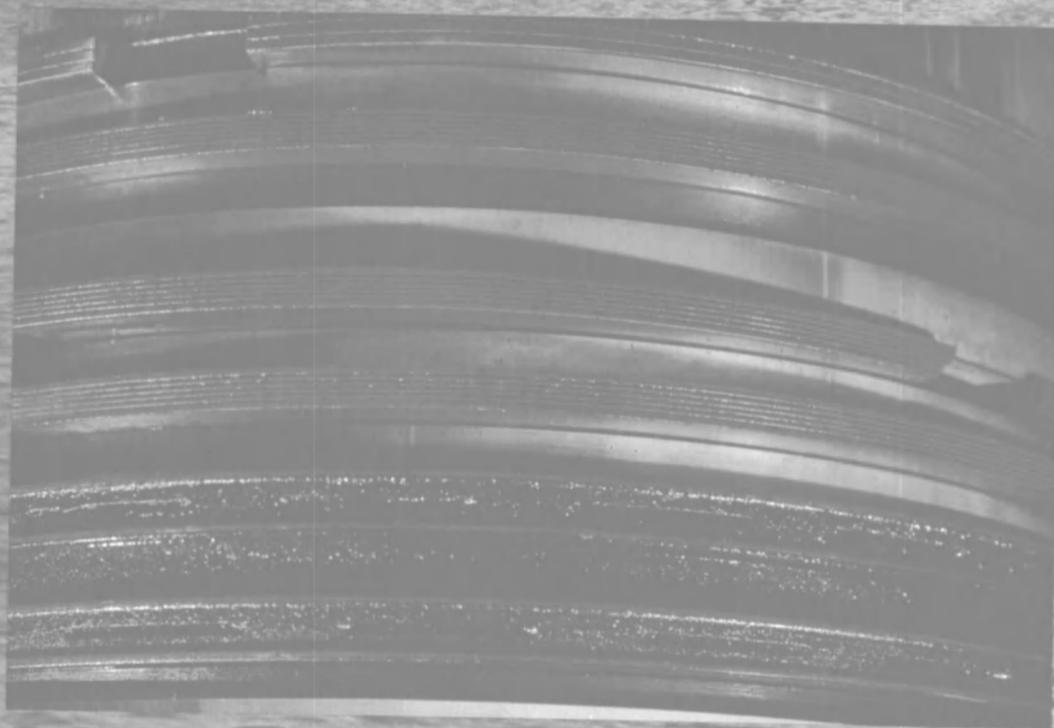
The GE Engine has earned its reputation with design concepts that significantly contribute to outstanding reliability, maintainability, and fuel economy.

Inherent fuel efficiency of General Electric's four-stroke-cycle engine has been enhanced over the past 17 years with improvements to critical components such as the intercooler, exhaust system, pistons and liners, and the turbocharger. General Electric believes that the present configuration of this marine power plant represents the latest state-of-the-art in fuel efficiency and can produce up to 22% savings in fuel over a two-stroke Roots-blown engine and up to 10% over a two-stroke turbocharged engine.

Contact your GE representative at OTC or write Manager, Diesel Power Products, 2901 East Lake Rd., Erie, Pennsylvania 16531.

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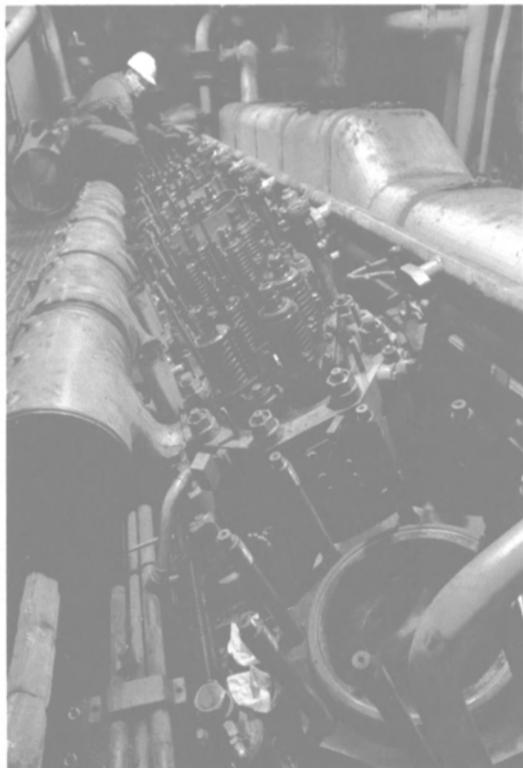
This catug's Colt-Pielstick Diesels ran over 17,400 hours on high sulfur fuel, and the pistons and rings look great.

Two Colt-Pielstick PC 2 V-14 engines are the main power units on the M/V SEABULK MAGNACHEM, an ultra modern 39,900 ton integrated tug/barge owned by Hvide Shipping Company of Port Everglades, Florida.

When the vessel was commissioned, Gulftow® Special 30 was chosen as the lubricating oil. Since the engines use fuel with a sulfur content as high as 1.9%, with a viscosity of 1121 SSU at 100° F and vanadium at 32 PPM, sodium at 38 PPM, that's tough duty for any oil. Gulftow Special 30 stood the test.

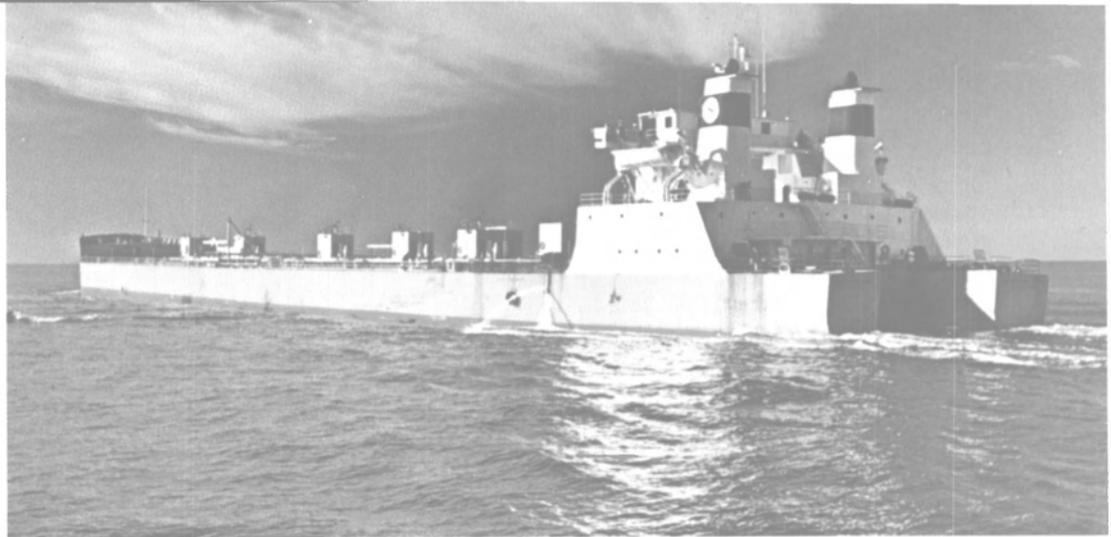
(Left) The M/V SEABULK MAGNACHEM in port at Mobile, Ala. for drydocking and overhaul of engines.

(Inset left) After 17,800 hours of operation, lubricated with Gulftow Special 30, this piston from the port engine shows no detectable wear. All rings were completely free.



The port engine during overhaul and inspection.

The MAGNACHEM was able to run 7,800 hours beyond the recommended 10,000 hour overhaul point on the port engine, and 7,400 hours beyond it on the



The M/V SEABULK MAGNACHEM, and her sister ship the M/V SEABULK CHALLENGER (above) are 39,000 ton integrated tug/barge combinations, transporting bulk liquids between U.S. Gulf and Atlantic Coast ports.

starboard. And when the engines were torn down and inspected, the piston skirts were clean and smooth, with no scoring, and all rings were completely free.

Hvide carefully considered the demands these conditions would place on an oil before choosing Gulftow Special 30. They chose it for stability, long life and superior protection in the tough marine environment.

Careful lubricant selection is only part of Hvide's meticulous maintenance program. They constantly monitor the performance of this vessel's engines on sophisticated monitoring consoles reading in both the engine room and on the bridge. And they use Gulf-Check tests on a regular basis to keep aware of oil and engine condition. It's this complete maintenance program that allows Hvide to get such long and economical service from its machinery.

In addition to using Gulftow Special 30 in the Pielstick Diesels, the M/V SEABULK MAGNACHEM

also uses Gulftow 193, Gulf Harmony® 68 AW, Gulf Harmony 46 AW, Gulf E.P Lubricant HD 220, Gulfcrown® Grease E.P No. 2 and Gulfube® Motor Oil XHD 10W/30 to meet other lubricant requirements.

Talk to your Gulf pro or Gulf Marine Distributor about Gulf lubricants for marine service. Or, for a brochure on "Gulf Inland and Coastal Marine Lubricants," write to Gulf Oil Corporation, P.O. Box 1563, Houston, Texas 77001.



Close inspection of the piston skirts found them clean and smooth, with no scoring.



Ask the pro from Gulf.

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Ridgon And Almerico Named Managers At Gulf Fleet Marine

Gulf Fleet Marine Corporation, headquartered in New Orleans, has announced two management appointments. Larry Ridgon has been named manager of the Gulf Coast Supply Boat Division. He assumes management responsibil-

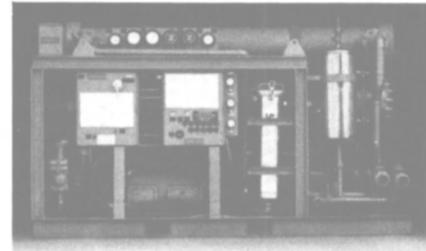
ities for the company's supply and towing supply vessels operating in the Gulf of Mexico. Mr. Ridgon has served as administrative manager for Gulf Fleet's operations in Egypt, and most recently was corporate controller.

Vincent Almerico has been appointed manager of engineering and maintenance, and will have responsibility for Gulf Fleet's new construction and major vessel

modification program as well as the preventive maintenance and repair program. He joined Gulf Fleet as manager of new construction.

Gulf Fleet Marine Corporation, one of the Houston Natural Gas Corporation group of companies, operates more than 100 vessels in support of the offshore petroleum and offshore construction industry.

Bailey Delivers Two 60-Ton Water Chilling Units To Navy



Bailey Refrigeration Company recently announced the completion of two 60-ton water chilling plants for a U.S. Naval activity (one unit shown above). Each plant, designed and constructed by Bailey, is a complete air-conditioning package on a portable steel base, requiring only a single electric connection, seawater cooling connections, and chilled water connections.

The chilling plants were subjected to a full eight-hour operational test in Bailey Refrigeration's Brooklyn, N.Y., facility on a Marine Pax tester, designed and built by Bailey. The test included capacity verification, using National Bureau of Standards certified thermometers and flow meters, and sound level monitoring, with NBS-certified sound level metering.

The Marine Pax tester was specifically designed to allow testing of chilled water and direct expansion air-conditioning systems up to 75-tons capacity. Bailey anticipates using the tester for military and commercial marine air-conditioning system testing and for service engineer training.

Canadian Pacific To Buy One-Third Share In Dart Containerline

Canadian Pacific intends to purchase a one-third share in Dart Containerline Company Limited, it was announced recently. The proposed share purchase will provide Canadian Pacific with an opportunity to participate in the large and growing volume of trade between the United States and Western Europe to complement its Canada-Europe service now being operated by CP Ships. The other shareholders of Dart Containerline are Compagnie Maritime Belge S.A. and the C.Y. Tung Group.

Dart Containerline Company Limited now operates a container service between the East Coast of Canada and the U.S., and the U.K. and Continental Europe with several ports of call on each side of the Atlantic. Future operations of Dart Containerline Company Limited will be confined to traffic moving between the U.S. and Europe. A new company — Dart Canada — in which Canadian Pacific does not hold an interest, will operate container services between Canada and Europe.



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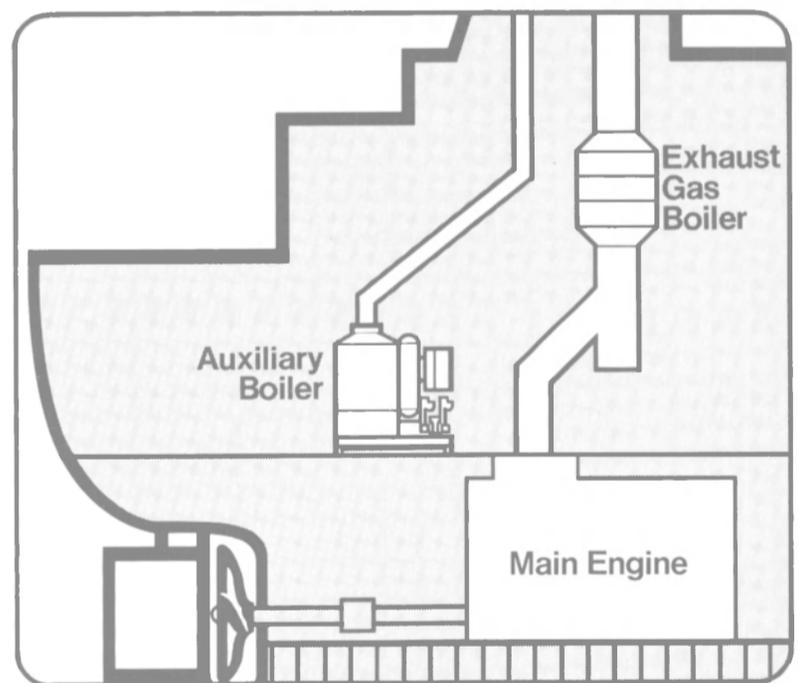
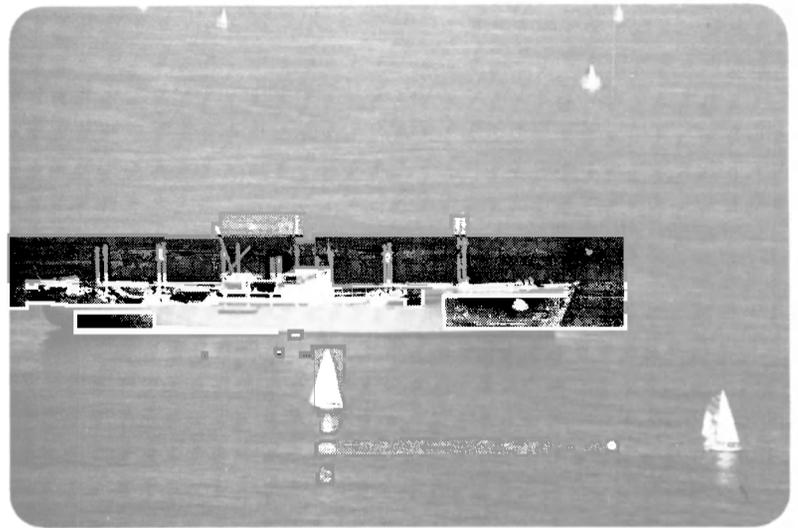
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New Brochure On Arc Welding Available From Westinghouse Electric

The industrial equipment division of the Westinghouse Electric Corporation, Sykesville, Md., has published new literature on its Fab-Master 450 and 650 constant voltage arc welding systems.

These systems are designed for gas metal arc welding (GMAW), flux cored arc welding (FCAW), and submerged arc welding on aluminum, low alloys, and stainless steels. Fab-Master systems also are suitable for carbon arc cutting and gouging.

Power supplies are all solid-state to provide high-quality application results and consistent

repeatability of settings. The Westinghouse Life Guard™ design assures reliable operation of these systems in harsh operating environments, including airborne salt, dirt and chemicals.

Fab-Master wire drive and controls include all solid-state control circuits, high torque drive motors, and modular design for a broad range of applications and

installation flexibility. The controls may be readily removed for operator convenience.

For a free copy of the new four-color brochure,

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New Hydraulic Crane Announced By Unit Crane —Literature Available

A new hydraulic marine crane, the Unit Mariner Model 480-H, is announced by the Unit Crane & Shovel Corporation. Having an API rated capacity of 42,400 pounds, the maximum lift capacity at a 15-foot radius is 67,000 pounds.

The 45-foot standard tubular steel boom can be extended with optional inserts to lengths through 100 feet. The main load hoist, auxiliary, and optional high-speed hoist are available with 1/2-inch or 3/4-inch wire rope, including nonrotating and spin-resistant. And open loop hydraulic system is said to be simple to maintain, run cool, and powered by a diesel or electric prime mover. Hydraulic controls in the enclosed operator's cab provide fast response for all functions, including 360-degree rotation.

For free illustrated literature and detailed specification,

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Freed Named Marketing Manager GE's DC Motor And Generator Department



Charles A. Freed

Charles A. Freed has been appointed manager-marketing for General Electric Company's DC Motor and Generator (DCM&G) Department, which is headquartered in Erie, Pa., with additional manufacturing facilities in Dothan, Ala. and East Stroudsburg, Pa. The Department is the world's leading supplier of industrial DC motors and generators, ranging from 1 hp to 3,500 hp.

Mr. Freed joined the General Electric Company in 1968. He held several positions in design and sales engineering, and in 1978 joined the DCM&G Department as manager-industrial sales.

As manager-marketing, he will be responsible for the formulation and execution of all marketing and sales policies in diverse DC motor markets, including marine and defense.

The competition hopes you don't read this.

Tracor's Satellite/Omega navigation system combines the accurate, all weather, worldwide satellite fixes of Transit with the continuous position fixing capability of Omega. The 60 second Omega fix is updated automatically to agree with the position provided by each good satellite fix. Between satellite fixes, Omega inputs are used to enhance automatically the dead reckoning of the satellite navigator. Warning alerts are lighted whenever Omega or Transit experience an anomaly or if the preset range limit between the Satellite/Omega position and the satellite only DR position is exceeded.

Our competition hopes you don't discover Tracor's Integrated system is comprised of two stand-alone systems providing total redundancy. There is no shared hardware.

They hope you don't discover Tracor's Satellite Navigator II is type approved by

DNV, DHI, Swiss PTT, and the Norwegian Maritime Directorate.

They hope you don't discover Tracor's three frequency Automatic Omega II has been awarded the NMEA Omega award based on demonstrated performance and reliability for the third consecutive year.

They hope you don't discover Tracor's worldwide service network which provides factory trained personnel in more than 70 major shipping ports supported by factory consigned spare parts.

Finally, our competition hopes you don't discover there is a way to save \$10,000 when purchasing a Satellite/Omega navigation system.

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Lemonides Named Hellenic Accounts Sales Manager For Farboil Company



Capt. Andreas Lemonides

Capt. Andreas Lemonides has joined the Marine Division of Farboil Company as sales manager of Hellenic Accounts for New York, the United Kingdom, and Greece it was announced by Joseph F. Harrington, vice president of sales. He will be based at Farboil's office at 11 Broadway, New York City.

Captain Lemonides previously held various managerial positions with steamship companies in New York and Philadelphia. He achieved the rank of Master Mariner in 1968. Farboil, a Beatrice Chemical Company, division of Beatrice Foods Company, produces and markets worldwide a full line of protective coatings for deepwater and inland waterway shipping.

Honeywell ELAC Introduces Survey/Sediment Sounder —Literature Available

Honeywell ELAC, Kiel, West Germany, a subsidiary of Honeywell Inc., Minneapolis, has introduced a survey/sediment sounder. The new, single-frequency unit, LAZ 721, can be used for inland and offshore surveys, exploration for oil, gas, and minerals, dredging operations, and for pipeline and cable laying.

The LAZ 721 utilizes a patented signal processor, LV 159, termed "Contrast Amplifier" to increase the dynamic range of the recorder to more than 30 dB. This provides greater ability to record both very strong and very weak echoes. The object resolution is greatly increased, the radial length of recorded echoes no longer depends on the radiated pulse length, but on the structural details of the reflecting object, thus the differentiating effect of the signal processor avoids "target distortions." The Contrast Amplifier provides outstanding bottom discrimination, distinction between hard and soft ground, mud/silt layers and even sedimentation.

For a free brochure on the new LAZ 721 unit,

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Brown And Symon Named To Board Of Liberian Shipowners' Council

The Liberian Shipowners' Council has elected Grady C. Brown as chairman of the board of directors for a two-year term, and Stanley Symon as vice chairman for a one-year term. Mr. Brown

is vice president, operations and technical, of Conoco Shipping Company in Houston, and has been on the board of the LSC since 1976, serving for the past two years as chairman of the Labor Committee.

Mr. Symon is currently senior vice president for Stolt-Nielsen, Inc., and general manager of its Ship Management Department,

with responsibility for a fleet of 27 ships, most of which are modern parcel chemical carriers.

Stolt-Nielsen being a Norwegian corporation, and Conoco being a major U.S. oil company, the appointments reflect both the international nature of the Liberian Shipowners' Council members and the mix of oil majors and independent owners.



Contractor: Cleveland Wrecking Company, Cleveland, Ohio, for Medical Arts Building, Dallas, Texas

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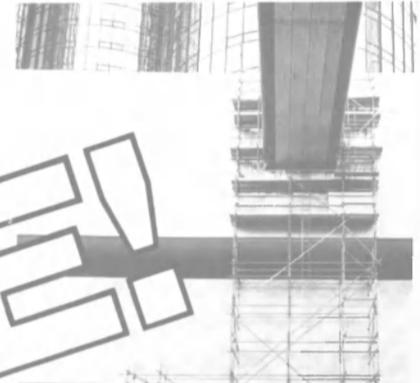
Products like Trouble Saver® —sectional steel scaffolding that goes up fast, with no tools required. Readily adapted to almost any job, it's shown here in demolition of the Dallas Medical Arts building.

Our Gold Medal® TubeLox® tube and coupler scaffolding is erected from four basic components and can conform to almost any contour or height. Here it's used for installing an overhead walkway at the Los Angeles Bonaventure Hotel.

Patent's Gold Medal® Suspended Scaffolding is easily adjustable to proper working height with a long reputation for safety. At The Gould Center it's shown used for exterior masonry.

Our famous Cable Climber,® fitted with a platform scaffold, supports a work crew for exterior finishing at the Century Center Co-op in Fort Lee, N.J.

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Contractor: Bonaventure Hotel, Los Angeles, Ca., for Bonaventure Hotel, Los Angeles, Ca.



Contractor: Crouch-Walker Corp., Chicago, for Gould Center East Tower, Rolling Meadows, Ill.



Contractor: Orange Gate Construction Inc., Fort Lee, N.J., for Century Center Co-op, Fort Lee, N.J.

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HUDSHIP's First 85-Foot Towboat Delivered To Energy Transport

Hudson Shipbuilders (HUDSHIP) of Pascagoula, Miss., recently delivered its first 85-foot towboat, the Virginia Cole (shown above), to Energy Transport Services, Inc. of New Orleans. Al-

though HUDSHIP builds a stock 70-foot towboat, of which several have been delivered, this is its first of the larger model that will be stock offering for customers looking for a medium-size, yet more powerful pushboat.

The boat was designed by Oliver Bryant, a Mississippi Gulf Coast naval architect, whom Ralston Cole, president and owner of Energy Transport, terms one of the best workboat designers in the country. Mr. Bryant, who is an independent consultant, has had a long association with HUDSHIP and continues to work with and for them.

