

MARITIME REPORTER AND ENGINEERING NEWS

J. E. O'MALLEY
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NEW YORK, N.Y. 10021

MC

OTC - '82

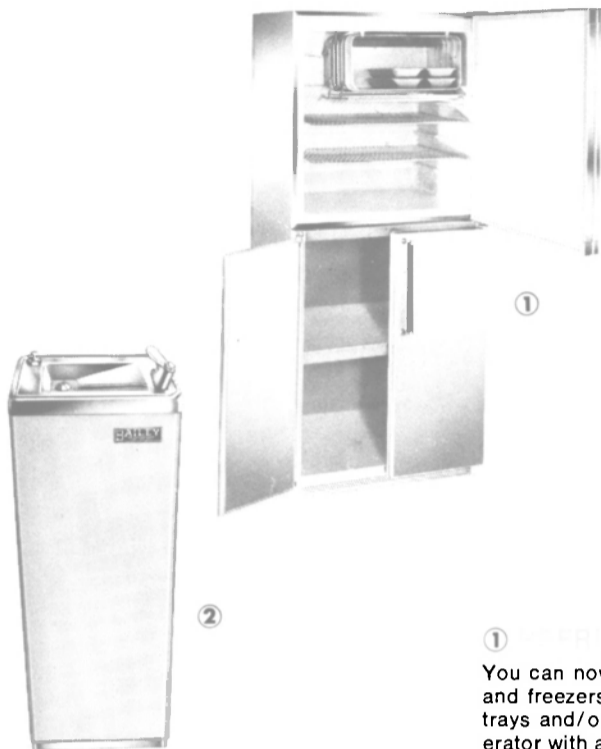
Shell's Cognac Platform — OTC Award Winner

SPECIAL PREVIEW ISSUE

APRIL 1, 1982

(SEE PAGE 4)

LATEST BAILEY MODELS especially for marine use



①

You can now combine these units in less than 5 cu. ft. of floor space. Capacity of refrigerators and freezers is 6 cu. ft., storage units of 11 cu. ft. A refrigerator with ample space for ice cube trays and/or frozen foods is ideal for officers' quarters. For mess or galley, combine a refrigerator with a storage unit or a freezer. If you need 12 cu. ft. of either refrigerator or freezer space, combine two similar units using our optional stacking frame with functional air grille to save valuable deck space.

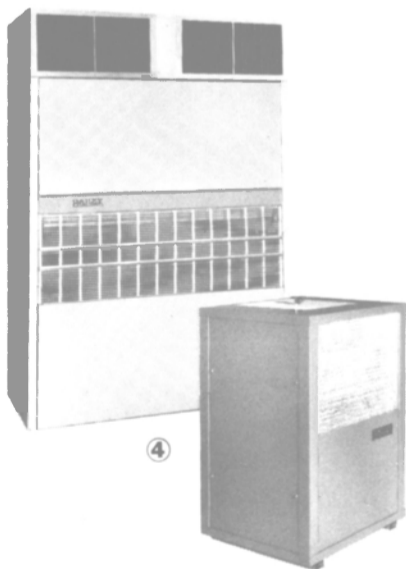
We also have a complete line of standard, portable and under-counter refrigerators from 4 to 102 cu. ft., AC or DC. AC units with blower-type evaporators are self-defrosting. All units rat-proofed in accordance with U.S. Health Service requirements.



②

Model B12N has an easy-to-clean top, a recessed rust-resistant base and mounting brackets for bolting cooler to the deck, all of stainless steel. Panels are of pearl gray baked-on enamel finish but are also available in stainless steel at slight extra cost.

Cooler capacity is 12 gals. of 50°F. water per hour. Bubbler has a built-in pressure regulator assuring an even flow of water at line pressures of 20 to 125 psi.



③

BAILEY Kold-Draft* Ice Cubers, occupying only 7½ sq. ft. of floor space, have a capacity of up to 1,200 lbs. per 24 hours. Add-A-Unit feature permits increasing this capacity without using more floor space. All models compensate for a 15° roll and/or pitch. Units have a special condenser, valves and fittings, permitting salt water to be used for cooling.

Models are in gray acrylic baked-on enamel; stainless steel finish is an optional extra. Daily capacities range from 110 to 1,200 lbs. using ice storage bins. Immediate delivery of complete units or repair parts from any of our four warehouses.

*Reg. TM Uniflow Mfg. Co.

④

Water-cooled, self-contained units have cabinets of heavy gauge steel, protected with rust inhibiting primer possessing excellent water immersion, salt spray and humidity resistance. Finish is neutral beige, baked enamel. In 3, 5, 7½ and 10 ton models, AC or DC.

Smaller models (AC only) are available for areas where deck space is at a minimum. Whereas other models must allow several inches for breather space, these fit flush against the bulkhead because the permanent-type, air return filter is in the front and the directional, controllable air discharge grille is on the top. In models ranging from 9,400 to 27,500 BTU/hr capacity, they are self-contained and sea water cooled. May be installed easily and inexpensively anywhere on a ship.