The Virginia Cole will push petroleum barges for the Energy Transport fleet, operating between Galveston, Texas, and New Orleans. Because she will be in open water on Galveston Bay, and the

rest of the time in either congested waters in the Intracoastal Canal or on the turbulent lower Mississippi River, special design considerations were made. These include a foot higher sheer, and rudder and steering capacities beyond those of most 85-footers. Her higher sheer will allow her to run in heavy weather in the open bay waters, and when she's in a narrow canal or fast-flowing river, her 7½-foot rudders give her greater maneuvering power.

Her engines are eight-cylinder GM Electro-Motive Diesel units turning 88 by 78-inch, stainless-steel Kahlenberg propellers. The 8-inch shafts are hot-rolled steel with Sturm chrome liners. They transmit their power through Twin Disc model MGN 100 AZ reverse reduction gears with a 4:1 ratio.

Decca's David Parkinson Appointed Regional Vice President Of NMEA

ITT Decca Marine, Inc. of Palm Coast, Fla., has announced that David Parkinson has been appointed regional vice president (Southeast) of the National Marine Electronics Association (NMEA). His responsibilities include the coordination of all NMEA activities in the Southeast United States and the U.S. Virgin Islands.

Mr. Parkinson has held various positions for the past seven years with ITT Decca Marine, including New York sales manager, and is



David Parkinson

presently Southeast Area sales manager. Prior to arriving in the U.S. 10 years ago, Mr. Parkinson was a practicing lawyer in London, England.



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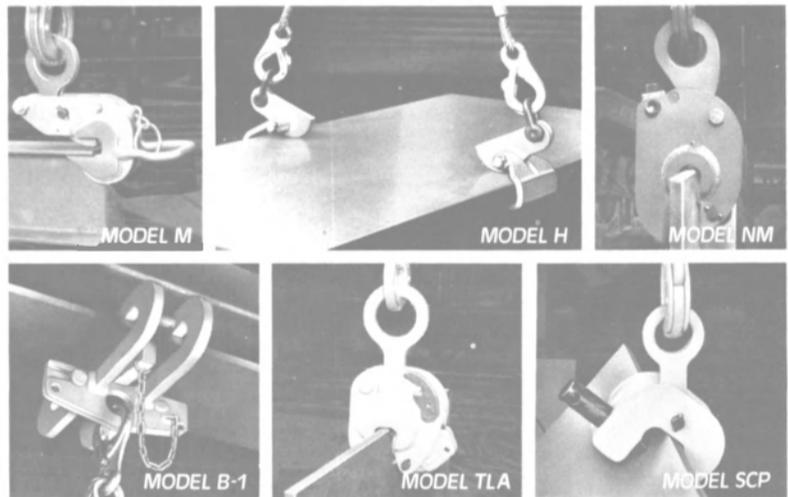
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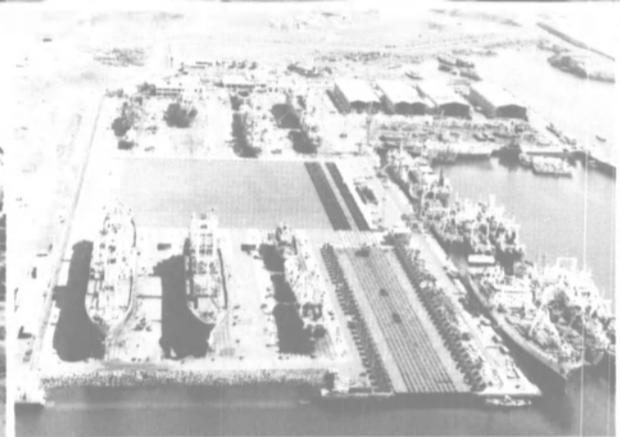
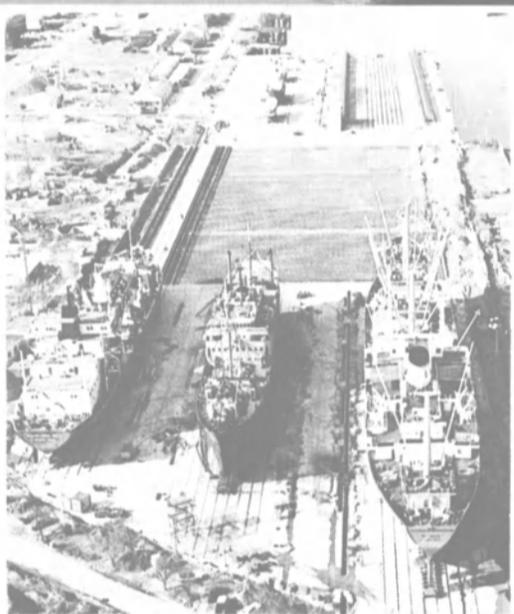
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Cargoship Cabo Corrientes (43,600 DWT) on Syncrolift platform, in large photo, waiting to be moved to work berth via transfer system. The bow extends 108' beyond sea end of platform.

Photo above on left shows ships in transfer area/work berths at Tandanor, Buenos Aires, with platform free to service the next vessel. Middle photo is close-up of side transfer rail system on which vessels were moved from Syncrolift to work berths. Photo on right shows 16 vessels in work berths at Astilleros Canarios, S.A., Las Palmas, Canary Islands. Note Syncrolift ready to lift a 17th vessel.

After 22 years, Pearlson is still the only company in the world totally dedicated to the shiplift and transfer system needs of the marine industry.

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Advanced Marine Enterprises Announces Corporate Changes And Move To New Facilities

The corporate structure of Advanced Marine Enterprises, Inc. has been modified to improve response to customer requirements and facilitate diversification of services. The company is currently pursuing opportunities in

the areas of energy transfer and transportation and computer services, as well as continuing to expand its naval architecture and marine engineering services to commercial customers, particularly in detail design. The corporate restructuring includes the establishment of The Rand Group Inc., a holding company, and a separate Computer Services Division. The former branch offices in Virginia Beach and San Diego

are now also operated as separate divisions.

Robert Martin has been appointed director of the new Computer Services Division, which will provide computer services to other divisions as well as develop an expanded customer base in the government and commercial sectors. He joins Advanced Marine from Data General Corporation in Orlando, Fla., where he managed the Orlando Data-Center Facility



Robert Martin

for sales, engineering, and customer use. He has extensive experience in systems engineering in data communications, operating systems, and scientific language support.



Capt. Jerome O'Brien

Capt. Jerome O'Brien, USN (ret.), and Capt. Philip Lyons, USN (ret.), have joined the company's Washington Division as managers responsible for technical supervision of major programs with NAVSEA and commercial customers.

Mr. O'Brien has been assigned as program manager reporting to Otto Jons, vice president, engineering, heading the Production Division. Mr. O'Brien's responsibilities will include product development, quality control, and training. He is a veteran submarine officer with 29 years of experience in undersea and anti-submarine warfare.



Capt. Philip Lyons

Mr. Lyons has been assigned as program manager reporting to Jay Dor, vice president, operations. Prior to joining Advanced Marine in November 1980, Mr. Lyons served as an engineering duty officer in the U.S. Navy. His last assignment was NAVSEA associate comptroller for ship programs.

Advanced Marine has consolidated numerous Washington Area offices and now occupies new, expanded corporate facilities at 1725 Jefferson Davis Highway in Arlington, Va.

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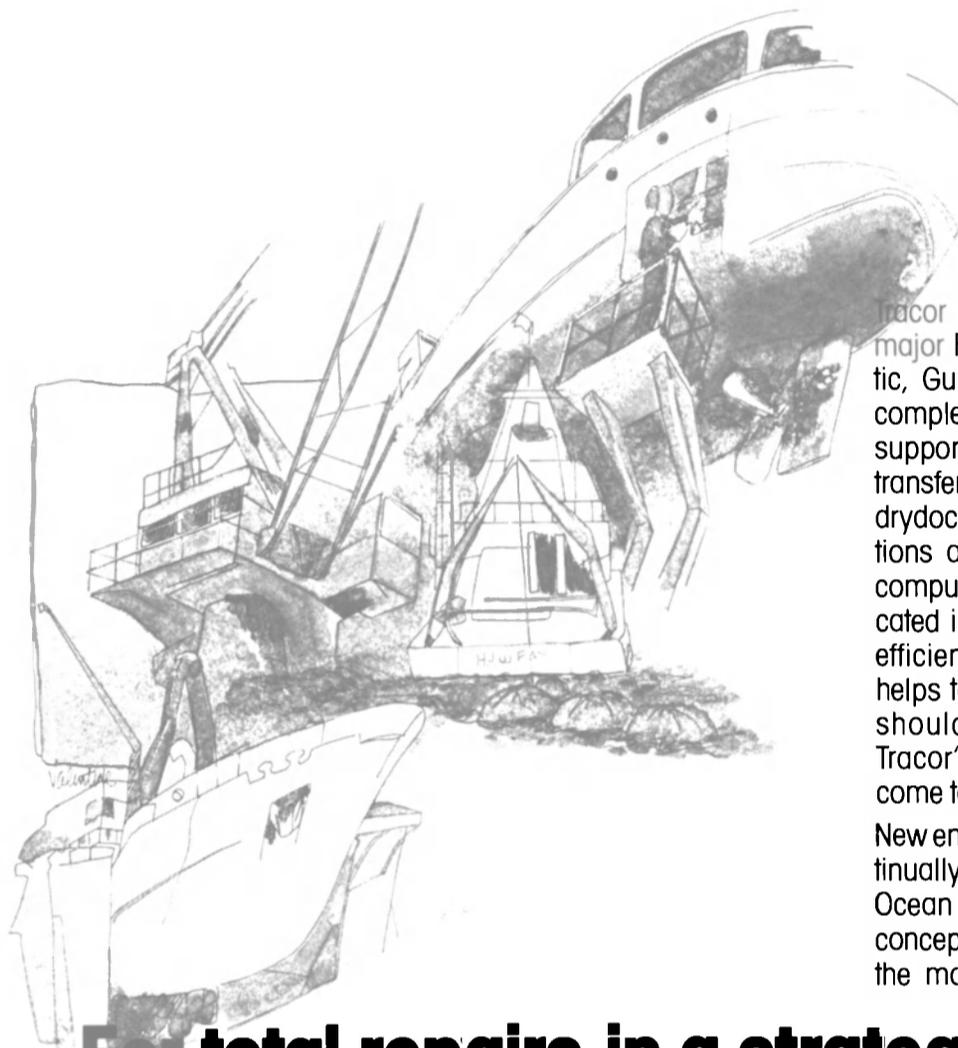


the CATUG project is indicative of HSI's commitment to utilize their ingenuity, imagination and capital to pioneer better transportation methods.

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GD-Quincy Yard To Build \$61-Million RO/RO Ship For Waterman Steamship

The Quincy (Mass.) shipbuilding division of General Dynamics Corporation has received a \$61-million contract from Sun Ship Inc., Chester, Pa., to construct a roll-on/roll-off (RO/RO) ship for Waterman Steamship Corporation of New York City. Sun had originally contracted with Waterman and the Maritime Administration for construction of three RO/ROs.

Other newbuilding contracts at the Massachusetts yard include a \$60-million, coal-fired bulk coal carrier for New England Electric, and three oceangoing tank barges for Coastwise Shipping.

Winding down its new ship construction operations, Sun Ship recently contracted with Bath Iron Works in Bath, Maine, for construction of a \$65-million dredge for the U.S. Army Corps of Engineers, and a \$25-million bulk sugar barge for California & Hawaii Sugar Company. Sun's newbuilding orderbook now contains one products tanker for Sun Transport, and two additional RO/RO ships for Waterman.

Zapata Marine Service Announces Assignments In Its Marketing Group

Zapata Marine Service's senior vice president-marketing, **Curtis L. Taylor**, recently announced several new assignments within the company's marketing group. **Paul W. Hendrie** has been named Zapata Marine's vice president-sales, and will assume overall responsibility for the company's marketing efforts in Europe, Africa, and Southeast Asia. He joined Zapata Marine as technical sales director in 1977, and has served in several marketing capacities since that time. Reporting to Mr. Hendrie are **James C. Bonney**, sales manager-Far East; **Jane Emerson-Evans**, sales manager-Europe and the Mediterranean; **Keith Gregory**, sales manager-Africa; and **I. Rory Jonzen**, sales manager-U.K. Mr. Hendrie and those sales managers are based in Great Yarmouth, England, except for Mr. Bonney, who is based in Singapore.

Before transferring to Singapore, Mr. Bonney was Zapata Marine's sales manager-Western Hemisphere for three years in Houston. He joined the company in 1974. Assuming the duties of sales manager-Western Hemisphere is **Roger M. Sykes**. He joined Zapata Marine's marketing department in 1974, and has served as the company's sales manager-Central and South America for the past year. He is based in Houston and reports to Mr. Taylor. Zapata Marine Service, a subsidiary of Houston-based Zapata Corporation, operates a fleet of 75 oilfield supply vessels worldwide.

United Seamen's Service And AMMLA Elect T.J. Smith Board Chairman

Thomas J. Smith, former president and chief executive officer of Farrell Lines, has been elected chairman of the board of directors of United Seamen's Service and its affiliate, the American Merchant Marine Library Association. He fills the positions left vacant by the recent death of **James C. Kellogg III**.

Mr. Smith has a long and distinguished career in the American shipping industry. He retired from Farrell Lines last year, relinquishing his position as vice chairman of

the board but remained a director. He began his career as a member of the International Longshoremen's Association. In 1942, he joined Farrell Lines as a pier superintendent. Mr. Smith rose through the ranks of the company, becoming president in 1968, chief executive officer in 1970, and vice chairman in 1979.

New Brochure Describes History And Products Of Sulzer Bros., Inc.

A four-color, 22-page brochure, "Sulzer in the USA," is now available describing the company's 40 years of operation in the United States. Established in 1940, Sulzer Bros. is a subsidiary of Sulzer Brothers Limited of Winterthur, Switzerland. Within four decades, the U.S. company has built a rep-

utation for the marketing of high-quality, energy-efficient machinery, including slow- and medium-speed diesel engines, turbocompressors, reciprocating compressors, and hydroelectric turbines.

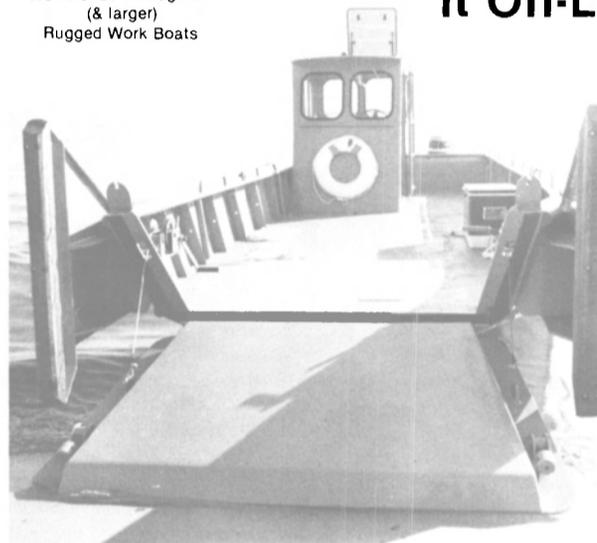
Sulzer is best known in the maritime world for its marine propulsion engines. Each year, roughly 40 percent of the diesel propulsion installed in merchant ships is Sulzer. The first slow-speed Sulzer diesels constructed in the U.S. by Allis-Chalmers will be installed in the three big container-ships under construction at Avondale Shipyards for American President Lines.

Sulzer Bros. is headquartered in New York City, and principal sales and service offices are located in Houston, San Francisco, and Spartanburg, S.C.

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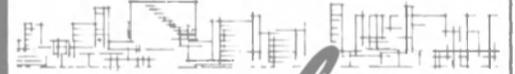
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Denyer Succeeds Nelson As Managing Director Of Butterworth Systems (UK)

W.L. (Lynn) Nelson, managing director of Butterworth Systems (UK) Ltd., has retired after 33 years of service with that company. Succeeding him as managing director is Derek C. Denyer, who was appointed to the board of directors of Butterworth Systems (UK) Ltd. in November 1980. He will also become a vice president of Butterworth Systems Inc., the company's U.S.-based affiliate. Mr. Denyer assumed his new responsibilities on April 1, immediately following Mr. Nelson's retirement.

Mr. Nelson began his 33-year association with Butterworth Systems (UK) Ltd. (then J.G. Edminston & Co.) as head of engineering in 1947. Appointed director and joint general manager in 1963, he assumed the

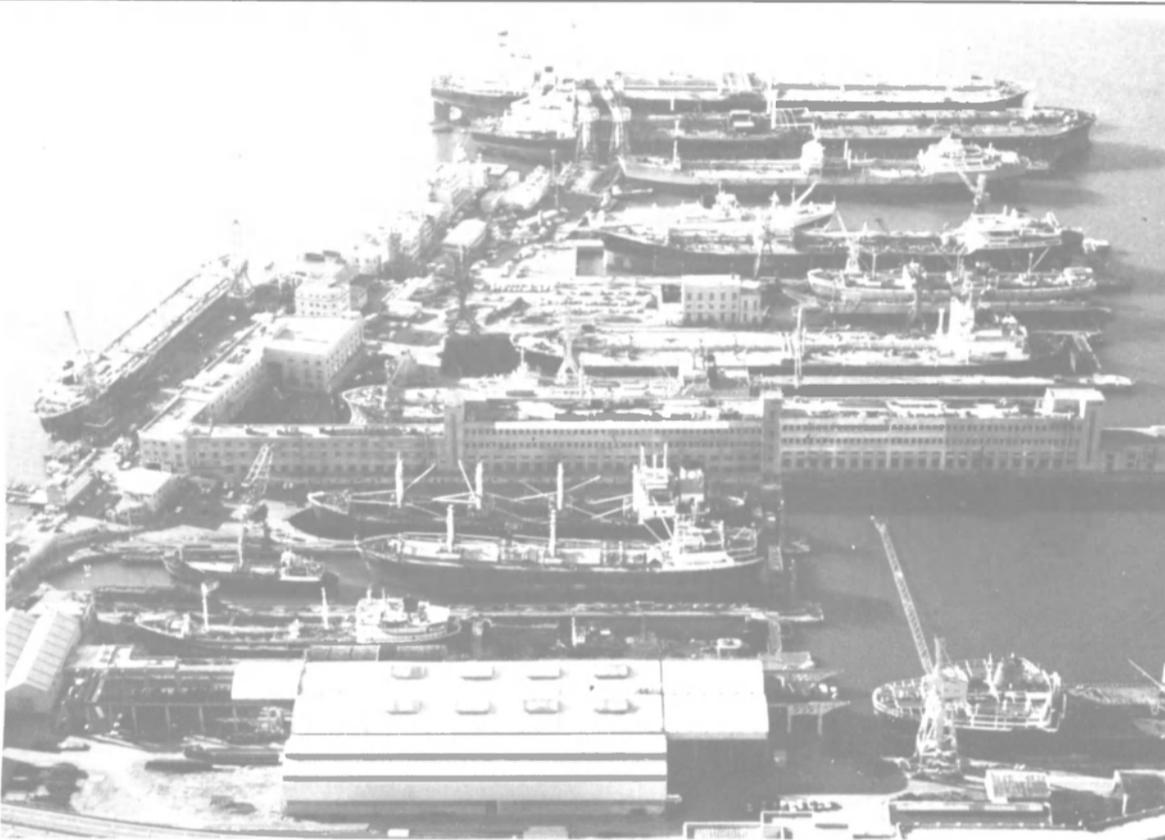


Derek C. Denyer



W.L. Nelson

position of managing director in 1967. In April 1979, he was appointed to the position of vice president of Butterworth Systems Inc., with the responsibility for coordinating continental European marketing operations. Additionally, he was named to the American company's management committee.



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Mr. Denyer held a variety of senior appointments with Esso Petroleum before joining Butterworth Systems (UK) Ltd. During his association with Esso, Mr. Denyer was involved in the fields of operations, engineering, and marketing. His last position with that company was manager, distributor and heating sales. The USA and U.K.-based Butterworth Systems companies manufacture and market specialized tank cleaning equipment, underwater hull cleaning equipment, oil/water separators, and high-pressure water jetting equipment.

Bailey-Shannon Seeks Title XI On Drill Rigs To Cost \$20 Million

Bailey Shannon Limited I, a subsidiary of Bailey-Shannon Drilling Company, Inc., Houston, has applied to the Maritime Administration for a Title XI guarantee to aid in financing the construction of two jack-up, mat-supported drilling rigs. These rigs, which will be operated on the U.S. Gulf Coast, are to be built by General Dynamics Corporation at Charleston, S.C.

If approved, Title XI financing would cover \$15,176,000 or 75 percent of the estimated actual cost of \$20,235,000. Deliveries are scheduled for October and November 1981.

Advanced Studies Center Dedicated At Maine Maritime Academy

Maine Maritime Academy's newest facility, the Center for Advanced Maritime Studies (CAMS) and Conference Center, was dedicated in recent formal ceremonies in Castine. U.S. Congressman David F. Emery, James V. Day, Federal Maritime Commissioner and chairman, Maine Maritime Board of Visitors, and Samuel B. Nemirow, Assistant Secretary of Commerce for Maritime Affairs, lead an array of dignitaries taking part in the event, a highlight celebration in connection with the Academy's 40th anniversary year.

A number of top executives of shipping companies and related industries from around the country, whose organizations were major donors to the reconstruction of Leavitt Hall as the Center for Advanced Maritime Studies, were on hand and recognized for their contribution. The donors satisfied the criteria established by MMA's Board of Trustees for the naming of rooms and areas located in Leavitt Hall, site of the Center for Advanced Maritime Studies and Conference Center.

The \$1,850,000 complex contains the principal Academy administrative offices, lodgings for up to 35 program participants, and a variety of conference and meeting areas, including a 300-seat auditorium (Delano Hall).

Literature Available On Pourable Resin Chocking For Stern Tube Assembly

In conjunction with Philadelphia Resins Corporation, Waukesha Bearings Corporation has developed a unique method of installing stern tube assemblies and bearings. Waukesha supplies to the yard a stern tube with bearings already installed. The yard merely optically aligns the entire assembly, and chocks it into place with a pourable, permanent resin. Drilling and tapping for seals is already done, so numerous steps in

installation can be eliminated. The resulting cost savings are said to be appreciable.

Simplicity and elimination of numerous installation and machining procedures are cited as the prime advantages of the system. Installation of a conventional stern tube can easily take two weeks of man-hours. Using the chocking method, an experienced crew can complete the operation in two days, with another 24 hours for the resin to cure. Machining operations at the yard are eliminated, as the stern tube comes with bearings installed and the outer diameter of the tube needs no machining. The chocking resin fills the 1/4-inch gap that remains.

Installation accuracy is claimed as another significant advantage. The entire assembly can be optically aligned and adjusted with preset jack bolts. A single optical alignment is all that is required prior to chocking. As the seal holes are drilled and tapped at the factory, that margin of error is also eliminated.

For additional information and free literature on the Waukesha/Philadelphia system,

Write 37 on Reader Service Card

New Customer Support Organization Implemented By Honeywell Marine

Honeywell Marine Systems Operations in Seattle has implemented a new Customer Support Organization designed to provide local service to the firm's worldwide service areas. "By dividing our service areas into three separate zones, with self-contained service capabilities, we can now provide more efficient and cost-effective service to all our customers," says **John Brennan**, manager of the new Customer Support Organization.

Under the new system, Honeywell has increased its shop repair facilities and built up its inventories in each of the three zones. It has also expanded its customer training capabilities and plans to introduce planned maintenance contracts in the near future.

Honeywell's service headquarters for Zone 1, which includes North and South America, is in Seattle. Zone 2, which includes the entire North Sea and all European and African sectors, is headquartered in Aberdeen, Scotland. Zone 3 includes Australia and Southeast Asia. Its headquarters is in Sydney, Australia.

For more information,

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Richard Dillon Named Vice President Of Santa Fe Engineering

Richard H. Dillon has been promoted to vice president of Santa Fe Engineering & Construction Company. He continues to be based at Houma, La., with responsibility for Santa Fe's marine construction activities in the Gulf of Mexico.

He worked for J. Ray McDermott from 1962 until 1971 when he joined Fluor Ocean Services. Two years later, Santa Fe International Corporation purchased a reel pipeline barge and other assets of Fluor Ocean Services, and Mr. Dillon was one of about 275 employees who joined Santa Fe at that time.

Since 1973 Mr. Dillon has worked as manager of marine construction for the Middle East, stationed in Bahrain, and as manager of estimating for Santa Fe Engineering &

Construction at its Orange, Calif., headquarters. He was assigned to Houma as area manager for the Gulf of Mexico in 1979.

Title XI On Drill Barge To Cost \$11.5 Million Asked By Merit Five Drilling

Merit Five Drilling Ltd., a subsidiary of Merit Drilling Company, Houston, has applied to the Maritime Administration for a Title XI guarantee to aid in financing the construction of a posted drilling barge capable of drilling to 25,000 feet.

United States Steel Corporation, Orange, Texas, is building the barge, which is to operate on the U.S. Gulf Coast. Delivery is scheduled in July this year. If approved, the Title XI financing would cover \$8,625,000, or 75 percent of the estimated cost of \$11,500,000.

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* Albert J. Millus, President of the firm is a nationally recognized authority on the Longshoremen's and Harbor Workers' Compensation Act. He is the former Executive Director of The State Insurance Fund (New York) (1972-1978) and has written extensively on the Longshoremen's Act.

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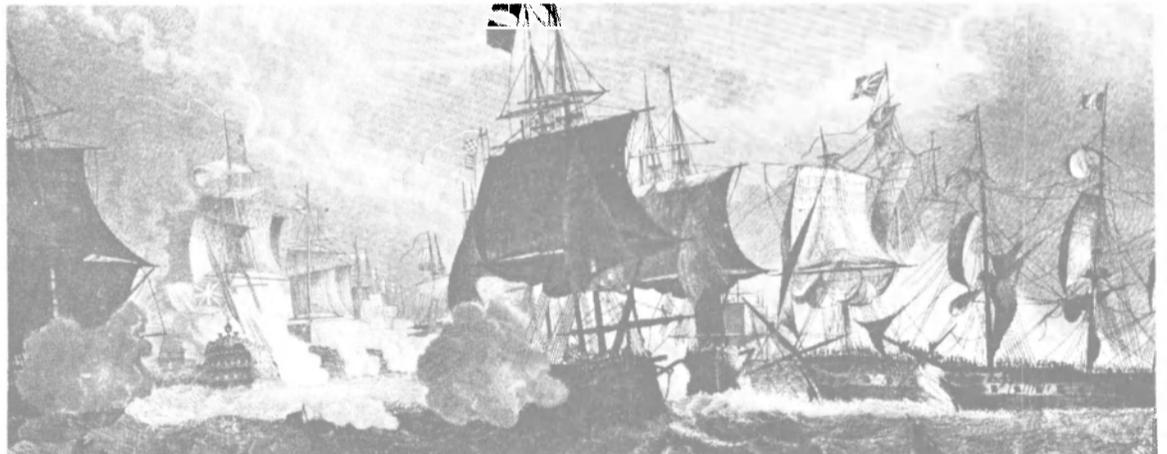
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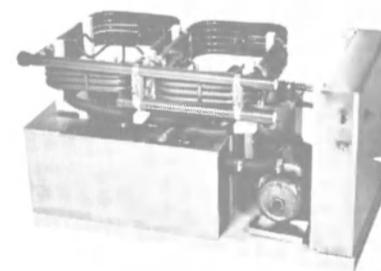
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Paul Hall Named First Posthumous Recipient Of AOTOS Award

The late Paul Hall, former president of the Seafarer's International Union and vice president of the AFL-CIO, has been named the 1981 recipient of the Admiral of the Ocean Sea Award. Mr. Hall is the first awardee to receive the maritime industry's highest award posthumously. It will be accepted by his widow, Rose, and by Frank Drozak, who succeeded him as SIU president, at a dinner and dance in New York on September 25, 1981.

Mr. Hall's selection was announced by J. Lane Kirkland, president of the AFL-CIO, at the union leadership's recent meeting in

Bal Harbour, Fla. Mr. Kirkland will also serve as general chairman of the event.

The AOTOS is given annually by the United Seamen's Service to the person in maritime labor, industry, or government who has made outstanding contributions to the American Merchant Marine.

Further information on the event is available from AOTOS, care of United Seamen's Service, Suite 2601, One World Trade Center, New York, N.Y. 10048.

American Commercial Asks Title XI On Towboats And Barges To Cost \$84 Million

American Commercial Lines, Inc., Houston, has applied to the Maritime Administration for a Title XI guarantee of some \$69

million to aid in financing the construction of five towboats and 296 barges. The applicant is a subsidiary of Texas Gas Transmission Corp. of Owensboro, Ky.

The barges will vary in length from 195 feet to 245 feet. The towboats are to be 145 feet by 48 feet by 11 feet 5 inches. Being built by Jeffboat, the vessels were scheduled for deliveries beginning in 1979 through 1981. All are intended for operation on inland waterways.

Of the vessels' total estimated cost of \$84,013,895, the Title XI guarantee would be \$69,300,000, if approved; 87½ percent of the costs of the barges and 75 percent of the costs of the towboats are eligible for guarantees under the federal ship financing program.

Leam Transport Seeks Title XI On Tug/Supply Boats To Cost \$24.5 Million

Leam Transport, Ltd., a subsidiary of Leam Transportation, 1806 Big Horn, Houston, Texas 77090, has applied to the Maritime Administration for a Title XI guarantee to aid in financing the construction of six 180-foot, oceangoing tug/supply vessels.

The diesel-powered 1,250-horsepower vessels are to operate in the Gulf of Mexico. Halter Marine, Inc., New Orleans, is the proposed builder. Deliveries are scheduled between January and June 1982.

If approved, the Title XI guarantee would cover \$21,400,000, or 87½ percent of the estimated cost of \$24,457,132.

Furuno's FR-360 Radar Gives Big-Screen Output —Literature Available

With a bright 7-inch CRT display (12-inch with standard magnification), Furuno's FR-360 is reported to be one of the most compact big screen radars of its class. The FR-360 has the latest microwave receiver circuitry with a 3-kw output.

The unit has seven range scales from ½ to 36 nautical miles, back-lit controls for convenient night operation, clutter controls for sea and rain interference, and dual pulse length as standard features. The radar alarm and EVRM are available as options.

The display unit can be tabletop, bulkhead, or overhead mounted with its reversible mounting cable. The antenna unit includes a 3.5-foot centered radiator with a low-noise drive system, and a modularized microwave transceiver.

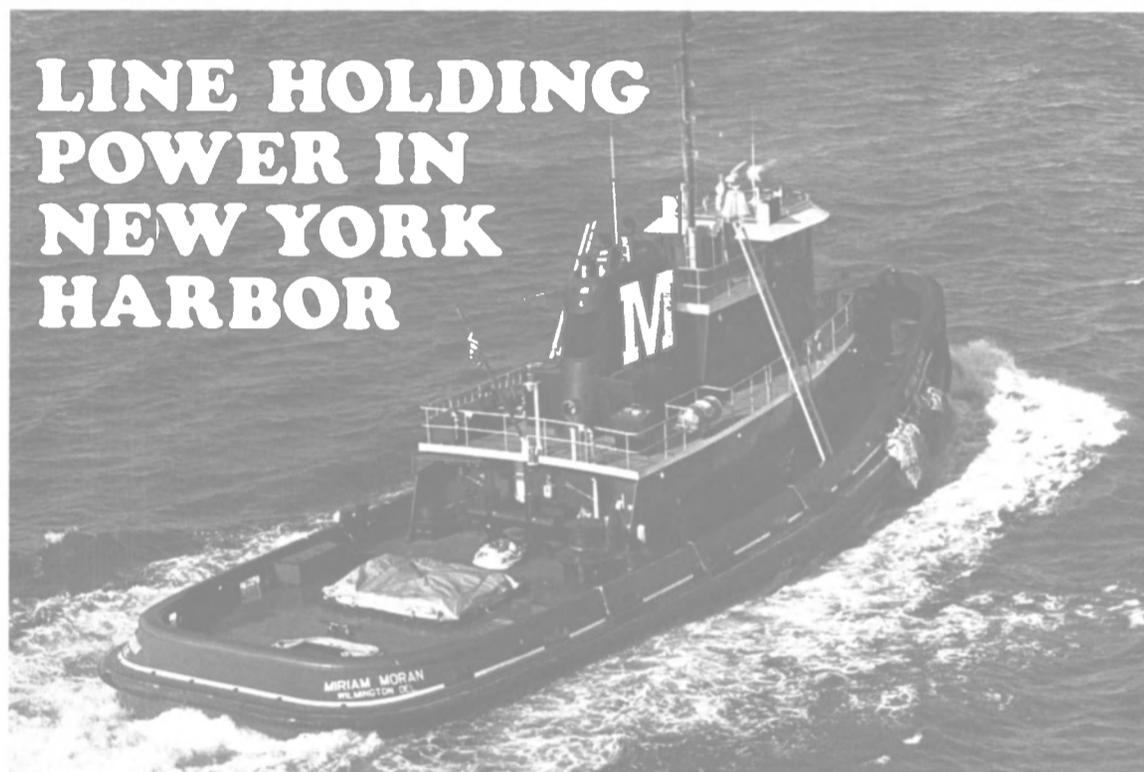
For more information on the FR-360,

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MarAd Approves Title XI On \$9-Million Drilling Rig Built By Vemar

The Maritime Administration has approved in principle an application from Glendel Ltd. II for a Title XI guarantee to aid in financing an inland posted barge drilling rig. Glendel II is a limited partnership with offices in common with its corporate general partner, Glendel Drilling Company Inc., The Woodlands, Texas.

Built by Vemar, Inc., Channelview, Texas, the 190-foot by 50-foot drilling rig was delivered last December. The approved Title XI guarantee covers \$6,835,000, or approximately 75 percent of the vessel's estimated depreciated cost of \$9,114,449.



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\$821,000 Orders For Automation Equipment Received By Lyngso

Soren T. Lyngso A/S of Copenhagen recently received orders totaling about \$821,000 for shipboard automation equipment. One order of approximately \$448,000 is for electronic automation equipment that will be installed in four ships under construction at the Puerto Real yard of Astilleros Espanoles S.A. for Polish Ocean Line. It includes complete alarm system with video screen and printer, automatic control equipment for the shaft and diesel generators, and a large number of gauges.

The other order, amounting to about \$373,000, is for use in three ships being built at Oresunds Shipyard in Landskrona, Sweden, for Phs. Van Ommeren of Netherlands. The automation equipment for these ships consists of STL's remote control system RCS 990 with an electronic governor and an alarm system with video screen and printer.

Wheeler Named U.S. Agent For Royal Schelde's Repair Yard At Vlissingen



Royal Schelde's Scheldepoort repair yard at Flushing (Vlissingen), Netherlands, (B.V. Koninklijke Maatschappij 'De Schelde') has named Wesley D. Wheeler Associates, Ltd. of New York City as exclusive U.S. agents. The yard (shown above) is situated at the crossroads of the North Sea and English Channel at the mouth of the River Scheldt, entrance to the ports of Flushing, Antwerp, Terneuzen, and Ghent. It is on open water, ideally situated for problem-free direct approach from open sea without deviation. There are repair piers for ships up to 350,000 dwt, and dock capacity for ships up to 45,000 dwt. The harbor has an entrance width of 400 meters (1,312 feet), and is readily accessible for ships with a practically unrestricted draft. Thus afloat, repairs can be done to almost any vessel.

Royal Schelde can supply Sulzer diesel engine spare parts from stock. A list of spares in stock will be mailed on request. Strict adherence to schedule is the rule at Scheldepoort. The yard operates 24 hours a day, seven days a week. Royal Schelde builds Schelde/Sulzer marine diesel engines for ships under construction at its own yard and elsewhere.

Management is by project and utilizes a system of continuous communication between owners and repair yard. All parties are kept up to date daily about the progress and cost of the work. The yard uses the newest gritblasting and coating equipment, including a high-pressure freshwater jet in-

stallation for hull cleaning of ships in dry-dock.

There are two graving and one floating dock at Scheldepoort. Graving dock No. 1 is for ships up to 25,000 dwt having a length of 175 meters (574 feet), beam of 25 meters (83.64 feet), and depth of 7.80 meters (25.58 feet). Graving dock No. 2 is for ships up to 45,000 dwt having a length of 217 meters (711.76 feet), beam of 30 meters (98.40 feet), and depth of 8.70 meters (28.54 feet). Floating dock No. 3 is for ships up to 25,000 dwt and has a lifting capacity of 10,000 tons. It accommodates ships having a length of 177.80 meters (583.18 feet), beam of 27 meters (88.56 feet), and depth of 7 meters (22.96 feet).

For a free four-color illustrated brochure describing Royal Schelde's facilities and capabilities,

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Herbert Baker Promoted To VP-Far East Services At Waterman Steamship

Waterman Steamship Corporation has announced the promotion of **Herbert N. Baker Jr.** to the position of vice president Far East Services. He will have overall responsibility for outbound and inbound traffic, operations, and sales between the United States and ports in the Far East and Southeast Asia.

Since joining Waterman in 1973, Mr. Baker has held various management positions in traffic, operations and marketing. He holds a bachelor of science degree from the U.S. Merchant Marine Academy and a master of science degree in transportation management from the State University of New York.

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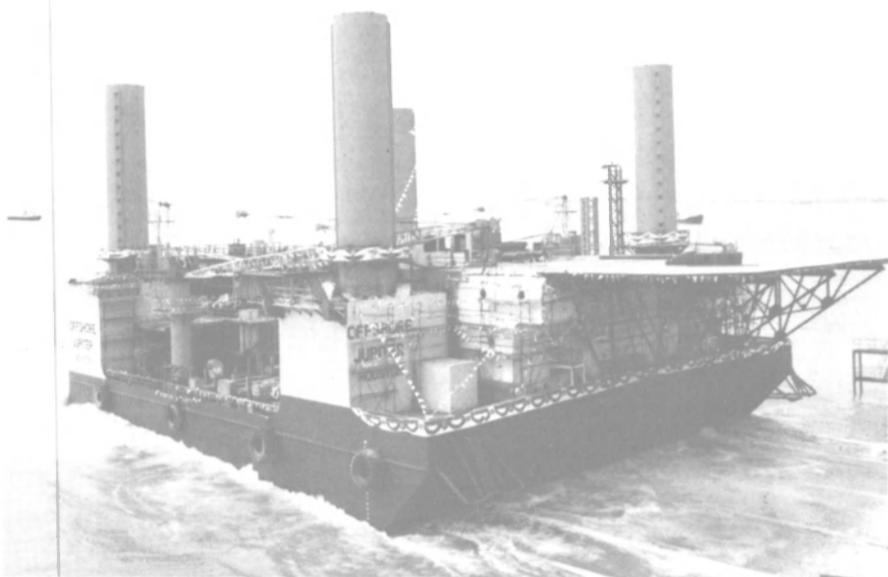
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Promet Private Launches Jackup For The Offshore Company

Promet Private Limited, Singapore, recently launched a 165-foot by 140-foot by 18-foot jackup rig, Offshore Jupiter (shown above), owned by The Offshore Company of Houston. The drilling rig, a four-legged, 150-foot water depth, cantilever jackup will probably be operating in the Arabian Gulf. Equipped with recessed tank footings, the rig will be a version of proven Offshore design and will be capable of working in worldwide water depths from 13 to 150 feet and drilling to depths of 16,000 feet.

The platform includes a cambered-deck steel hull about 18 feet deep supported by four tubular caisson-type legs, and will be fitted with living quarters for 82 men on three levels above deck.

Other projects recently awarded to Promet include two units of BMC-200, 200-foot water depth Self-elevating Independent Leg Mobile Drilling Unit for Sedco Inc., and one unit BMC-300, 300-foot water depth Jackup Drilling Unit.



Hitachi Zosen Delivers Bulk Carrier For Norwegian Owner

Constructed at the Hiroshima Works (Innoshima) of Hitachi Zosen, the 60,662-dwt bulk carrier Jaraconda (shown above) was delivered recently to Aksjeselskapet Kosmos of Norway. A Panamax type bulker developed by Hitachi, she is designed to carry various kinds of cargo, including grain, ore, and lime. Cargo hold capacity is 74,778 cubic meters. Special features of the vessel

include comfortable living quarters that are constructed so as to reduce vibration and noise, in accordance with Norwegian regulations.

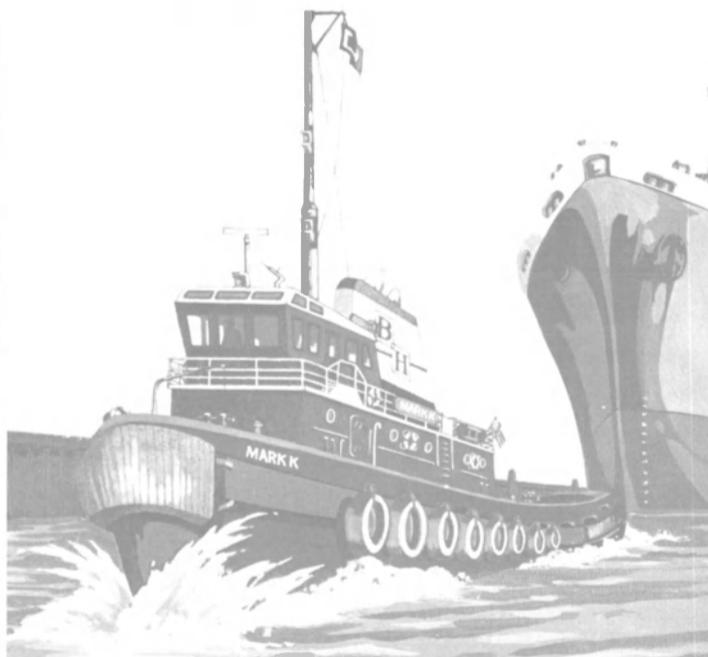
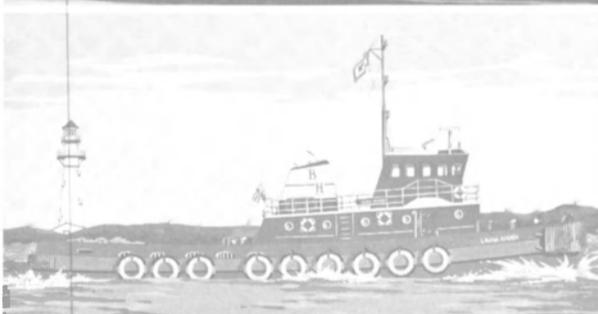
The ship is powered by a Hitachi/Sulzer 6RND76M diesel engine with a maximum continuous output of 14,400 bhp at 122 rpm. By using a newly improved fuel injection system, this engine saves on fuel consumption. Trial speed was 17.036 knots.

Built to Det norske Veritas classification, the Jaraconda has an overall length of 224.50 meters, beam of 32.20 meters, depth of 17.80 meters, and full-load design draft of 12.40 meters (736.54 by 105.64 by 58.40 by 40.68 feet).

Pielstick Diesels Ordered For Three Indian Coast Guard Patrol Vessels

The Indian dockyard Mazagon Dock Ltd. has placed an order with the Alsthom-Atlantique Pielstick Diesel Group for six SEMT-Pielstick 16PA6V280 engines to be fitted in offshore patrol boats for delivery to the Indian Coast Guard. These vessels, which have displacements slightly above 1,000 tons, will each have two 16-cylinder PA6 engines driving a variable-pitch propeller. The maximum continuous rating of each engine is 6,400 bhp at 1,050 rpm.

Following France and the Republics of Korea, Ireland, and Yugoslavia, India will be the fifth nation to use this type of SEMT-Pielstick engine for offshore patrol work.



Three new tugs join the Bay-Houston family.

Three new additions to the Bay-Houston fleet will be the Barbara H. Neuhaus, Laura Haden and Mark K. All attest to the dedication of Bay-Houston to provide the best

towing service available on the Gulf Coast.

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**New Protective Fender
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Developed By Seaward**



Seaward International, Inc. has developed a new marine fender specifically for the protection of the legs of offshore platforms and structures. The new Sea Guard® (shown above) fender eliminates damage to both the platform leg and the vessel due to accidental collisions. These fenders provide the standoff and energy absorption necessary to safely cushion the impact. They are currently in use for platform leg protection in the Gulf of Mexico.

Sea Guards are also well suited to a variety of other applications where a rugged and streamlined fender is needed between fixed or floating structures and ships, barges, or service craft. Other current applications include use between a tug and barge in the notch of an integrated tug/barge combination, or on general cargo berths.

These fenders are constructed with a resilient foam core, which is covered with nylon-reinforced elastomer. The netless design of the Sea Guard gives the fender a smooth, snag-free, low-friction exterior. The ends are built with a long taper and extra reinforcement caps. These allow sliding contact, which prevents the vessel from catching on the fender.

For additional information and free literature on the Sea Guard,
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**Proceedings Of 1980
REAPS Symposium
Now Available**

The proceedings of the 1980 REAPS Technical Symposium held in October are now available from IIT Research Institute.

The REAPS program is a cooperative effort of the Maritime Administration and U.S. shipyards, administered by IIT Research Institute.

The soft-cover, 600-page volume documents new developments in all phases of ship design and construction, shipbuilding methods, planning and control, and

work organization. These proceedings also mark the Research and Engineering for automation and productivity program's seventh year of operation.

Cost of the proceedings is \$40, shipped prepaid for orders within the U.S. To order, send checks (payable to IIT Research Institute) to REAPS Program Librarian, 10 West 35th Street, Chicago, Ill. 60616.

**Miller Named Assistant
Vice President For
Eller & Company**

Eller & Company, Inc., Fort Lauderdale, has announced the election of Jack Miller as assistant vice president.

He joined Eller in 1972 as line manager for the firm's Jacksonville, Fla., office. He was promoted

to assistant manager in 1973 and to manager of the Jacksonville office in 1974, with responsibility for the company's overall Jacksonville operation.

Prior to joining Eller, Mr. Miller was employed with Southern Shipping Company in Jacksonville for a period of nine years in the position of traffic manager. He will continue to be domiciled in Eller's Jacksonville office.

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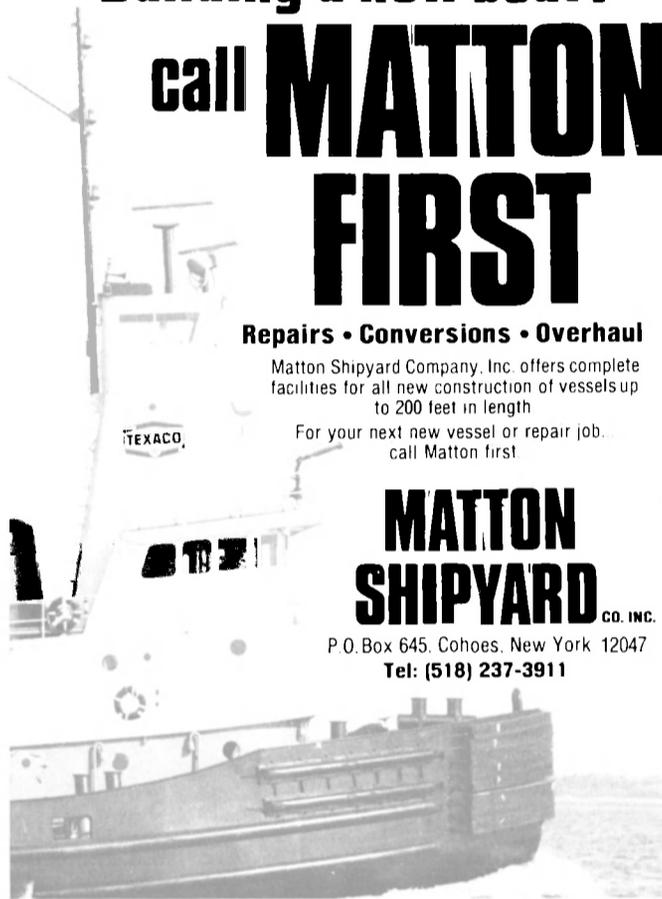
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RO-RO 81

**CONGRESS CENTRUM HAMBURG JUNE 30 - JULY 2 1981
CONFERENCE PROGRAMME**

This programme is subject to alteration or addition

Session 1: Operations and Commercial Aspects

Regular Ro-Ro freight services and the problems of their membership or association to freight agreements (panel discussion) **Panellists to be announced**

The operation of a high-speed Ro-Ro service between Seattle-Tacoma and Alaska **R. B. McMillen, President Totem Ocean Trailer Express, Inc., (TOTE), USA**

The use of flat rack and platform containers on Ro-Ro ships. The advantages and hazards of working these types of 'specials' in the Ro-Ro mode **Speaker to be confirmed**

Session 2: Ro-Ro Ship Types and Design Features

The planning and design of a new concept of large Combination Ro-Ro carriers now under construction (Joint Paper) **Leif Hoegh Co. A S, Oslo and the Gdvnia Shipyard, Poland**

Forest products Ro-Ro's in the Eighties; cargo mix and flow patterns; new designs and economic criteria **Timo K. Siirila, Head of Development, Rauma-Repola Shipyard, Finland**

Combined stabilization Anti-Heeling Systems and their influence on Ro-Ro vessel and Ferry Design **Horst A. Halden, Director, Interling GmbH, Hamburg**

Session 3: Ro-Ro Ferries and Short-Sea Routes

The emergence of the super-jumbo ferry has brought extra demands on the capability of their Ro-Ro access and internal rolling agreements. A ferry forum will discuss their concept, realisation and service experiences.

Forum Moderator: **R. H. Jacquinet, MacGregor Organisation**

Ferry to be discussed	Participating Company
Prinsesse Ragnhild	Anders Jahre
4 new ships	Sealink UK
Kronprinsessan Victoria	Operator
Visby	Operator

Mediterranean Ferries

CNAN (Compagnie Nationale Algerienne de Navigation)

The Behaviour and Prospects of NW European Ro-Ro ferry and short-sea operators: the impact of factor costs (fuel; road haulage; etc) and the possible results **M. G. Garratt, Marine Transport Centre, University of Liverpool**

Session 4: Diesel Propulsion for Ferries and Ro-Ro Cargo Ships

The continuing increase in bunker prices and operating costs has put a new emphasis on machinery selection, arrangement and maintenance. **H. Klintorp, Manager, Installation Dept. B & W Diesel A S**

Developments in these areas will be discussed by a panel of major engine designers **U. Viets, Head of Sales, Marine Diesels, M.A.N.**

J. Gallois, Technical Director, S.E.M.T. — Pielstick

J. H. Wesselo, Director of Research and Development, Stork-Werkspoor BV

Session 5: Ro-Ro Safety

Since the 1980 Conference, when major shipowners and designers gave their views on the stability of Ro-Ro ships, much attention has been focussed on recent accidents involving this type of tonnage. For this reason, Ro-Ro 81 will again include a Safety Session on different aspects.

Session 6: Ro-Ro Port Operations

West Africa - Ro-Ro came to stay; the Nigerian experiences, problems and responses from port users. **K. Lundberg, General Manager, The Ro-Ro Terminal Co. (Nigeria) Ltd., Managing Agents To the Nigerian Ports Authority**

Productivity in a Ro-Ro port — to what degree is it dependent on the co-operation between the stevedoring companies and the shipping lines? **P. Bjurstrom, Managing Director, Gothenburg Stevedoring Co.**

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**David Porter Elected
Vice President Of
Childs Engineering**



David L. Porter

Kenneth M. Childs Jr., president of Childs Engineering Corporation, Medfield, Mass., recently announced the election of **David L. Porter** as a vice president of the corporation. Mr. Porter joined Childs Engineering, a consulting firm specializing in waterfront engineering, as a design engineer in 1972. He is a registered professional engineer in several states. As a certified marine diver, he has combined engineering knowledge with ability to work underwater, giving him "hands on" experience with structural conditions at the sea-land interface.

This experience has recently been utilized on a project where he has led a team of engineer/divers on underwater inspection and assessment of U.S. Naval facilities throughout the United States. Mr. Porter also is project manager for design and construction of a \$5.5-million tanker berthing facility in Albany, N.Y. Other experience includes inspection and design of numerous piers, marine railways, and floating drydocks.

**Institute Marks 25 Years
Of Containerized Shipping**

The Containerization and Intermodal Institute has announced plans for a silver anniversary celebration honoring the 25th year since the inception of container shipping. A special honors luncheon will be held May 5 at the new Vista International Hotel at the World Trade Center, New York City.

Eric Ridder, publisher of The Journal of Commerce, is serving as chairman and will be master of ceremonies at the event, which will include a salute to the pioneers of the industry. In addition, the institute will publish a commemorative journal in honor of the event, with key articles authored by transportation journalists in the industry.

Inquiries concerning the event can be directed to the Institute at 299 Madison Avenue, New York, N.Y. 10017; (212) 697-3121.

**New Pipe Freezing Kit
Saves Time And Money
—Literature Available**

A new pipe freezing kit sold by Maritime Equipment Inc. of Flemington, N.J. makes it easy to repair and modify existing piping systems without draining or shutting down processes. Trade named

Jetfreezer, the kit contains jackets, high-pressure hose, fittings, and other components that make it possible for a pipefitter or maintenance man to freeze a variety of liquids in pipes up to 3 inches in diameter.

Depending upon the situation, a jacket is wrapped around the pipe at one or two locations, and liquid CO₂ is injected into the

jacket forming dry ice at minus 109 F. This freezes the liquid in the pipe, permitting repairs or modifications. Complete instructions are included in the kit, which explain how to make a "controlled" freeze and maintain it as long as required.

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Artist's rendering of air cushion vehicles that Wartsila will build for U.S.S.R. The craft are designed for cargo transfer in Arctic regions, have payload of 38 tons.

Soviet Union Orders Nine ACVs From Wartsila Helsinki Yard

A contract for nine air cushion vehicles (ACV) was signed in Moscow recently between V/O

Sudoimport and Wartsila of Finland. The ACVs, which represent a new line of production for the

shipyard, are based on a Soviet license and on long-term product development work at Wartsila. Deliveries are scheduled for 1982 and 1983.

The vessels are designed for cargo transfer in Arctic regions; each has a loading capacity of 38 tons. They will operate with the nine icebreaking multipurpose ships ordered earlier from Finnish yards. Six of these will be built by Wartsila and three constructed at the Valmet yard.

The Wartsila/Soviet ACV has a length of 67.9 feet, beam of 32.5 feet, and hovering height of about 2 feet. Power output is 1,936 bhp supplied by diesel engines of Soviet manufacture.

Development work for these craft was started at the Helsinki Shipyard in 1976 when the special cargo transfer problems in the Arctic were investigated. The problems include lack of harbor facilities, difficult ice conditions, and shallow coastal waters.

Wartsila will have the benefit of experience gained from an

earlier order for an air cushion ferry placed a year ago by the Finnish Board of Roads and Waterways. This unit, which is now under construction, is intended for winter traffic in the southwestern archipelago of Finland.

Inclusion in the latest contract of a license agreement with the Soviet organization Licensintorg makes it possible to pool the experience of the two parties.

Landregan Named Mgr.— Hawaii Marine Operations For Matson Navigation

Matson Navigation Company has named Capt. J.W. Landregan to the Honolulu post of manager, marine operations, Hawaii. Formerly manager, terminals, northern California, he succeeds Capt. R.J. McKenzie, who has retired after a 47-year maritime career. Captain Landregan started as a deck officer in 1944 and has worked ashore for Matson Terminals, Inc. since 1960.



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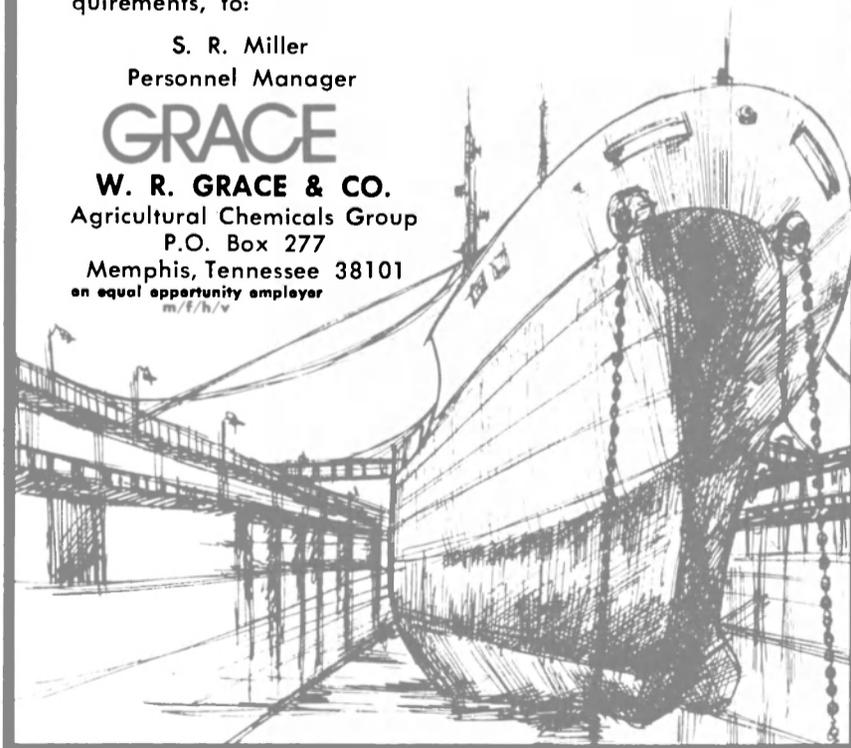
Candidates should be Maritime Academy graduates with at least 1st Assistant Engineer's Motor License and have 5-10 years sea-going and related shoreside maintenance/repair experience with large, slow-speed diesel powered vessels in 10,000 HP range.

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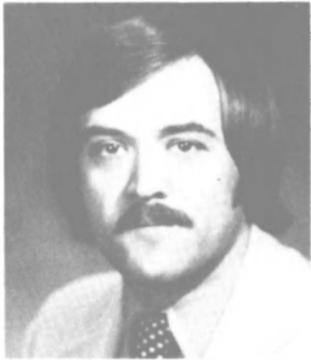
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**Richard Davis Named
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At Waukesha Engine**



Richard A. Davis

Richard A. Davis has been named director of service at Waukesha Engine Division, Dresser Industries Inc. In this capacity, he is responsible for all international and domestic field service activities, warranty administration, dealer service development, and service training.

Mr. Davis has been the division's director of construction and industrial equipment engine sales since 1977. He joined the company in 1974 as central regional manager. A 20-year veteran of the engine business, he has held a number of service, parts, and marketing positions with Ford Motor Company, Perkins Engines, Inc., Detroit Diesel Allison Division of General Motors, and Isuzu Motors Ltd., as well as Waukesha.

Waukesha Engine is a manufacturer of heavy-duty diesel and gas engines for the marine, petroleum, off-highway vehicle and power generation markets.

**Austin Stevens Named
General Manager
Of Fourchon, Inc.**

Ronald J. Doucet, secretary-treasurer of Fourchon, Inc., a growing marine repair facility in south Louisiana, announces the appointment of Austin (Bozo) Stevens to the position of general manager of its facilities at La-rose, La., on the Intracoastal Waterway. Mr. Stevens has 30 years of varied managerial experiences in shipyard new construction and repair operations, towboat and barge operations, and oil field drilling and supply environments.

**Todd-Seattle's Hagen
Elected President Of
Shipbuilders Association**

Lawrence (Larry) H. Hagen, director of industrial and public relations at Todd Pacific Shipyards Corporation, Seattle Division, was recently re-elected president of the Pacific Coast Shipbuilders' Association. He has been with the Todd Seattle Division in the personnel and labor relations

field for some 25 years, with the last eight years as director of industrial relations.

Also elected by the PCSBA board of directors at its recent conference were James West, Northwest Marine Iron Works, Portland, as vice president, replacing Jack Conklin, Merrit Ship Repair, Oakland, who has retired; and Robert Nicholas, Tacoma Boatbuilding Company, Tacoma, as secretary.

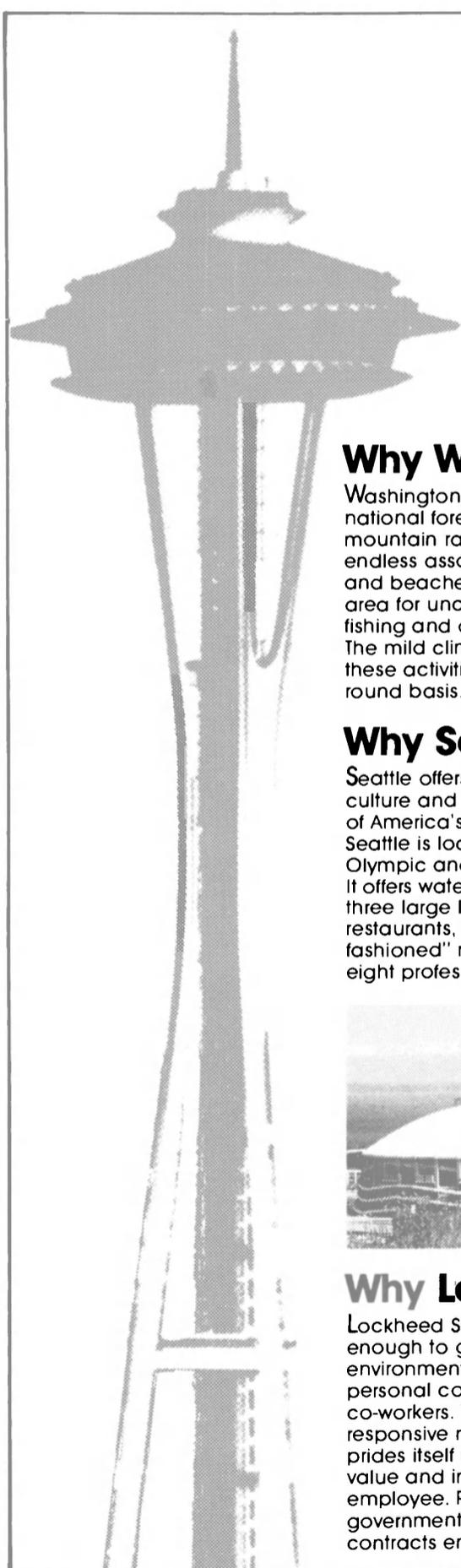
**Papson Joins Collyer
Insulated Wire As
Operations Manager**

Joseph F. Papson has been appointed manager of operations at Collyer Insulated Wire, Lincoln, R.I., a division of Gulf + Western Manufacturing Company. The announcement was made by Richard A. Rinaldi, president. In his new position, Mr. Papson will be re-

sponsible for plant production, plant engineering, process engineering and traffic (shipping and receiving). He had previously been employed by the Okonite Wire and Cable Company, East Providence, R.I.

Collyer Insulated Wire is a major manufacturer of electrical insulated wire and cable which is used by shipbuilders and in other industries.

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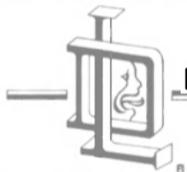
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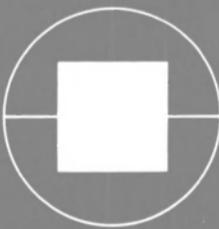
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Dome Will Employ Japanese Technology In New Shipyard

Dome Petroleum and Nissho Iwai Inc. have announced the signing of an agreement with Kawasaki Heavy Industries Ltd., Tokyo, for the transfer of Japanese shipbuilding technology to Canada to be used in Dome's proposed new Canadian shipyard. The new shipyard is an integral part of Dome's Western LNG Project to sell British Columbia LNG to Japan. At least half of the LNG vessel construction will be done in the new yard.

With this Agreement, Dome will be able to implement in the new yard the most advanced technology in the shipbuilding world for quality control systems, and thus increase Canada's capability to construct large-

size, cost-efficient LNG ships and Arctic oil and LNG carriers.

The technical transfer will be achieved through the construction arrangement for the first two of the four moss spherical type LNG ships required for the LNG sale to Japan. Under this Agreement it is expected Kawasaki will build the first ship in Japan. The second ship will be identical to the first and will be built in Canada in the Dome shipyard, using Kawasaki's drawings and engineering information. Kawasaki will consult to Dome and assist the new yard in the construction of the second LNG ship. As part of the arrangement, Canadian shipyard personnel will be trained in Japan on the construction of the first LNG ship. Japanese technicians will be involved in Canada for building the second ship. Canadian materials and supplies will be utilized to the maximum extent possible.

In addition to bringing new technology to Canada, Kawasaki's technical assistance will allow the new yard to achieve efficient production operations in short order, and thus encourage the shipyard to add more Canadian content when constructing the third and fourth LNG ships.

The first ship will be Japanese-owned and will be delivered during the third quarter of 1985. The second ship will be Canadian-owned and will be delivered in 1986. The proposed Western LNG Project is subject to approval by Canadian regulatory authorities.

Leech Named Chairman And Steading President Of G & H Towing

Capt. John G. Leech has been named chairman of the board of G & H Towing Company, Galveston, Texas. He has been with G & H Towing for the last 37 years of its 47-year existence.

C.H. Steading II was named as president and chief executive officer; H.H. Chapin was appointed vice president of construction and repair; R.D. Fasano, vice president of marine operation; C.R. Klaes Jr., secretary-treasurer; and E.L. Paysee, assistant secretary.

Wayne Harper Named Sales Engineer For Delta Shipyard

Ralph Arceneaux, president of Delta Shipyard, Houma, La., has announced the appointment of Wayne L. Harper to the company's newly created position of sales engineer. Mr. Harper has served in a wide variety of management and engineering assignments associated with the oil and marine industries. He will be responsible for sales management of the shipyard's repair and new construction operations.

Delta Shipyard is presently undertaking an extensive development program aimed at increasing its repair and new construction capabilities. Under construction is a new 4,000-ton floating drydock scheduled for completion in September of 1981.

Additionally, barge fabrication facilities are being constructed that will allow the construction of two large offshore, deck cargo barges or tank barges simultaneously. This is all in addition to its present repair and new construction divisions located at the junction of the Gulf Intracoastal Waterway and the Houma Navigational Channel just outside the city limits of Houma.

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**Isdahl And Sotir Named
Senior Vice Presidents
At Royal Viking Line**

Royal Viking Line, Norwegian-flag cruise operation headquartered in San Francisco, has just named two senior vice presidents, according to Warren S. Titus, president. **Jan Greve Isdahl**, formerly with Chase Manhattan Bank in New York, has been appointed senior vice president-corporate planning, and **George A. Sotir**, previously vice president-sales, has been promoted to senior vice president-marketing. Mr. Isdahl will handle special projects, with particular emphasis on expansion of the firm's cruise interests and other travel-related activities. Mr. Sotir will take over the worldwide marketing responsibility for the line.

Mr. Isdahl has been with Chase Manhattan since 1973 serving in various capacities, moving up to vice president in 1978. He handled credit control, review and coordination of all credit requests originating in Europe and the Middle East that exceeded local lending authorities. His most recent position was in the bank's commodity financing division with clients involved in crude oil and steel trading.

Mr. Sotir, well-known in shipping circles, has been with Royal Viking Line since its inception in 1970 when he was general sales manager. He was named vice president-sales the following year. Prior to his association with Royal Viking, Mr. Sotir served for 18 years with Matson Navigation Company, based at various times in the firm's San Francisco, Chicago, and New York offices.

**Charles Note Named
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Charles C. Note has been promoted by Economics Laboratory, Inc. to materials manager for the company's Magnus Maritec International Division in Palisades Park, N.J. He was previously distribution manager.

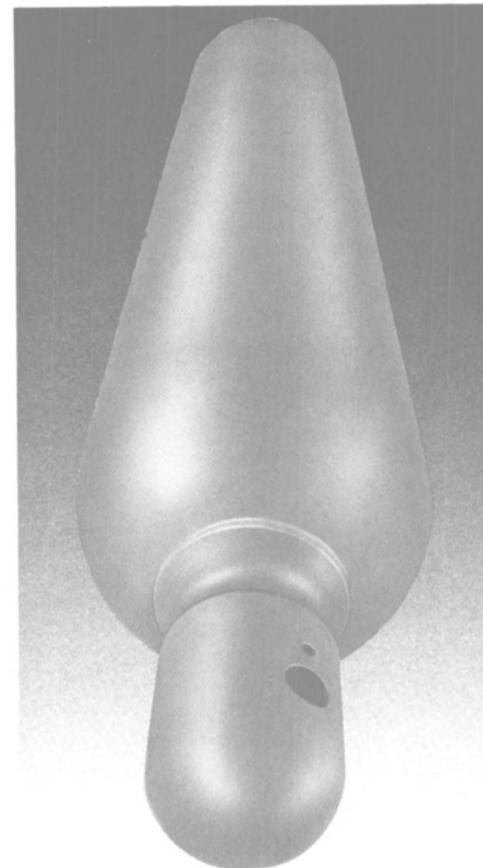
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The West German shipyard Bremer Vulkan recently completed the ore/bulk/oil carrier Alexander for Setenata Limited of Monrovia, Liberia. The newbuilding Hull No. 1015 is the first in a series of four unique OBOs of about 75,300 dwt that will be built by the Bremen yard.

In addition to the transport of a variety of cargoes such as dry bulk, containers, large pipes, etc., the multipurpose carrier is also capable of hauling liquid cargoes such as crude oil, light heating oil, and other petroleum products, as well as combinations of dry and liquid cargoes.

The Alexander has an overall length of 798.77 feet, beam of 105.70 feet, depth of 67.26 feet, and draft of 47.00 feet. Her propulsion plant is a single Bremer Vulkan/MAN type K8SZ70/125BL diesel engine with a rating of 16,520 bhp at 145 rpm. The ship has Lloyd's Register of Shipping classification, and will sail under the Liberian flag.



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**Port Of Los Angeles
Approves Major Coal
Terminal Concept**

The Los Angeles Board of Harbor Commissioners recently approved in concept the development of a major coal terminal in the harbor's Terminal Island District. The Board directed that an environmental impact report be prepared for the development, including the dredging of a 65-foot channel to the southern portion of Terminal Island, and the creation of necessary landfill in the Outer Harbor for relocation of hazardous liquid bulk terminals presently located adjacent to the harbor community, both projects included in the Port's extensive Master Plan and capital development program.

Los Angeles Mayor Tom Bradley expressed his full support for the Commission action, citing that increased coal export traffic through the Port of Los Angeles will serve to reduce the nation's trade deficit with the Far East, now the primary destination for coal shipments emanating from the U.S. West Coast. Mayor Bradley added, "We hope to bring a major coal-handling terminal to Los Angeles, one capable of storing millions of tons of coal and able to load in excess of 20 million or more tons each year in vessels approaching 250,000 dwt."

Current coal traffic through the Port of Los Angeles's bulk loader facility at Berth

49-50 totaled 700,000 tons in the last six months of 1980. Projected coal tonnage for the entire calendar year 1981 is estimated at two million tons for the three-million-ton-capacity facility.

**Webb Institute Receives
\$25,000 Grant From
The Teagle Foundation**

Webb Institute of Naval Architecture, the oldest four-year naval architecture undergraduate institution in the U.S., recently announced receiving a \$25,000 grant from The Teagle Foundation, Inc. Institute officials said that the grant will be used for its general scholarship program solely for the education and future development of naval architects and marine engineers.

The Teagle Foundation was founded in 1944 by Walter C. Teagle, the former chairman of Standard Oil Company of New Jersey, known today as Exxon Corporation. The primary concern of the foundation centers on scholarship assistance to employees of Exxon Corporation and to children of present, retired, and deceased employees to obtain undergraduate or graduate level education. In addition to the above, the foundation also supports a number of colleges with direct grants for the college's scholarship aid program. Selection of the individual and the stipend are determined by the college.

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**NAVAL SEA SYSTEMS COMMAND
SENIOR EXECUTIVE SERVICE OPPORTUNITY
DIRECTOR, RESEARCH, TECHNOLOGY
AND ASSESSMENT OFFICE (SEA 003)**

The incumbent is responsible for bringing together and providing the overall coordination of the Command's RDT&E Program, which includes all aspects of planning, reviewing, assessing and prioritizing the Command's technology base and advanced development goals and objectives. This Office in conjunction with the major Directorates in NAVSEA will plan and execute defense research and exploratory and advanced development programs in the area of military weapons systems and ships to meet the Navy's present and future needs in the most cost efficient and mission effective manner. In addition, this office will serve as the central point of contact for NAVSEA research and technology programs with industry and other agencies as well as with higher authority within DOD.

(This position is interdisciplinary and may be filled as either a General Engineer or a Physical Scientist, depending upon qualifications of the selectee.)

Applicants for the engineering discipline must possess a B.S. or higher degree in engineering or a related field from an accredited college or university.

Applicants for the Physical Science discipline must possess a B.S. degree or higher in physical science, engineering or mathematics that includes 24 semester hours in physical science and/or closely related engineering science such as mechanics, dynamics, properties of materials and electronics or a combination of 4 years experience and education (including 24 hours as described above).

Salary range: \$52,247 to \$61,600 (Currently limited by law to \$50,112.50).

This position is located in Arlington, Virginia in the Crystal City Complex. Interested applicants should send a Standard Form 171, Personal Qualifications Statement to:

**HQ. NAVAL MATERIAL COMMAND
Civilian Personnel Operations Division
Staffing Branch/SES Section (09M535)
National Center #3, Room 4E24
Washington, D.C. 20362
Announcement #: SEA-003-81 MR**

Applications should be received by 30 April 1981. (Vacancy will close no earlier than 30 April 1981).

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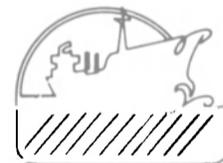
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- representing the Project and its interests in dealing with individuals throughout the Navy, Department of Defense, contractors, and other U.S. and foreign government agencies.

Applicants must possess a B.S. Degree in Engineering or a related field from an accredited college or university (or the equivalent) plus progressively responsible engineering and management experience in life cycle management or acquisition of Deep Submergence vehicles and systems.

Salary range: \$52,247 to \$61,600 (Currently limited by law to \$50,112.50).

This position is located in Arlington, Virginia. Interested applicants should send a Standard Form 171, Personal Qualifications Statement to:

Headquarters
Naval Material Command
Civilian Personnel Operations Division
Staffing Branch/SES Section (09M535)
Washington, D.C. 20360
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Applications must be received no later than 24 April 1981.

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DEPUTY DIRECTOR, SUBMARINE
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Applicants must possess a B.S. degree in engineering or naval architecture from an accredited college or university (or its equivalent); and demonstrated substantial, progressively responsible engineering experience in the management of submarine design, maintenance, modernization, acquisition or logistic support.

Salary range: \$52,247 to \$61,600 (Currently limited by law to \$50,112.50).

This position is located in Arlington, Virginia in the Crystal City Complex. Interested applicants should send a Standard Form 171, Personal Qualifications Statement to:

**HQ NAVAL MATERIAL COMMAND
Civilian Personnel Operations Division
Staffing Branch/SES Section (09M535)
National Center #3, Room 4E24
Washington, D.C. 20362
Announcement # SEA-921B-81 MR**

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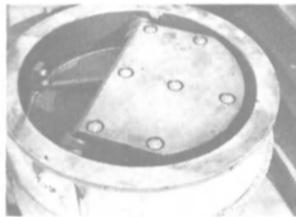
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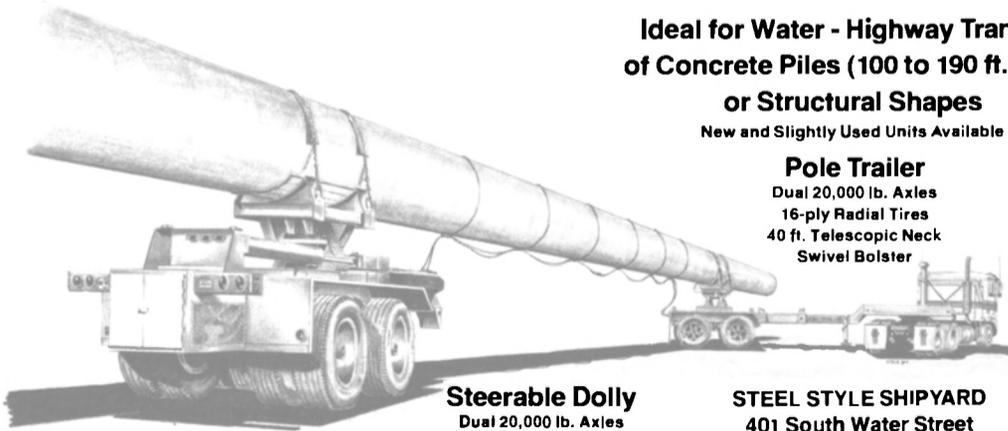
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One auxiliary turbogenerator condenser 2,200 sq. ft., with cupro-nickel tubes and heads

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One Delaval 300 GPM at 150 PSI

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Four Gould pumps model 3655, 1000 GPM at 140 ft. head, complete with 50 HP, 220/440 volt A.C. Motors, 3500 RPM

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Two vertical fuel oil service pumps, 15 GPM at 350 ft. head, with 5/10 HP, 440 V., A.C. motors

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One Worthington vertical duplex pump 7 1/2 x 9 x 12

One horizontal duplex pump, 10 x 10 x 12

Two Worthington 5 1/2 x 2 3/4 x 6 vertical duplex pumps

One Ingersoll-Rand 6-ALV, 1400 GPM at 295 ft. head, 8 x 6 pump

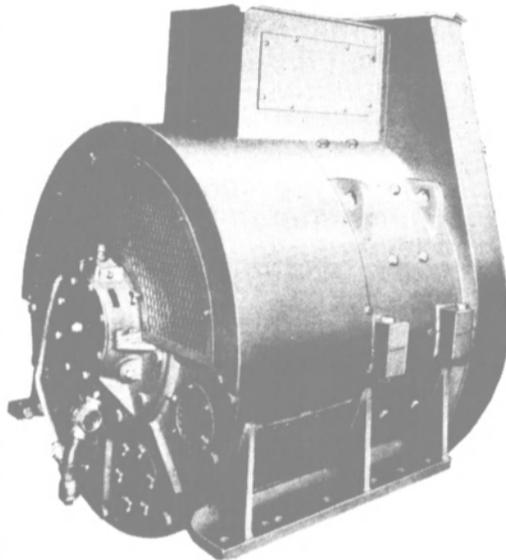
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One Worthington 10 x 9 x 12 vertical duplex pumps, liquid end

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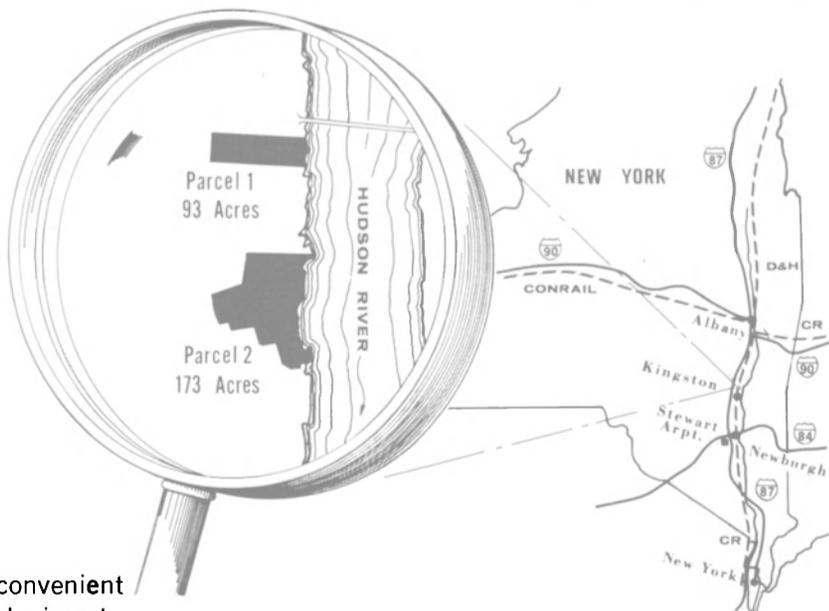
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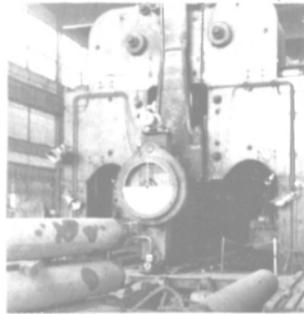
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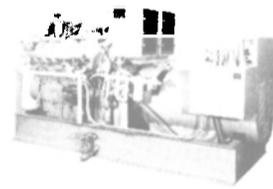
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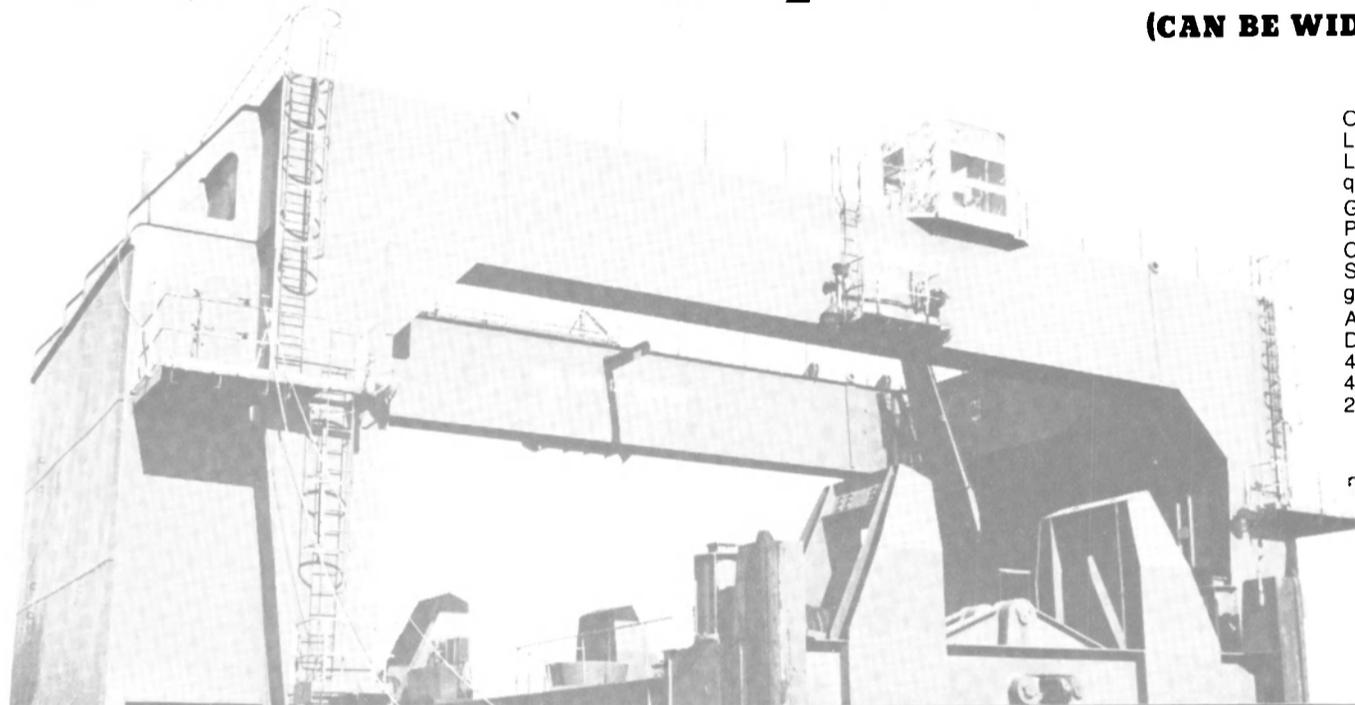
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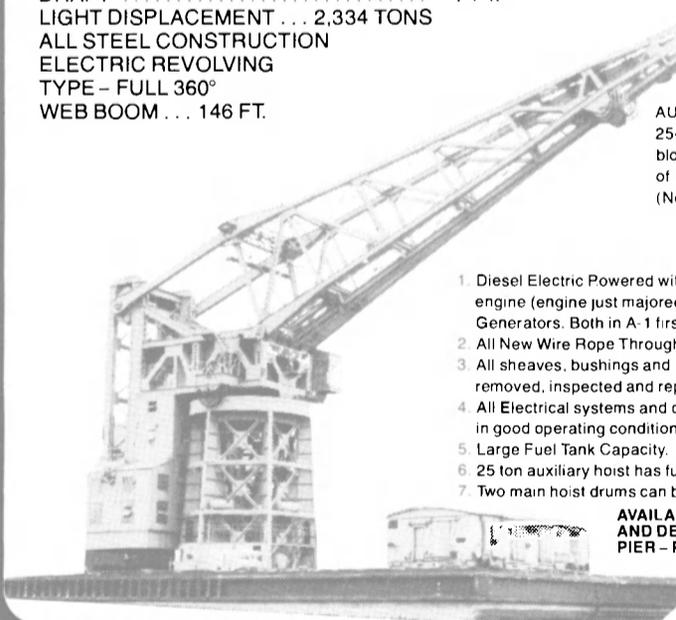
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NEW 1970-72

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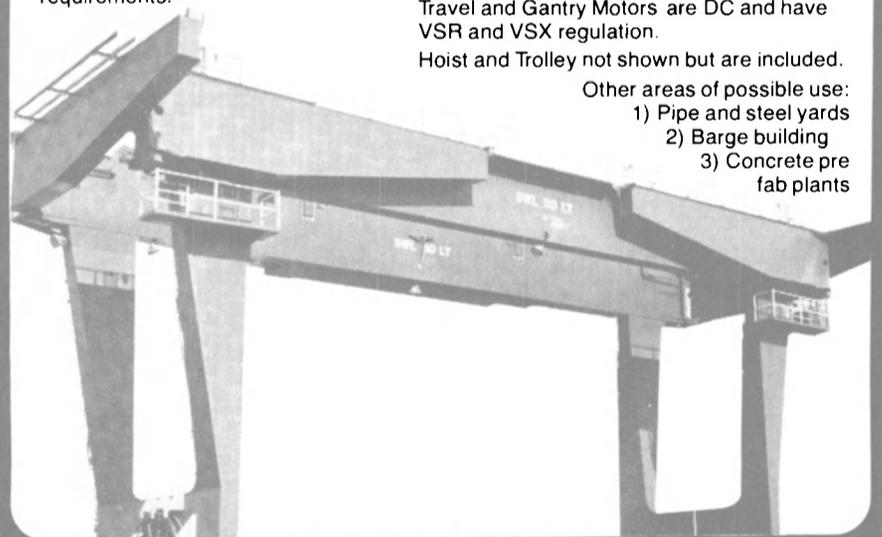
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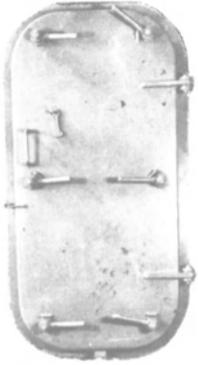
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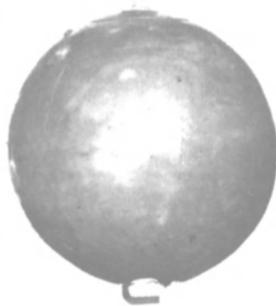


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KEARFOTT PENDULUM WINDOW WIPERS

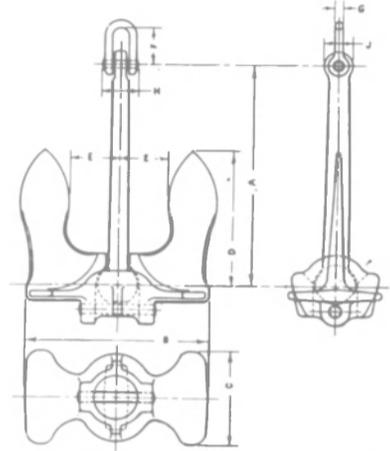
1/30 HP 110 volt AC/DC universal series wound motor—ball bearing—5000 RPM—\$197.50 with 40:1 single worm reduction Clear opening 27 1/2"—14" arm—10" blade—with rheostat & shutoff switch. 4 available. **EACH**

THE BOSTON METALS COMPANY

313 E. Baltimore St. Baltimore, Md. 21202
Marine Warehouse (301) 752-1077
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ANCHORS -- CHAIN

DETACHABLE LINKS
PEAR-SHAPED DETACHABLE LINKS



LARGE BALDT-TYPE ANCHORS
16000 LBS/12000 LBS/8000 LBS/3000 LBS

10 EA. 5" x 15" I.D. STEEL RINGS
3 EA. R.P. ANCHOR SHAX 3 7/8 STK, 3 7/8 PIN

NEW CHAIN

9 X 90 Ft. 2" DILOK CHAIN — ABS

NEW SWIVELS

3 EA. 2 5/8 — 3" E&E SWIVELS
13 EA. 3 7/8 DETACHABLE LINKS

PEARSHAPED DETACHABLE LINKS
25 EA. #7 — 17 EA. #5

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HEAVY STEEL DOOR FOR LOADING CARGO THRU SIDE OF SHIP

Complete with heavy frame. Clear opening 72" wide 90" high. Outside frame size 103" high — 86" wide. While under way, door is secured with 18 heavy bolts & steel blocks around frame — 6 heavy bolts & steel blocks in middle.

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LOUIS-ALLIS M.G. SETS 2.5 KW 120 Volt Single Phase 60 Cycle Output 120 Volt D.C. Input — 1800 RPM



2 1/2 KW—115 volts single phase A.C. output. GENERATOR: Type GNA—class 1G— Frame 28A—Form A—1800 RPM—5 KVA—2.5 KW 115 volts AC— 60 cycle —50% PF—43.4 amps. MOTOR: Louis Allis—Type GNA—Class E—Frame 25A—Form A—1800 RPM—115 volts DC—32 amps—shunt wound (with attached Ward-Leonard frequency regulator). Some control panels available.

CAN FURNISH WITH 230 VOLT DC INPUT

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**SURPLUS
BERGER
FAIRLEADS**



2 Model 620—for 1 1/4" wire—20" sheave.
Located San Francisco, Ca.

\$3950 EACH

3 Model 614—for 1 1/4" wire—14" sheave.
Located Panama City, Fla.

\$2495 EACH

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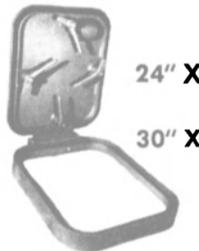
HATCHES

**NEW UNUSED
FLUSH HATCHES**



54' X 77"

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



24" X 30"

30" X 30"



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



60" X 42" X 12"
10-DOG



72" X 72" X 12"
16-DOG



36" X 26" 7-DOG
TANKER EXPANSION
TRUNK

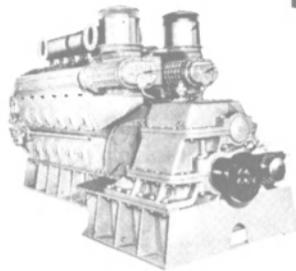


42" X 42" X 9"
7-DOG
SPRING
LOADED

THE BOSTON METALS COMPANY

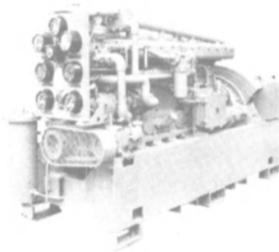
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LST MACHINERY



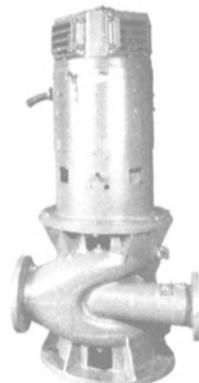
**PORT & STARBOARD GM 12-567A
900 HP DIESEL ENGINES
with Falk reverse & reduction gears**

ENGINE: GM 12-567A—8 1/2 X 10—V-type—2-cycle—747 RPM—electric starting—serial Nos. 1041 & 1060. GEAR: Falk AirFlex—reverse & reduction—2.48:1 forward—2.52:1 reverse.



100KW GBD-8 DIESEL GEN'S.

120/240 VDC—417 amps—stab shunt—1200 RPM—Delco generator—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 11/16" high—42" wide. Hgt necessary to pull piston 68". Fuel consumption 0.620 lbs/hr.



**GARDNER-DENVER
BALLAST PUMP**

Bronze — 1500 GPM — 56' head or 25 lbs — 8" suction — 6" discharge. MOTOR: Century 30 HP 230 VDC 110 amps 1750 RPM. 40° T rise — stab. shunt — ballbearing — dripproof. Controls available.

TAILSHAFTS

Diameter: 6 1/8" Length: 21' 2 5/8"

THE BOSTON METALS COMPANY

313 E. Baltimore St.

752-1077

Baltimore, Md. 21202

TWX: 710-234-1637

WALZ & KRENZER

**USCG APPROVED HEAVY SLIDING
DOORS WITH FRAMES**

All Doors Bolted In And Easily Removed

- 1 36"x66" Horizontal hand mech. steel sliding door—complete with mechanical local & remote gear boxes
- 1 60"x78" Steel watertight sliding door. Complete with mechanical local and remote boxes.

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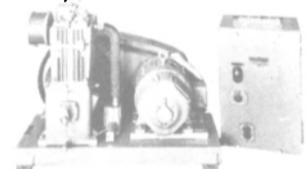
GOULD FIRE & BILGE PUMP

250 GPM & 100 lbs—4" suction—3" discharge—2200 RPM—bronze—manufactured by Gould. Direct connected to 30 HP 230 volt DC Louis-Allis motor.

**4-BLADE PROPELLERS
BRONZE — PORT & STARBOARD**



7' Diameter—pitch constant 4.699. Bore tapers from 6 1/8" to 4 53/64". 14 1/2" Taper equal to 1"/foot on diameter. U.S. Navy reconditioned. Average weight 1760 lbs.



CLUTCH TIRE AIR COMPRESSOR

Model 320—4 X 2 1/2 X 3"—10/15 CFM—100/150 PSI—700 RPM. MOTOR: 3 HP—230 volts DC—1750 RPM.



**COMBINATION LUBE OIL &
SALT WATER COOLING PUMPS**

Model 3630—mfg by Goulds—1150 RPM. Rotary lube oil pump one end (35 GPM @ 15 PSI—1 1/2" X 1 1/2")—salt water circulating pump other end (35 GPM @ 15 PSI—2" X 1 1/2") G.E. Motor model 5B254A1988—type B—Frame 254—3 HP—230 VDC—11.9 amps—1150 RPM compound—Cont. 40° C temp rise. Ball bearing.



**QUICK-ACTING
LEVER
OPERATED
WATERTITE
DOORS**

26" X 66"
8-DOG
Rights & Lefts

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Marine Warehouse (301) 752-1077
TWX: 710-234-1637

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

ANODES—Cathodic Protection

Kaiser Aluminum & Chemical Corp., 300 Lakeside Dr., (Rm 2039KB), Oakland, CA 94643
Wilson Walton International Inc., 66 Hudson Street, Hoboken, NJ 07030

BEARINGS—Rubber, Metallic, Non-Metallic

Johnson Rubber Co. (Marine Div.), 16025 Johnson St., Middlefield, Ohio 44052
Lucian Q. Moffitt, Inc., P.O. Box 1415, Akron, Ohio 44309
Waukesha Bearings Corp., P.O. Box 798, Waukesha, Wisc. 53186

BLASTING—Cleaning—Equipment

Butterworth Systems Inc., 224 Park Ave., Florham Park, NJ 07932
GMMC/Porta-Shotblast, 1112 Davidson Road, Nashville, Tenn. 37205
Goff Corporation, One Pleasant Grove Rd., Seminole, OK 74868

BOILERS—Tube Cleaning

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

BRAKES

Goodyear Aerospace (Industrial Brakes Division), Box 477, Berea, KY 40403

BROKERS

B.R.I. Coverage Corporation, 156 Williams Street, New York, NY 10038
Capt. Astad Company, Inc., P.O. Box 53434, New Orleans, La. 70153
Crown Assets Disposal Corp., 300 Notre Dame St., Ville St.-Pierre, Quebec, Canada H8R 3Z6

BUNKERING SERVICE

Belcher Company of New York, Inc., 48-02 54th Avenue, Maspeth, NY 11378
Gulf Oil Trading Co., 1290 Ave. of the Americas, N.Y., N.Y. 10019

CARGO TRANSFER & ACCESS EQUIPMENT

MacGregor-Comarain, Inc., 135 Dermody St., Cranford, N.J. 07016

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Philadelphia Resins Corp., 20 Commerce Drive, Montgomeryville, Pa. 18936

CONTAINERS—Cargo Container Handling

Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501

CONTROL SYSTEMS—Monitoring

Arnessen Marine Systems, Inc., One Battery Plaza, New York, NY 10004
Henschel Corporation, 14 Cedar St., Amesbury, Mass. 01913
Megsystems, Inc., 5909 West 130th Street, Cleveland, OH 44130
Pan American Systems Corporation, P.O. Drawer 400, Belle Chasse, LA 70037

COUPLINGS

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

CRANES—HOISTS—DERRICKS—WHIRLEYS

Blohm & Voss Company, 55 Morris Avenue, Springfield, NJ 07081
Clyde Iron, a unit of AMCA International Corp., Suite 102, 2300 West Loop South, Houston, TX 77027
M. P. Howlett, Inc., 410 32nd St., Union City, N.J. 07087
J. D. Neuhaus, Witten-Heven, Hebezeuge, D 5810 Witten-Heven, West Germany

DECK MACHINERY—Cargo Handling Equipment

Appleton Machine Co., Marine Division, 618 S. Oneida St., Appleton, WI 54911
Markey Machinery Co., Inc., 79 S. Horton St., Seattle, Wash. 98134
Navire Cargo Gear (SEA) Pte. Ltd., 9th Floor Orchard Towers, Orchard Road, Singapore 0923

DIESEL ACCESSORIES—CYLINDER LINERS

B & W Marine Service, One State Street Plaza, New York, N.Y. 10004
General Thermodynamics Corporation, 210 South Meadow Road, P.O. Box 1105, Plymouth, Massachusetts 02360
Goltan Marine Company, Inc., 162 Van Brunt Street, Brooklyn, NY 11231

ELECTRICAL EQUIPMENT

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

EMULSIFICATION SYSTEMS

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

EQUIPMENT—Marine

ATCO Marine Corp., 603 Dean Street, Brooklyn, NY 11238
Argo Marine, Div. of Argo Intl., 140 Franklin St., New York, N.Y. 10013
Comet Marine Supply Corp., 157 Perry St., New York, N.Y. 10014
Conhagen/USMP Company, Inc., 4475 South Clinton Ave., South Plainfield, NJ 07080
Consafe Inc., P.O. Box 40339, Houston, TX 77040
Kearfott Marine Products, 550 South Fulton Ave., Mount Vernon, N.Y. 10550

EXPANDED METALS — METALS

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

FANS—VENTILATORS—BLOWERS—HEATEXCHANGERS

Coolmar Heatexchangers B.V., P.O. Box 54156 3008 JD Rotterdam, (The Netherlands) Waalhaven Z.Z. 52
Hartzell Propeller Fan Company, 901 S. Downing Street, Piqua, OH 45356
Joy Manufacturing Co., 338 So. Broadway, New Philadelphia, Ohio 44663
Zidell Explorations, 3121 S.W. Moody St., Portland, Ore. 97201

FENDERING SYSTEMS—Dock & Vessel

Hughes Bros., Inc., 17 Battery Place, New York, N.Y. 10004
Johnson Rubber Co. (Marine Div.), 16025 Johnson St., Middlefield, Ohio 44062
Seaward International, Inc., 6269 Leesburg Ave., Falls Church, Va. 22044

FINANCING—Leasing

Continental Illinois National Bank, 231 S. LaSalle, Chicago, IL 60693
Greyhound Leasing & Financial Co., Greyhound Tower, Phoenix, AZ 85077
Kidder, Peabody & Co., Inc., 10 Hanover Square, New York, N.Y. 10005
Warburg Paribas Becker, Inc., 2 First National Plaza, Chicago, Ill. 60670

FURNITURE

Bailey Joiner Co., Inc., 74 Sullivan Street, Brooklyn, N.Y. 11231
Comfort-Mate, Inc., P.O. Box 43-1572, Miami, FL 33116

GANGWAYS

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

HATCH & DECK COVERS—Chain Pipe

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

HULL CLEANING

Butterworth Systems Inc., 224 Park Ave., Florham Park, N.J. 07932
Phosmarin Equipment, 21, Boulevard de Paris, 13002 Marseille, France
Sub Enterprises, Inc., P.O. Box 16531, Irvine, CA 92713

HYDRAULICS

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

INERT GAS—Generators—Systems

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

INSULATION—Cloth, Fiberglass

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

INSURANCE

Adams & Porter, 1819 St. James Place, Houston, Texas 77027
Adams & Porter, 1 World Trade Center, Suite 8433, New York, N.Y. 10048
Alexander & Alexander, Inc., 1185 Ave. of the Americas, New York, N.Y. 10036
B.R.I. Coverage Corporation, 156 Williams St., New York, NY 10038
Midland Insurance Co., 160 Water St., New York, N.Y. 10038
Whitehall Brokerage, Inc., 685 3rd Ave., New York, NY 10017

JOINER—Watertight Doors—Paneling

Masonite Commercial Division, Dover, OH 44622
Walz & Krenzer, Inc., 400 Trabold Road, Rochester, NY 14624

KEEL COOLERS

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

LIFEBOATS & DAVITS

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LIGHTING EQUIPMENT—Lamps, Fixtures, Searchlights

ACR Electronics, Inc., 10-99 3901 North 29th Avenue, Hollywood, FL 33020
Browning Marine, Inc. (Aqua Signal), P.O. Box 806G, St. Charles, IL 60174
Oceanic Electrical Mfg. Co., 157 Perry Street, New York, N.Y. 10014
Oreck Corp., 100 Plantation Rd., New Orleans, LA 70123
Perko Inc., P.O. Box 6400D, Miami, Florida 33164
Phoenix Products Company, 4785 North 27th Street, Milwaukee, WI 53209
Port Electric Supply Corp., 157 Perry Street, New York, N.Y. 10014

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McDonnell Douglas Astronautics Co., 5301 Bolsa Ave., Huntington Beach, CA 92647

MACHINE TOOLS

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

MACHINERY MAINTENANCE, REPAIR, OVERHAUL, AND TESTING

A.L. Burbank & Co., Ltd., Marine Thermotest Dept., One World Trade Center, Suite 2811, New York, NY 10048
General Electric Company—Bldg. 2, Rm 216, Schenectady, N.Y. 12345
Schnitzer-Levin Marine Co., 445 Littlefield Ave., So. San Francisco, CA 94080

MOORING SYSTEMS

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

NAVAL ARCHITECTS, MARINE ENGINEERS, SURVEYORS

Advanced Marine Enterprises, Inc., Suite 500, 2341 Jefferson Davis Highway, Arlington, Va. 22202
Agemar, Avenida 3E No. 71-51, Edif. Acuario (Planta Baja) Apartado 1465, Maracaibo, Venezuela
American Standards Testing Bureau, Inc., 40 Water Street, New York, N.Y. 10004
Amirikian Engineering Co., Chevy Chase Center Bldg., Suite 505, 35 Wisconsin Circle, Chevy Chase, Md. 20015
Del Breit Inc., 326 Picayune Place (Suite 201), New Orleans, LA 70130
C.D.I. Marine Co., Regency East, Suite 222, 9951 Atlantic Blvd., J.L. Bludworth, P.O. Box 2441, Corpus Christi, TX 78403
Jacksonville, Florida 32211

CTS & Associates, 11320 S.W. 108 Court, Miami, Fla. 33176

CADCOM, 107 Ridgely Ave., Annapolis, MD 21401
Childs Engineering Corp., Box 333, Medfield, Mass. 02052
John P. Colletti & Associates, P.O. Box 13378, Pittsburgh, PA 15243

COLUMBIA-SENTINEL ENGINEERS WESTERN, INC., P.O. BOX 21542, SEATTLE, WA 98111

Crandall Dry Dock Engrs., Inc., 21 Pottery Lane, Dedham, Mass. 02026

CRANE CONSULTANTS INC., 15301 1ST AVE., SO. SEATTLE, WASHINGTON 98148

C.R. Cushing & Co., Inc., One World Trade Center, New York, N.Y. 10048

NORMAN N. DEJONG & ASSOCIATES, INC., 1734 EMERSON ST., JACKSONVILLE, FLA. 32207

Design Associates, Inc., 3308 Tulane Ave., New Orleans, La. 70119
Designers & Planners, Inc., 82 Beaver Street, New York, NY 10005
Donhaiser Marine, Inc., 11511 Katy Freeway, Houston, TX 77079
Parker C. Emerson & Associates, 17935 Cardinal Drive, Lake Oswego, Oregon 97034

CHRISTOPHER J. FOSTER, INC., 16 SINTSINK DRIVE EAST, PORT WASHINGTON, N.Y. 11050

Friede and Goldman, Ltd., 225 Baronne St., New Orleans, La. 70112
Giannotti & Associates, Inc., 703 Giddings Ave., Suite U-3, Annapolis, MD 21401

GIBBS & COX, INC., 40 RECTOR STREET, NEW YORK, N.Y. 10006

John W. Gilbert Associates, Inc., 58 Commercial Wharf, Boston, Mass. 02110

THE GLOSTEN ASSOCIATES, INC., 610 COLMAN BLDG., 811 FIRST AVE., SEATTLE, WA 98104

Phillip Gresser Associates, Ltd., 3250 South Ocean Blvd., Palm Beach, FL 33480
Marris Guralnick Associates, Inc., 620 Folsom Street, Suite 300, San Francisco, CA 94107
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Jantzen Engineering Co., 6655-H Amberton Drive, Baltimore, Md. 21227

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Littleton Research and Engrg. Corp., 95 Russell St., Littleton, Mass. 01460

LUCANDER DESIGNS, P.O. BOX 711, SAN PERLITO, TX 78590

Alan C. McClure Associates, Inc., 2600 South Gessner, Houston, TX 77063

JOHN J. McMULLEN ASSOCIATES, INC., 1 WORLD TRADE CENTER, NEW YORK, N.Y. 10048

MacLear & Harris, Inc., 28 West 44 Street, New York, N.Y. 10036
Marine Consultants & Designers, Inc., 308 Investment Insurance Bldg., Corner E. 6th St. & Rockwell Ave., Cleveland, Ohio 44114
Marine Design Inc., 401 Broad Hollow Road, Rte. 110, Melville, N.Y. 11746
Marine Technical Associates, Inc., 195 Paterson Avenue, Little Falls, NJ 07424

MARITIME SERVICE COMPANY, 1357 ROSECRANS ST., SUITE B, SAN DIEGO, CA 92106

Rudolph F. Matzer & Associates, Inc., 13891 Atlantic Blvd., Jacksonville, Fla. 32225

MECHANICAL RESOURCES INC., 191 CAMBRIDGE AVENUE, JERSEY CITY, N.J. 07307

George E. Meese, 194 Acton Rd., Annapolis, Md. 21403
Metritape, Inc., 33 Bradford Street, Concord, MA 01742
NKF Engineering Assoc., Inc., 8150 Leesburg Pike, Vienna, VA 22202
Nelson & Associates, Inc., 1405 N.W. 167th Street, Miami, FL 33169
Nickum & Spaulding Associates, Inc., 911 Western Ave., Seattle, WA 98104

ROBERT B. NIEDERBERGER, P.E., 507 EVERGREEN ROAD, SEVERNA PARK, MD 21146

Norgaard and Clark, 114 Sansome St., San Francisco, CA 94104
Ocean-Oil International Engineering Corporation, 3019 Mercedes Blvd., New Orleans, La. 70114
Offshore Power Systems, 8000 Arlington Expressway, Jacksonville, FL 32211

OROMAR INTERNATIONAL ENTERPRISES, INC., P.O. BOX 13069, PORT EVERGLADES, FL 33316

PRC Guralnick, 5252 Balboa Ave., San Diego, CA 92117
Pacific Industries Inc., 1440 Canal Street, Suite 1915, New Orleans, LA 70112
Pearlson Engineering Co., Inc., 8970 S.W. 87th Ct., Miami, Florida 33156

S.L. PETCHUL, INC., 1380 SW 57th Ave., Fort Lauderdale, Fla. 33317

Pilotage Consultants, Inc., P.O. Box 3, Atlantic Highlands, NJ 07716

M. ROSENBLATT & SON, INC., 350 BROADWAY, NEW YORK, N.Y. 10013

and 657 Mission St., San Francisco, Calif.
Sargent & Herkes, Inc., 611 Gravier St., New Orleans, La. 70130
Schmahl and Schmahl, Inc., 1209 S.E. Third Ave., Fort Lauderdale, Florida 33316

SEACOR SYSTEMS ENGINEERING ASSOCIATES, CORP., P.O. BOX 2030, 19 CHERRY HILL INDUSTRIAL PARK, PERINA BLVD., CHERRY HILL, NJ 08003

Seaworthy Engine Systems, 36 Main Street, Essex, CT 06426
George G. Sharp, Inc., 100 Church St., New York, N.Y. 10007
T. W. Spaetgens, 156 West 8th Ave., Vancouver, Canada V5Y 1N2
R.A. Stearn, Inc., 253 N. 1st Ave., Sturgeon Bay, WI 54235
Richard R. Taubler Inc., 8 Columbia St., Milford, Del. 19963
Thames Engineering Consultants Inc., P.O. Box 589, New London, Ct. 06320

TIMSCO, 622 AZALEA ROAD, MOBILE, AL 36609

Corning Townsend III, 18 Church St., Georgetown, CT 06829
Undersea Systems, 112 W. Main St., Bay Shore, N.Y. 11706
Wesley D. Wheeler Assoc., Ltd., 104 E. 40th St., Suite 206, New York, NY 10016

THOMAS B. WILSON, 920 NORTH AVALON BLVD., WILMINGTON, CA 90744

Wind Ship Development Corporation, 690 Main Street, Norwell, MA 02061
Wink Incorporated, 8020 Mayo Blvd., New Orleans, LA 70126
XPLO Corporation, 229 Fifth Street, Gretna, LA 70053

NAVIGATION & COMMUNICATIONS EQUIPMENT

AAT Communications Corporation, 1854 Hylan Blvd., New York, NY 10305

AMERICAN HYDROMATH CO., BUCKWHEAT BRIDGE RD., GERMANTOWN, N.Y. 12526

Apelco Marine Electronics, Division of Raytheon, 676 Island Pond Rd., Manchester, NH 03103

COMMUNICATION ASSOCIATES, INC., 200 MCKAY ROAD, HUNTINGTON STATION, N.Y. 11746

Comsat General Corp., 950 L'Enfant Plaza, S.W., Washington, D.C. 20024

DANTRONICS COMPANY, P.O. BOX 204, BOCCA RATON, FL 33432

Electro-Nav Inc., 840 Bond Street, Elizabeth, NJ 07201
EPSCO, Inc., 411 Providence Highway, Westwood, Mass. 02090
Furuno U.S.A., 271 Harbor Way, S. San Francisco, CA 94080
Griffith Marine Navigation, Inc., 134 North Avenue, New Rochelle, NY 10801

HARRIS COMMUNICATIONS, RF COMMUNICATIONS DIVISION, 1680 UNIVERSITY AVENUE, ROCHESTER, NY 14610

Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
Hose McCann Telephone Company, Inc., 9 Smith Street, Englewood, NJ 07631

ITT DECCA MARINE, U.S. ROUTE 1 & ST. JOE RD., P.O. BOX G, PALM COAST, FL 32037

ITT Mackay Marine, 2912 Wake Forest Road, Raleigh, N.C. 27611
Intermarine Electronics, Inc., Flowerfield Bldg. #7, St. James, N.Y. 11780

LOTION CORP., 5 ALFRED CIRCLE, BEDFORD, MA 01730

Maritel, Inc., 139 Old Solomon's Island Road, Annapolis, MD 21401
Nav-Com, Inc., 711 Grand Blvd., Deer Park, NY 11729
Navidyne Corp., 11824 Fishing Point Drive, Newport News, VA 23606

NAVIGATION & COMMUNICATIONS EQUIPMENT

AAT Communications Corporation, 1854 Hylan Blvd., New York, NY 10305

AMERICAN HYDROMATH CO., BUCKWHEAT BRIDGE RD., GERMANTOWN, N.Y. 12526

Apelco Marine Electronics, Division of Raytheon, 676 Island Pond Rd., Manchester, NH 03103

COMMUNICATION ASSOCIATES, INC., 200 MCKAY ROAD, HUNTINGTON STATION, N.Y. 11746

Comsat General Corp., 950 L'Enfant Plaza, S.W., Washington, D.C. 20024

DANTRONICS COMPANY, P.O. BOX 204, BOCCA RATON, FL 33432

Electro-Nav Inc., 840 Bond Street, Elizabeth, NJ 07201
EPSCO, Inc., 411 Providence Highway, Westwood, Mass. 02090
Furuno U.S.A., 271 Harbor Way, S. San Francisco, CA 94080
Griffith Marine Navigation, Inc., 134 North Avenue, New Rochelle, NY 10801

HARRIS COMMUNICATIONS, RF COMMUNICATIONS DIVISION, 1680 UNIVERSITY AVENUE, ROCHESTER, NY 14610

Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
Hose McCann Telephone Company, Inc., 9 Smith Street, Englewood, NJ 07631

- Navigation Communications Systems, Inc., 20100 Plummer Street, Chatsworth, CA 91311
- North American Philips Communication Corp., 91 McKee Road, Mahwah, N.J. 07430
- RCA Service Co., Building 204-2, Camden, N.J. 08101
- Radar Devices, Inc., 2955 Merced Street, San Leandro, CA 94577
- Raytheon Marine Co., 676 Island Pond Road, Manchester, N.H. 03103
- Raytheon Ocean Systems Company, Westminster Park, Risho Avenue, East Providence, RI 02914
- Raytheon Service Co., 103 Roesler Rd., Glen Burnie, MD 21061
- Simrad Inc., 1 Labriola Court, Armonk, N.Y. 10504
- Southern Marine Research, Inc., 1401 N.W. 89th Court, Miami, FL 33172
- Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.
- Texas Instruments Inc., P.O. Box 226080, M/S 3107, Dallas, TX 75265
- Tracor, Inc., Industrial Products Div., 6500 Tracor Lane, Austin, Texas 78721
- OILS—Marine—Additives**
- B. P. Marine North America Trading, Plaza 9, 900 Route 9, Woodbridge, NJ 07095
- Ferrous Corporation, P.O. Box 1764, Bellevue, WA 98009
- Gulf Oil Company—U.S. (Domestic Oils), 909 Fannin Street, Houston, TX 77001
- Gulf Oil Trading Co., 1290 Ave. of Americas, New York, N.Y. 10019
- Houston Marine Services, Inc., 505 Atrium One, 11811 1-10 East, Houston, TX 77029
- Shell Oil Co., 1 Shell Plaza, Houston, Texas 77002
- Mobil Oil Corporation, 150 East 42nd St., New York, N.Y. 10017
- Texaco, Inc. (International Marine), 135 East 42nd St., N.Y., N.Y. 10017
- OIL/WATER SEPARATORS**
- Alfa-Laval, Inc., 2115 Linwood Avenue, Ft. Lee, NJ 07024
- Butterworth Systems Inc., 224 Park Ave., Florham Park, N.J. 07932
- Sigma Treatment Systems, 2 Davis Ave., Frazer, PA 19355
- PAINTS—COATINGS—CORROSION CONTROL**
- Belzona Molecular Metalize Inc., 224 7th Street, Garden City, NY 11530
- "CONSOL" manufactured by Hanline Bros., Inc., 1400 Warner St., Baltimore, MD 21230
- Devco Marine Coatings Co., P.O. Box 7600 Louisville, KY 40207
- Eureka Chemical Company, 234 Lawrence Ave., So. San Francisco, CA 94080
- International Paint Co., 17 Battery Place North, Suite 1150, New York, N.Y. 10004
- Jatun-Baltimore Copper Paint Co., 501 Key Highway, Baltimore, MD 21230
- Mobil Chemical Co., Maintenance & Marine Coatings Dept., P.O. Box 250, Edison, N.J. 08817
- Woolsey Marine Industries, Inc., 1250 Broadway, New York, NY 10001
- PETROLEUM SUPPLIES**
- Houston Marine Services, Inc., 505 Atrium One, 11811 1-10 East, Houston, TX 77029
- Shell Oil Co., 1 Shell Plaza, Houston, Texas 77002
- PIPE—HOSE—Cargo Transfer, Clamps, Couplings**
- Camlock Flange Sales Corp., 449 Sheridan Blvd., Inwood, L.I., N.Y. 11696
- CUNICO Corp., Cooney Pipe & Copper Works Div., 214 N. Hawaiian Ave., Wilmington, CA 90748
- Hydro-Craft, Inc., 4223 Edgeland, Royal Oak, Mich. 48073
- Kubota Ltd., 2-47, Shikit Suhigashi 1-Chome, Naniwa-Ku, Osaka 556-91, Japan
- Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030
- Tioga Pipe & Supply Company, 2450 Wheatshaf Lane, Philadelphia, PA 19137
- PLASTICS—Marine Applications**
- Hubeva Marine Plastics, Inc., 390 Hamilton Ave., Bklyn, N.Y. 11231
- PROPULSION EQUIPMENT—Bowthrusters, Diesel Engines, Gears, Propellers, Shafts, Turbines**
- Alco Power Inc., 100 Orchard St., Auburn, N.Y. 13021
- Alstom-Atlantique, 2 quai de Seine, 93203 Saint-Denis, France
- Armo Steel/Advanced Materials Div., 703 Curtis St., Middletown, OH 45043
- Avondale Shipyards, Inc., P.O. Box 52080, New Orleans, La. 70150
- Bird Johnson Company, 110 Norfolk St., Walpole, Mass. 02081
- Burmeister & Wain Alpha Diesel AS, DK-1400 Copenhagen K, Denmark
- Burmeister & Wain Diesel, Inc., 50 Broadway, New York, NY 10004
- Caterpillar Tractor Company, Engine Division, Peoria, IL 61629
- Colt Industries' Fairbanks Morse Engine Division, Beloit, Wisc. 53511
- Combustion Engineering, Inc., Windsor, Connecticut 06095
- Electro-Motive Division, General Motors Corp., LaGrange, Ill. 60525
- Elliott Company, (Div. of Carrier Corp.), Jeanette, PA 15644
- General Electric Co., Diesel Power Products, 2901 E. Lake Rd., Erie, PA 16531
- Kawasaki Heavy Industries, Ltd., 2-4-1 Hamamtsu-cho, Minato-ku, Tokyo, Japan
- MTU of North America, Inc., 10450 Corporate Drive, Sugar Land, TX 77478
- Maritime Industries, Ltd., 6307 Laurel St., Burnaby, B.C. Canada V5B 3B3
- Michigan Wheel, 1501 Buchanan Ave., S.W., Grand Rapids, MI 49507
- Omnithruster Inc., 15418 Cornet Ave., Santa Fe Springs, CA 90670
- Oosterhuis Industries, Inc. (Marine Engineering, Inc.), P.O. Box 30587, New Orleans, LA 70190
- Port Electric Turbine Div., 155-157 Perry St., New York, N.Y. 10014
- Propulsion Systems Inc., 21213 76th Ave., So., Kent, WA 98031
- Schattel of America, Inc., 8375 N.W. 56 Street, Miami, Fla. 33166
- Skinner Engine Company, P.O. Box 1149, Erie, PA 16512
- Steamco Corporation, 364 Stowe Avenue, Orange Park, FL 32073
- Tacoma Boatbuilding Co./Escher Wyss, 1840 Marine View Dr., Tacoma, WA 98422
- Transamerica Delaval Inc., Engine & Compressor Div., 550 85th Ave., Oakland, CA 94621
- Transamerica Delaval, Inc., Turbine & Compressor Div., P.O. Box 8788, Trenton, N.J. 08650
- Turbine Specialties, Inc., P. O. Box 207, West State Street Road, Salina, KS 67401
- Voith Schneider of America—U.S. Agent: Eli Sharprut, 347 Evelyn St., Paramis, N.J. 07652
- PUMPS—Repairs—Drives**
- Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030
- Transamerica Delaval, IMO Pump Division, P.O. Box 447, Monroe, NC 28110
- Warren Pumps, Inc., Bridges Ave., Warren, Mass. 01083
- REFRIGERATION—Refrigerant Valves**
- Bailey Refrigeration Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231
- Port Refrigeration Div., 157 Perry Street, New York, N.Y. 10014
- ROPE—Manilla—Nylon—Hawsers—Fibers**
- American Mfg. Co., Inc., Willow Avenue, Honesdale, Pa. 18431
- Samson Ocean Systems, Inc., 99 High Street, Boston, Mass. 02110
- Tubbs Cordage Company, Orange, CA 92668
- RUDDER ANGLE INDICATORS**
- Electric Tachometer Corp., 68th & Upland St., Philadelphia, Pa. 19142
- Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
- Hose McCann Telephone Co., Inc., 524 W. 23rd St., N.Y. 10011
- Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.
- SANITATION DEVICES—Pollution Control**
- Argo Marine Pollution Systems Division, 140 Franklin St., New York, N.Y. 10013
- Envirovac (Division of Dometic Inc.), 1260 Turret Drive, Rockford IL 61111
- Marine Moisture Control Co., Inc., 449 Sheridan Blvd., Inwood, L.I., N.Y. 11696
- Marland Environmental Systems, Inc., N. Main Street, Walworth, WI 53184
- Microphor, Inc., P.O. Box 490, Willits, CA 95490
- Red Fox Industries, P.O. Drawer 640, New Iberia, LA 70560
- Research Products/Blankenship, 2639 Andjan, Dallas, Texas 75220
- St. Louis Ship FAST Sewage Systems, 611 East Marceau St., St. Louis, Mo. 63111
- Sigma Treatment Systems, 2 Davis Ave., Frazer, PA 19355
- SCAFFOLDING EQUIPMENT—Work Platforms**
- Patent Scaffolding Co., 2125 Center Ave., Fort Lee, N.J. 07024
- Spider Staging Sales Co., P.O. Box 182, Renton, Washington 98055
- Trus Joist Corp., P.O. Box 60, Boise, Idaho 83707
- SHACKLES**
- West Footscray Engineering Works P/L, 52 Cross Street, West Footscray, Melbourne, Victoria, 30 12, Australia
- SHAFT SEALS, REVOLUTION INDICATOR EQUIPMENT**
- Bird-Johnson Co., 100 Norfolk St., Walpole, MA 02081
- Electric Tachometer Corp., 68th & Upland St., Philadelphia, Pa. 19142
- Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
- Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030
- SHIPBREAKING—Salvage**
- American Ship Dismantlers, Inc., Division of Schnitzer Industries, 3300 N.W. Yeon Avenue, Portland, Ore. 97210
- The Boston Metals Co., 313 E. Baltimore St., Baltimore, Md. 21202
- Levin Metals Corporation, 1310 Canal Blvd., Richmond, CA 94807
- Zidell Explorations, Inc., 3121 S.W. Moody St., Portland, Ore. 97201
- SHIPBUILDING STEEL**
- Armo Steel Corp., 703 Curtis St., Middletown, Ohio 45042
- Bethlehem Steel Corp., One State Street Plaza, N.Y. 10004
- SHIPBUILDING—Repairs, Maintenance, Drydocking**
- A.D.M. (Amsterdam Drydock Mfg.), Moatschoppij bv, P.O. Box 3006, 1003 AA, Amsterdam, Holland
- AMT, Inc., 2400 N.W. 39th Avenue, Miami, FL 33142
- Asmar Shipyards Co., Astilleros y Maestranzas de la Armada, Prat 856, Piso 14, Casilla 150-V, Valparaiso, Chile, S.A.
- Astilleros Espanoles S.A., 17 Padilla, P.O. Box 815, Madrid, Spain
- Astilleros Unidos de Veracruz, S.A., San Juan de Ulua S/N, Apdo. Postal 647, Veracruz, Ver., Mexico
- Avondale Shipyards, Inc., P.O. Box 52080, New Orleans, La. 70150
- Bay Shipbuilding Corporation, 605 North Third Avenue, Sturgeon Bay, WI 54235
- Bender Shipbuilding & Repair, P.O. Box 42, Mobile, AL 36601
- Bergeron Industries Inc., P.O. Box 38, St. Bernard, La. 70085
- Bethlehem Steel Corp., One State Street Plaza, N.Y. 10004
- Blohm & Voss Company, 55 Morris Avenue, Springfield, NJ 07081
- Bludworth Bond Shipyard Inc., P.O. Box 5065, Houston, TX 77012
- Boeing Marine Systems, P.O. Box 3707, Mail Stop 14-11, Seattle, WA 98124
- Ira S. Bushey & Sons, Inc., 764 Court Street, Brooklyn, N.Y. 11231
- Cantieri Navali Riuniti, Via Cipro, 11, 16100 Genova, Italy
- Carrington Slipways Pty, Ltd., Old Punt Road, Tomago, N.S.W., Australia 2322
- Centromor, One World Trade Center, Suite 3557, New York, N.Y. 10048
- China Shipbuilding Corp., c/o Allegro Transportation Supply Co., One Penn Plaza, Room 1606, New York, NY 10119
- Conrad Industries, P.O. Box 790, Morgan City, La. 70380
- Curacao Drydock Co., Inc., P.O. Box 153, Willemstad, Curacao, Netherlands Antilles
- Curacao Drydock, 26 Broadway, Suite 741, New York, N.Y. 10004
- Delattre-Levivier, Tour Fiat, Cedex 16, 92084 Paris La Defense, France
- Dorbyl Ltd., Military Road, 1 Industrial Sites, West Bank, 5201 East London Republic of South Africa
- Dravo Steelship Corp., R.4, Box 167, Pine Bluff, Ark. 71602
- Equitable Shipyards, Inc., P.O. Box 8001, New Orleans, La. 70122
- FMC Corp., Marine & Rail Equipment Div., 4700 N.W. Front Ave., Portland, Oregon 97208
- Galveston Shipbuilding Co., P.O. Drawer 2660, Galveston, TX 77553
- HBC Barge, Inc., Grant Building, Pittsburgh, PA 15219
- Halifax Industries Ltd., P.O. Box 1477, Halifax, Nova Scotia, Canada, B3K 5H7
- Halter Marine, Inc., P.O. Box 29266, New Orleans, La. 70189
- Havre de Grace, Havre de Grace, Md.
- Hitachi Shipbuilding & Engrg. Co., Ltd., 47 Edoberi 1-Chome, Nishi-Ku, Osaka, Japan
- Hong Kong United Dockyards Ltd., P.O. Box 534, Kowloon Central Post Office, Kowloon, Hong Kong
- Hudson Shipbuilders, Inc., P.O. Box Q, Pascagoula, MS 39567
- Jackson/Engineering Company, Inc., 2945 Richmond Terrace, Staten Island, NY 10303
- Jeffboat, Inc., Jeffersonville, Ind. 47130
- Keppel Shipyard Ltd., P.O. Box 2169, 325, Telok Blangah Road, Singapore 4
- Levingston Shipbuilding, P.O. Box 968, Orange, TX 77630
- Lockheed Shipbuilding and Construction Co., 2929 16th Avenue, S.W., Seattle, Wash. 98134
- McDermott Incorporated, 1010 Common Street, New Orleans, LA 70160
- MacGregor Land & Sea, Inc., 135 Dermody Street, Cranford, NJ 07016
- Mangone Shipbuilding Co., 819 South 80th Street, P.O. Box 5446, Houston, TX 77012
- Marine Fabricators, P.O. Box 246, Green Cove Springs, FL 32043
- Mattson Shipyard Co., Inc., P.O. Box 645, Cohoes, New York 12047
- Midland Marine Corporation, One Pennsylvania Plaza, New York, NY 10001
- Misener Industries, Inc., 5353 Tyson Avenue, P.O. Box 13625, Tampa, Fla. 33681
- Mississippi Marine Towboat Corp., P.O. Box 539, Harbor Front Industrial Park, Greenville, MS 38701
- Monark Boat Co., P.O. Box 210, Monticello, Ark. 71655
- Nashville Bridge Company, P.O. Box 239, Nashville, TN 37202
- National Steel & Shipbuilding Corp., San Diego, Calif. 92112
- Newpark Shipbuilding & Repair, P.O. Box 5426, Houston, TX 77012
- Newport News Shipbuilding & Dry Dock Co., 4101 Washington Ave., Newport News, Va. 23607
- North American Hydraulics, P.O. Box 278, Brampton, Ontario Canada L6V 2L1
- O.A.R.N. (Officine Allestimento-Riprazioni Navi), P.O. Box 1395 Genoa, Italy 16100
- Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501
- Pearlson Engineering Co., P.O. Box 8, Kendall Branch, Miami, Fla. 33156
- Perth Amboy Dry Dock Co., Perth Amboy, N.J. 08862
- Port Allen Marine Service, Inc., P.O. Box 108, Port Allen, LA 70767
- Port Houston Marine, Inc., 7220 J.W. Peavy Drive, Houston, TX 77012
- Port of Portland, P.O. Box 3529, Portland, OR 97208
- Promet (PTE) Ltd., 27 Pandam Rd., Jurong Industrial Estate, Singapore 22
- S.E.B.N., Societa Estercozio Bacini Napoletani, Via Marinella Varco N.6 (80133) Naples, Italy
- St. Louis Shipbuilding—Federal Barge, Inc., 611 East Marceau, St. Louis, Mo. 63111
- STE Marie Yard & Marine, Inc., 741 East Portage Ave., Sault Ste Marie, MI 49783
- Savannah Shipyard Co., P.O. Box 787, Savannah, GA 31402
- Sembawang Shipyard Ltd., Sembawang, P.O. Box 3, Singapore 9175
- The Service Machine Group, Inc., P.O. Box 2664, Morgan City, LA 70308
- Setenave-Estaleiros Navais De Setubal, P.O. Box 135, Setubal, Portugal
- Southwest Marine, Inc., P.O. Box 13308, San Diego, Ca 92113
- Sudaimport, 5 Kalyaevskaya, Moscow K-6, USSR
- Sun Ship Inc., Chester, PA 19013
- Swiftships Inc., P.O. Box 1903, Morgan City, LA 70380
- Tacoma Boatbuilding Co., Inc., 1840 Marine View Drive, Tacoma, WA 98422
- Tandano (Piacentini), Antartida Argentina 555 Darsena Norte, (1104) Buenos Aires-Republica Argentina
- Thomas Marine Inc., 37 Bransford Street, Patchogue, NY 11772
- Todd Shipyards Corp., 1 State St. Plaza, New York, N.Y. 10004
- Total Transportation Systems Inc., 813 Forest Dr., Newport News, VA 23606
- Total Transportation Systems (International) A/S, Bjornegarden, P.O. Box 28, N5201 Oslo, Norway
- Tracor Marine, P.O. Box 13107, Port Everglades, Fla. 33316
- Tug Barge Systems, Inc., subsidiary of Ingram Corp., 4100 One Shell Square, New Orleans, La. 70139
- Union Dry Dock & Repair Co., Foot of Pershing Road, Weehawken, N.J. 07087
- Wiley Manufacturing, a unit of AMCA International Corp., P.O. Box 97, Port Deposit, MD 21904
- SHIP STABILIZERS**
- Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.
- SMOKE INDICATORS**
- Robert H. Wager Co., Inc., Passaic Avenue, Chatham, N.J. 07928
- STUFFING BOXES**
- Johnson Rubber Co. (Marine Div.), 16025 Johnson St., Middlefield, Ohio 44062
- SURVEYORS AND CONSULTANTS**
- Francis B. Crocco, Inc., P.O. Box 1411, San Juan, Puerto Rico 00903
- Hull & Cargo Surveyors, Inc., 99 John St., New York, NY 10038
- TANK CLEANING**
- Butterworth Systems Inc., 224 Park Ave., P.O. Box 352, Florham Park, N.J. 07932
- Environmental Chemicals, Inc., 487 Division Street, Boonton, NJ 07005
- Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030
- Salwico, Inc., 77 River St., Hoboken, N.J. 07030
- TANK LEVELING INDICATORS**
- Transamerica Delaval, Inc., Gem Sensors Div., Spring Lane, Farmington, CT 06032
- Vu-Gage System, 150 E. 42nd St. (Room 910), New York, NY 10017
- Zesco, Inc., 3131 Brian Park, Suite 1095, Houston, TX 77042
- TECHNICAL MANUAL PREPARATION**
- Benhof, Inc., 2468 N. Jerusalem Road, N. Bellmore, NY 11710
- TERMINALS—Oil-Transfer**
- Caicos Petroleum Services Div., Federal Chicago Corp., 2222 North Elston Avenue, Chicago, IL 60614
- Delong Corp., 29 Broadway, New York, N.Y. 10006
- Transportation Concepts & Techniques Inc., 1020 West Main Street, Charlottesville, VA 22903
- TOWING—Barges, Vessel Chartering, Lighterage, Salvage, etc.**
- Bay-Houston Towing Co., 805 World Trade Bldg., Houston, Texas 77002
- Chotin Transportation, Inc., 580 Walnut St., Cincinnati, Ohio 45202
- Curtis Bay Towing Co., Mercantile Bldg., Baltimore, Md. 21202
- Henry Gillen's Sons Lighterage, 21 West Main St., Oyster Bay, N.Y. 11771
- Great Lakes Towing Company, 1800 Terminal Tower, Cleveland, OH 44113
- Gulf Fleet Marine Corporation, Canal Place One, Suite 2400, New Orleans, LA 70130
- James Hughes, Inc., 17 Battery Pl., New York, N.Y. 10004
- McAllister Bros., Inc., 17 Battery Pl., New York, N.Y. 10004
- McDonough Marine Service, P.O. Box 26206, New Orleans, La.
- Moran Towing & Transportation Co., Inc., One World Trade Center, Suite 5335, New York, N.Y. 10048
- Ocean Salvors Company, One World Trade Center, New York, NY 10048
- Smit International (Americas) Inc., 17 Battery Place, New York, NY 10004
- Suderman & Young Co., Inc., 918 World Trade Bldg., Houston, Texas 77002
- Tureaco Coastal & Harbor Towing Corp., One Edgewater St., Clifton, Staten Island, N.Y. 10305
- TRAINING SERVICES—Simulator**
- Ship Analytics, Park Circle, Centerport, NY 11721
- VALVES AND FITTINGS**
- Dover Corporation, Norris Division, P.O. Box 1739, Tulsa, OK 74101
- Hayward Marine Products, 900 Fairmount Avenue, Elizabeth, NJ 07207
- Marine Moisture Control Co., 449 Sheridan Blvd., Inwood, N.Y. 11696
- Marland Environmental Systems Inc., N. Main St., Walworth, WI 53184
- Rockwell International, Flow Control Division, 400 N. Lexington Avenue, Pittsburgh, PA 15208
- Stacey Valve Co., 29 Meserole Ave., Brooklyn, N.Y. 11222
- Voss, Inc., Building J, 7029 Huntley Road, Columbus, Ohio 43229
- Robert H. Wager Co., Inc., Passaic Avenue, Chatham, N.J. 07928
- Waukesha Bearings Corp., P.O. Box 798, Waukesha, WI 53186
- Winel of America, Inc., 16014 Cowley Road, Grafton, OH 44044
- WATER PURIFIERS**
- Everpure, Inc., 660 N. Blackhawk Dr., Westmont, IL 60559
- Halogenic Products Corporation, P.O. Box 27488, Salt Lake City, UT 84127
- WINCHES AND FAIRLEADERS**
- Bloom Inc., Highway 20, West Four Miles, Independence, IA 50644
- Clyde Iron, a unit of AMCA International Corp., Suite 102, 2300 West Loop South, Houston, TX 77027
- Gearmatic Co. Ltd., 7400 132nd Street, Surrey, B.C., Canada
- Markey Machinery Co., 79 South Horton St., Seattle, Washington 98134
- Smith-Berger Manufacturing Corporation, 3236 16th Avenue S.W., Seattle, WA 98134
- WINDOWS**
- Kearfoot Marine Products, A Singer Co., 550 South Fulton Avenue, Mt. Vernon, N.Y. 10550
- WIRE AND CABLE**
- Anixter Bros., Inc., 4711 Golf Road, One Concourse Plaza, Skokie, Illinois 60076
- Seacoast Electric Supply Corp., 225 Passaic St., Passaic, NJ 07055
- Seacoast Electric Supply Corp., 1505 Oliver St., Houston, TX 77007
- WIRE ROPE—Slings**
- Armo Steel Corp., 703 Curtis St., Middletown, Ohio 45042
- Bethlehem Steel Corp., One State Street Plaza, N.Y. 10004
- ZINC**
- Smith & McCorken, 153 Franklin St., New York, N.Y. 10013

This directory section is an editorial feature published in every issue for the convenience of the readers of MARITIME REPORTER/Engineering News. A quick-reference readers' guide, it includes the names and addresses of the world's leading manufacturers and suppliers of all types of marine machinery, equipment, supplies and services. A listing is provided, at no cost for one year in all 24 issues, only to companies with continuing advertising programs in this publication, whether an advertisement appears in every issue or not. Because it is an editorial service, unpaid and not part of the advertisers contract, MR/EN assumes no responsibility for errors.

U.S. SHIP CONSTRUCTION CONTRACTS

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

Builder	Owner	Total No.	Type	Hull Nos.	Est. GT (Each)	Est. DWT (Each)	Est. HP (Each)	Est. Total Cost (\$Mil.)
American Ship Building	Interlake Steamship	1	Bulk	909	32,000	59,000	D-16,000	50.0
Avondale Shipyards	American President Lines	3	Container	2329-31	40,500	30,300	D-43,200	330.0
	Suwanee River	3	Tug/Barge	2323-8	16,000	41,300	D-18,200	111.6
	Ogden Marine	2	Products	2318-19	25,000	42,000	D-15,000	100.0
	Eagle Dredging	1	Dredge	2320	4,200	4,900	D-7,500	30.0
	Corps of Engineers	1	Dredge	2322	9,900	8,000	D-10,400	67.5
	United States Trust	1	Dredge	2332	—	—	—	30.0
Bath Iron Works	Corps of Engineers	1	Dredge*	402	6,000	—	D-7,000	65.0
	Falcon I Sea Transport	2	Tanker	403-4	24,000	33,900	D-14,720	142.0
	Calif. & Hawaii Sugar	1	Barge*	405	21,000	37,000	—	25.0
Bay Shipbuilding	Goodyear Steamship	1	Bulk	724	12,000	23,500	D-7,500	25.0
	Ogelbay Norton	1	Bulk	726	33,000	50,000	D-14,000	52.4
	Beker Shipping	1	Bulk Barge	728	20,000	41,000	—	NA
	Universal American Barge	1	Bulk Barge	729	17,500	33,000	—	NA
	Ocean Barge	1	Bulk Barge	730	17,500	33,000	—	NA
Bethlehem-Sparrows Point	Artemis Marine	1	Tug/Barge	4652	32,000	47,000	D-18,200	52.6
	First-Fifth Tug/Barge	5	Tug/Barge	4653-7	32,000	47,000	D-18,200	266.0
Equitable Shipyards	City of New York	2	Ferry	1713-14	3,000	4,200	D-7,800	30.0
General Dynamics-Quincy	Bulkfleet Marine	2	Tug/Barge	055-6	12,000	27,000	D-8,000	NA
	Coastwise Shipping	3	Tank Barge	023-5	—	—	—	NA
	New England Electric	1	Collier	—	23,500	36,000	T-12,000	60.0
Levingston Shipbuilding	Asco Falcon I	3	Bulk	751-3	23,500	36,000	D-14,800	120.0
Mangone Shipbuilding	Sun Transport	1	Products	129	1,600	2,300	D-1,900	NA
National Steel & SB	Union Oil	3	Products	415-17	24,500	37,500	T-13,000	150.0
	American Tankships	2**	Products	419-20	24,500	37,500	D-11,400	102.0
	American Trading Trans.	3	Products	424-6	27,000	44,000	D-11,400	153.0
Norfolk Shipbuilding	Corps of Engineers	1	Dredge	178	2,750	—	D-2,250	18.5
Sun Ship, Inc.	Sun Transport	1	Products	677	17,000	31,000	D-14,200	36.0
	Waterman Steamship	3	RO/RO-Cont.	679-80, 82	18,500	23,500	T-32,000	207.1
Upper Peninsula SB	State of Michigan	1/4	Tug(1)/ Barge(4)	001-5	5,400	10,000	D-8,000	35.5

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

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

Builder	Owner	Name	Type	Delivery
Alabama Maritime	Diamond M	Diamond M. Hunter	Semisub.	11/81
Mobile, Ala.	"	Diamond M. Eagle	"	4/82
Baker Marine	Huthnance Dig.	Charger I	Jackup	6/81
Ingliside, Texas	Huthnance Dig.	Charger II	"	9/81
	Magnum Marine	Mr. Demp	"	11/81
	Magnum Marine	Robert N. Haskin	"	5/82
	Magnum Marine	Robert W. Womack	"	6/82
	Marine Drilling	J. Storm XV	"	3/81
Bethlehem Steel	Broughton Offshore	Broughton II	Jackup	3/81
Beaumont, Texas	Griffin-Alexander	Griffin-Alexander I	"	4/81
	"	Griffin-Alexander II	"	6/81
	"	Griffin-Alexander V	"	5/82
	"	Griffin-Alexander VII	"	9/82
	Houtech Energy	Houtech I	"	8/81
	"	Houtech II	"	10/81
	"	Houtech III	"	3/82
	"	Houtech IV	"	9/82
	Marine Drilling	J. Storm XVI	"	7/81
	"	J. Storm XVII	"	9/81
	O & U Drilling	(unnamed)	"	1/82
Bethlehem Steel	Houston Offshore	Sabine III	Jackup	6/81
Sparrows Point, Md.	Griffin-Alexander	Griffin-Alexander III	"	10/81
	"	Griffin-Alexander IV	"	3/82
	"	Griffin-Alexander VI	"	6/82
	Temple Drilling	Cheyenne	"	4/82
General Dynamics	Bailey & Shannon Inc.	Bill Bailey	Jackup	10/81
Charleston, S.C.	"	Bob Warner	"	12/81
Ingalls Shipbuilding	Transworld Drilling	Transworld 69	Submersible	6/81
Pascagoula, Miss.	"	Transworld 70	"	8/81
	"	Transworld 72	"	11/81
	"	Transworld 73	"	2/82
	Bonito Offshore	Bonito I	Jackup	3/82
	Chiles Drilling	Yucatan	"	9/81
	Global Marine	Glomar Main Pass I	"	11/81
	"	Glomar Main Pass II	"	1/82
	"	Glomar Main Pass III	"	5/82
	"	Glomar Main Pass IV	"	9/82
	Huthnance Drilling	Vanguard I	"	7/81
	"	Vanguard II	"	10/82
	Keyes Offshore	Keyes 300	"	3/81
	"	Keyes 301	"	5/81
	"	Keyes 302	"	6/81
	"	Keyes 303	"	7/82
Levingston Shipbuilding	Dixilyn-Field	DF-87	Jackup	4/81
Orange, Texas	Noble Drilling	Ed Holt	"	10/81
	"	(unnamed)	"	12/82
	Compania Perforadora	(unnamed)	"	5/82
Marathon LeTourneau	Chiles Drilling	Seabee	Jackup	3/83
Brownsville, Texas	Global Marine	Glomar High Island V	"	3/81
	"	Glomar Adriatic I	"	7/81
	"	Glomar Adriatic II	"	10/81
	"	Glomar Adriatic IV	"	8/83
	Penrod Drilling	Penrod 86	"	2/82
	"	Penrod 88	"	5/82
	"	Penrod 90	"	8/82
	Rowan Drilling	(unnamed)	"	12/82
Marathon LeTourneau	Penrod Drilling	Penrod 87	Jackup	5/82
Vicksburg, Miss.	"	Penrod 89	"	9/82
	"	Penrod 91	"	1/83
	Rowan Drilling	Charles Rowan	"	3/81
	"	Arch Rowan	"	6/81
	"	Gilbert Rowe	"	10/81
	"	Cecil Provine	"	3/82
	"	(unnamed)	"	9/83
	"	(unnamed)	"	1983

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

Builder	Owner	Name	Type	Delivery
	Rowan Drilling	(unnamed)	Jackup	1984
Vemar Shipyard	Atwood Oceanics	Richmond	Submersible	9/81
Channelview, Texas	Cliffs Drilling	(unnamed)	Jackup	7/81
	"	(unnamed)	"	11/81
	Penrod Drilling	Penrod 170	Submersible	12/81
	"	Penrod 171	Submersible	4/82
	"	Penrod 172	Submersible	8/82

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

Builder	Type	Navy Nos.	No.	Est. Contract Value, \$Mil.
Avondale Shipyards	Fleet Oiler	AO-178-9	2	\$144.0
	"	AO-180, 186	2	146.2
Bath Iron Works	Guided-Missile Frigate	FFG-21, 24, 26	3	178.2
	"	FFG-29, 32, 34	3	147.0
	"	FFG-36, 39, 42	3	209.9
	"	FFG-45, 47, 49	3	203.0
Boeing Marine Systems	Missile Patrol Hydrofoil	PHM-2	1	21.3
	"	PHM-3-6	4	178.0
GD-Electric Boat	Attack Submarine	SSN-698-9	2	856.0
	"	SSN-700-4	5	2,171.4
	"	SSN-705-10	6	2,605.6
	"	SSN-719-20	2	—
	Trident Submarine	SSBN-726	1	285.4
	"	SSBN-727-9	3	699.4
	"	SSBN-730	1	354.5
	"	SSBN-731-2	2	699.0
	"	SSBN-733	1	401.0
Ingalls Shipbuilding	Missile Destroyer	DDG-993-6	4	1,400.0
	Destroyer	DD-997	1	231.0
	Aegis Missile Cruiser	CG-47	1	287.8
Lockheed Shipbuilding	Sub. Tender	AS-41	1	209.5
	Dock Landing Ship	LSD-41	1	338.6
Marinette Marine	Fleet Ocean Tug	T-ATF-171-2	2	16.8
National Steel & SB	Destroyer Tender	AD-42-4	3	520.0
	Cable Repair Ship	T-ARC-7	1	107.0
Newport News SB	Attack Carrier	CVN-70-71	2	1,718.6
	Attack Submarine	SSN-711	1	111.4
	"	SSN-712-15	4	388.0
	"	SSN-716-18	3	380.8
Peterson Builders	Patrol Gunboats**	F-PGG-2-9	8	70.1
Tacoma Boatbuilding	Missile Patrol Chaser**	F-PCG-1-4	4	52.5
	Med. End. Cutter*	WMEC-901-4	4	130.0
Todd-San Pedro	Guided Missile Frigate	FFG-14	1	48.7
	"	FFG-19, 23, 25	3	151.0
	"	FFG-27, 30, 33	3	147.0
	"	FFG-38, 41, 43	3	214.8
	"	FFG-46	1	67.7
Todd-Seattle	Guided-Missile Frigate	FFG-18	1	49.6
	"	FFG-20, 22	2	100.7
	"	FFG-28, 31, 35	3	147.0
	"	FFG-37, 40	2	143.2
	"	FFG-44, 48	2	135.3

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

WARNING CALL YOUR ELECTRICIAN

Your building may have one of these Federal Pacific Circuit Breakers which need to be replaced, or field modified:

NEJ/HEJ NFJ/HFJ NEG/HEG NEF NP

Under certain conditions these breakers could cause personal injury or property damage.

FPE circuit breakers are most likely to be found in enclosures marked FPE. However, they *may* also be found in *some* enclosures made by other manufacturers.

THEY WILL NOT BE FOUND IN ENCLOSURES MARKED GE, WESTINGHOUSE, ITE, SQUARE D, AND CUTLER-HAMMER.

Because of the difficulty in identifying these devices, have your on-site electrician or facility engineer review the following chart to determine if you have any of these FPE Breakers.

Identification chart of breakers involved in corrective actions

BREAKER TYPE	AMPERE RANGE	POLES	VOLTS A.C. RATING MAX.	TYPE OF FACILITY	CORRECTIVE ACTION REQUIRED
NEJ/HEJ	70-225	2 & 3	240	Light Industrial	REPLACE BREAKERS
NFJ/HFJ	70-225	2& 3	600	Industrial	REPLACE BREAKERS INSTALLED ON ELECTRICAL SYSTEMS ABOVE 550 VOLTS
NEG/HEG	30-100	2 & 3	600	Heavy Industrial	MODIFY BREAKERS INSTALLED ON 480 VOLTS OR ABOVE. MODIFY BREAKERS INSTALLED IN FPE ENCLOSURES 1100T.
NEF	40-100	2 & 3	480 600	Commercial and Industrial	REPLACE BREAKERS
NP	600-2500	2 & 3	600	Large Electrical Distribution Systems	REPLACE BREAKERS INSTALLED ON ELECTRICAL SYSTEMS WITH AVAILABLE FAULT CURRENTS ABOVE 85,000 AMPERES AT 240 VOLTS OR 50,000 AMPERES AT 480 AND 600 VOLTS OR WHERE ROUTINELY USED AS A SWITCH

This is part of a program voluntarily initiated by Federal Pacific. The Consumer Product Safety Commission has been notified. Lab tests have indicated that these Circuit Breakers could cause personal injury or property damage. Federal Pacific will respond as soon as possible by phone or mail. Allow 6 weeks for this preliminary contact.

If your electrician finds you have these FPE breakers in service, or if he is uncertain, please call, toll free: 800-526-3962 (In New Jersey: call collect: 201-526-1330).

Yes. We have _____ breakers in use. MR
 Please have an FPE engineer contact us.
 Name _____
 Title _____
 Company _____
 Address _____
 Phone _____



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272

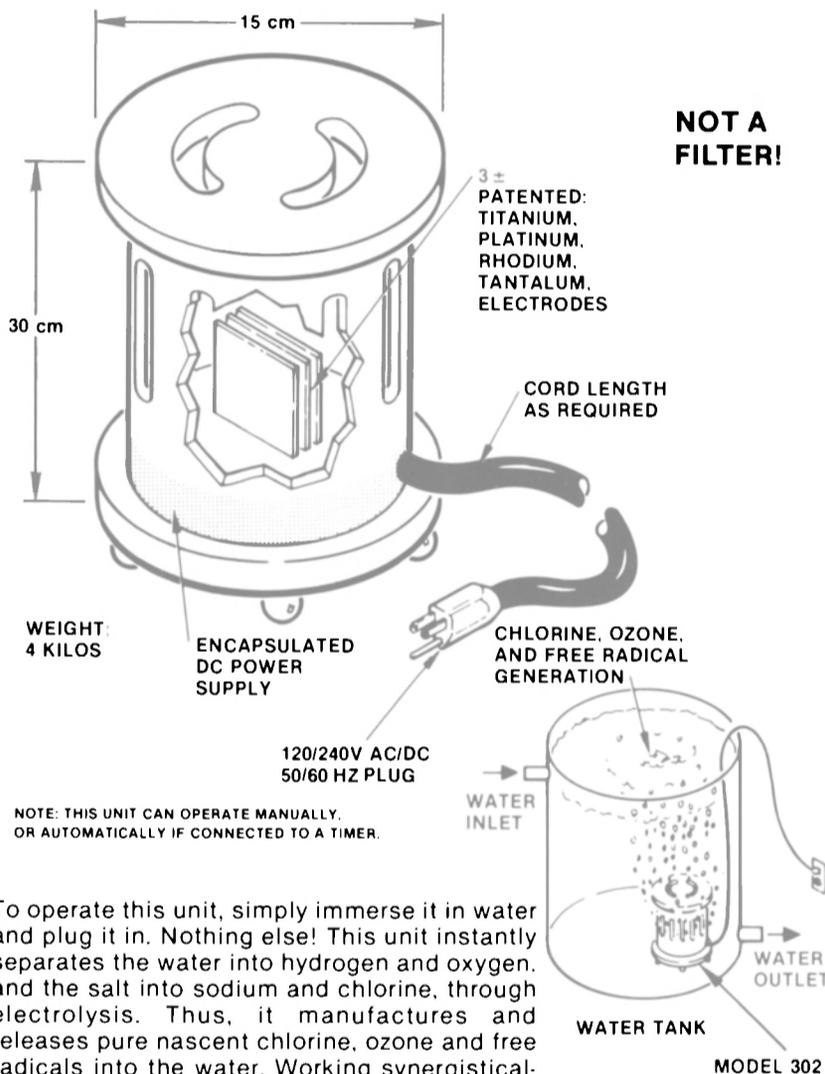
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● BACTERIA-FREE WATER ● PATHOGEN-FREE WATER ● STERILE WATER WITHOUT FILTERS, CHEMICALS, ULTRA VIOLET LIGHTS, BOILING, REVERSE OSMOSIS, ETC.!

A NEW AND SCIENTIFICALLY PROVEN WAY TO KILL ALL WATER-BORNE BACTERIA, INSTANTLY AND AUTOMATICALLY!

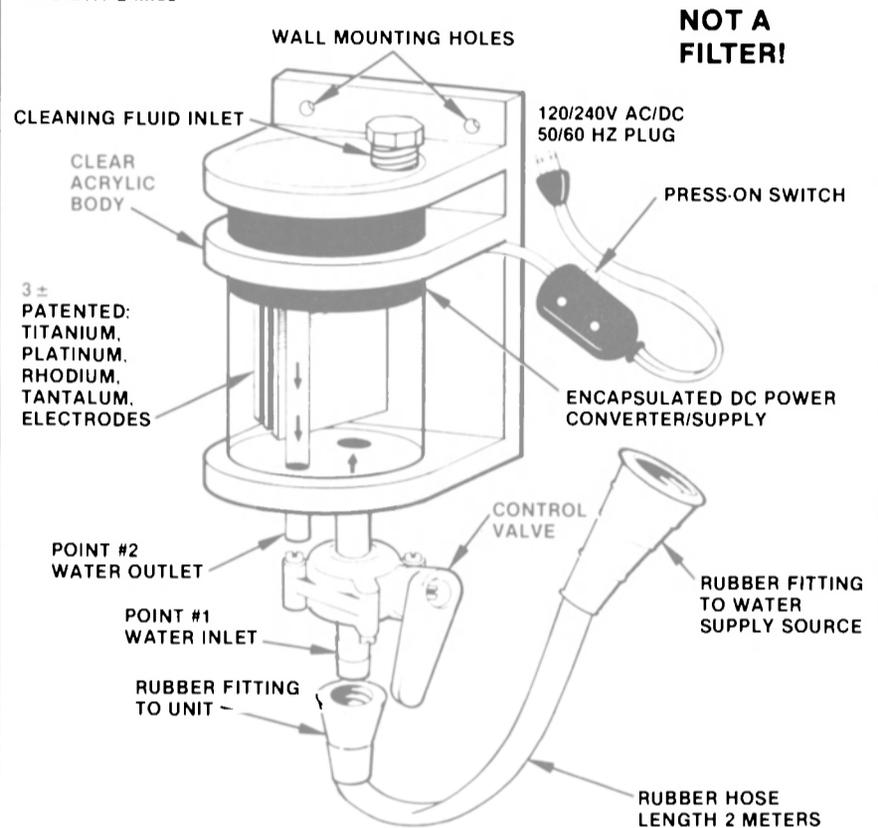
The fastest, easiest, most economical way to sterilize water for homes, industries, hospitals, marine uses, laboratories, agriculture, sewage, and a myriad of other uses and applications without altering the color, taste, odor or texture of the water!

STER-O-LIZER Model 302



To operate this unit, simply immerse it in water and plug it in. Nothing else! This unit instantly separates the water into hydrogen and oxygen, and the salt into sodium and chlorine, through electrolysis. Thus, it manufactures and releases pure nascent chlorine, ozone and free radicals into the water. Working synergistically, these halogens are known to be a powerful germicidal agent, capable of instantly destroying all water-borne bacteria, rendering the water pathogen-free, sterile and safe for human consumption. It may also be used for sterilization of livestock water, food processing and a myriad of other applications. For drinking purposes, where the water contains about 50 ppm salt, capacity of Model 302 is about 200 liters per half-hour (10,000 liters per 24-hour day of continuous operation). Electrical consumption is 15 amps at 120 V, and 30 amps at 240 V, AC/DC 50-60 Hz. If water contains more than 50 ppm salt, consult the factory for modification to accommodate salt content. Higher salt content increases sterilizing capacity.

DIAMETER 10 cm
HEIGHT 20 cm
WEIGHT 2 kilos



STER-O-LIZER Model 310

CAPACITY:
4 liters per minute
6,000 liters per day

STER-O-LIZER Model 320

CAPACITY:
8 liters per minute
12,000 liters per day

To operate this unit, simply introduce running water which contains no more than 50 ppm salt at point #1. Plug it in and press the switch. Nothing else. The water will exit at point #2 free of all water-borne bacteria, pathogen-free, sterile, ready for immediate human consumption, or it can be stored for later use. If the water contains more than 50 ppm salt, the factory can adjust this unit to take up to 30,000 ppm salt. The process used is electrolysis of the water and its salt. The patented electrodes generate nascent chlorine, ozone and free radicals, known as a powerful germicidal agent. Electrical consumption is from 6 to 20 amps.

FEATURES OF THE STER-O-LIZERS:

- INFINITE USES AND APPLICATIONS ● SUPERIOR CONSTRUCTION
- NO MOVING PARTS ● NOTHING TO ADJUST OR WEAR OUT ● MAINTENANCE FREE
- AMAZINGLY SIMPLE AND EFFECTIVE BACTERIA KILLER ● MIRACLE OF MINIATURIZATION
- IT REPLACES BULKY SYSTEMS COSTING MANY TIMES MORE TO BUY, OPERATE AND MAINTAIN

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Simrad designs and builds every piece of marine electronic equipment to meet the most stringent legal requirements not only of the U.S. Government but all over the world. Important? Yes. But not as important as the everyday safety of your boat and your crew. So Simrad goes beyond legal requirements to make sure that your electronics are accurate, reliable, tough and easy-to-use. Quality that you can depend on, and economical so that you can afford to have all the protection that you and your crew deserve.

Simrad can help you pass IMCO inspection... and much more!

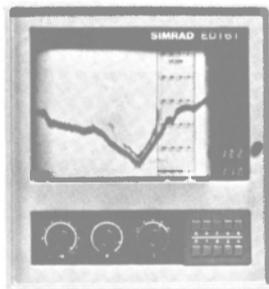
Simrad Loran C's are designed and manufactured to meet or exceed the U.S. Coast Guard endorsed RTCM Minimum Performance Standard (MPS).



TL-856 Loran C Navigator automatically computes and displays TD's, Lat/Long, course, ground speed, time and distance to any of ten waypoints, as well as cross-track error. It can acquire and track all Loran C masters and secondaries worldwide. Four tunable and two preset notch filters for professional performance even in high interference areas. *TL-856 makes it all simple.*



2182 KHz Watch Alarm Receiver. Simrad's new, compact, FCC approved Watch Alarm Receiver, RW 105, fulfills all legal requirements of the new IMCO/SOLAS Regulations. The RW 105 also meets the specifications for most other maritime regulatory agencies. It can be set to receive all transmissions on the 2182 KHz distress frequency or automatically mute all but distress signals preceded by the two-tone alarm. An internal digital clock lifts the mute during radio silence periods. Connection for optional tape recorder or remote speaker, and built-in test generator are standard. *Easily fits into limited space.*



New Digital Recording Sounders. Simrad offers two economical navigation recording echosounders that meet IMCO recommendations for merchant vessels. In addition to showing a well defined bottom on recording paper, the systems have independent digital depth indicators and depth alarms. The Simrad ED-161 has four recording ranges from 0-25 to 0-550 fathoms. For navigating in shallower waters, the 200 KHz ED-162 has four ranges from 0-30 feet to 0-250 fathoms. The optional IR-201 Remote Digital Analog Indicator displays depth in feet, meters and fathoms. An optional transducer selector with alarm (TS-101) allows use of up to four transducers. Due to Simrad's special engineering, some vessels can be retrofitted from inside the hull without having to drydock. Contact Simrad for details.



TL-838 Loran C Receiver simultaneously displays two lines of position from automatically acquired and tracked masters and all available Loran C secondaries. TL-838 has four tunable and two preset notch filters for outstanding performance, worldwide. It incorporates a three point memory, and *very fast acquisition and settling.*



Loran C Coordinate Converter Model TC-28A adds total navigation functions to most Simrad Loran C Receivers. Converts TD's to Lat/Long, memorizes up to ten waypoints and calls up course and distance to any of them. Computes and displays on command time to destination and cross-track error. Installs directly on TL-838 or separately with other Simrad models. *Makes them all navigators.*



Two IMCO approved automatic direction finders, the TD-A202B and the TD-C328HATS (shown), are now offered by Simrad. The TD-A202B has frequency ranges of 200-580 KHz beacon band and 1.5-2.8 MHz marine band. The TD-C328HATS has a range of 200 KHz to 13.5 MHz. Both are highly sensitive superheterodyne receivers. *They lock in fast.*

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