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PROTECTION**

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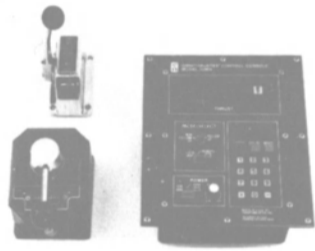


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Micro-Processor Control System, Model 1200A with gyro input . . . holds vessel's heading. System also accepts compatible NAV/AIDS fore-aft and slow-speed propulsion and positioning.

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Write for: OMNITHRUSTER Modular System — Technical Data Bulletin XX

PV950 800HP
MODULE THRUSTER



*Covered by U. S. Patents:
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ON THE COVER

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\$166-Million Amphibious Assault Vehicle Contract To FMC Corporation

FMC Corporation, Ordnance Division, San Jose, Calif., has been awarded a \$166,719,542 cost-plus-incentive-fee contract for fiscal years 1981 and 1982 conversion and modernization of 167 LVT7 Amphibious Assault Vehicles to LVT7A1 configuration plus the procurement of associated equipment and the procurement of two new production LVT7A1 vehicles. Work will be performed at San Jose. The Naval Sea Systems Command, Washington, D.C., is the contracting activity. (N00024-82-2010)

Gulf Intracoastal Seeks Title XI For 3 Barges Costing \$3 Million

Gulf Intracoastal Marine, Inc., of Baton Rouge, La., has applied for a Title XI loan guarantee to aid in financing three tanker barges.

The vessels are 304, 285, and 280 feet long, respectively. They were delivered last year by St. Louis Ship, a division of Pott Industries, Inc., St. Louis, Mo., and were designed for operation on the U.S. inland waterways. If approved, the guarantee would cover \$2,397,000, or 75 percent of the vessels' combined total cost of \$3,196,000.

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\$6-Million Parts Contract Awarded To Raytheon

The Raytheon Company, Sudbury, Mass., has been awarded a \$6,567,186 cost-plus-fixed-fee contract for procurement of guidance system components used in the Navy's Fleet Ballistic Missile Program. The Navy's Strategic Systems Project Office, Washington, D.C., is the contracting activity. (N00030-82-C-0061)

Van der Mark Changes Name To Diesel Marine

Van der Mark B.V. of Rotterdam, Netherlands, has changed its name to Diesel Marine Rotterdam B.V., shortly after moving into larger premises in the Botlek area of the port.

At its new location, Diesel Marine Rotterdam will maintain large stocks of exchange pistons, cylinder covers, exhaust valves and seats, together with replacement piston rings and fuel injection spares. A port engineering service also is provided.

With **Leo Engelan** as general manager, the company is a member of the recently formed Diesel Marine International Ltd., a group of companies specializing in reconditioning and exchange of main diesel engine components. The group includes U.K.-based Lockwood, Torday and Carlisle Ltd., Diesel Krome Engineering B.V. and Van der Horst B.V. of Holland, and Diesel Marine A/S of Norway.

To obtain free literature on the Diesel Marine International Ltd. companies, including specifics on their facilities and services,

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Halter To Build Two Tug/Supply Vessels For Petromar Offshore

Halter Marine, Inc., New Orleans, La., and the Petromar Offshore Corporation, Rockport, Texas, has signed a contract for the construction of two 192-foot tug/supply vessels. Both will be delivered in the fourth quarter of 1982.

When completed, the new boats will bring Petromar's fleet to a total of 16 tug/supply vessels all of which are Halter built.

The new vessels will be named the Petromar Princess and the Petromar Odyssey. Each will be 192 feet 6 inches long with a molded beam of 40 feet and molded depth of 15 feet. Each will be powered by two EMD 12645E7BA turbocharged diesel engines developing 2,305 hp each at 900 rpm. They will be equipped with a Smatco 92DAW towing winch and stern roller for towing and anchor handling.

Petromar currently operates four 3,000-bhp, 192-foot by 40-foot tug/supply boats, two 4,610-bhp, 192-foot by 40-foot tug/

supply boats, and four 3,000-bhp, 185-foot by 40-foot tug/supply boats. All are designed to work in international waters and all are equipped for towing and anchor handling.

Four 3,900-bhp, 185-foot tug/supply boats are under construction for Petromar at Halter's New Orleans division, and the two new vessels will be built at Halter's Chickasaw, Ala., shipyard.

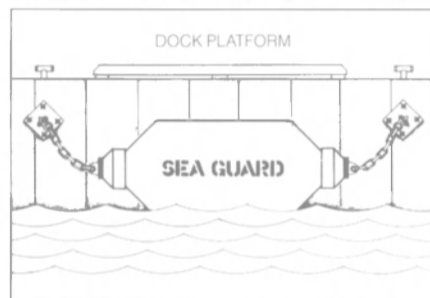
Announce Two Promotions At Cameron Iron Works Oil Tool Division

Cameron Iron Works, Inc., Houston, Texas, today announced the promotion of **Clinton S. Kubena** to manager of marketing administration, oil tool division. Mr. **Kubena** was most recently the division's technical marketing manager.

Charles E. Curtis Jr. was named to succeed Mr. **Kubena** as technical marketing manager.

Prior to his most recent promotions, Mr. **Kubena** served as sales manager of marine systems in Houston; district manager, Cameron Iron Works Scandinavia; technical director, Cameron Iron Works de France, S.A.; and manager of technical services, Cameron Iron Works, Ltd. in the U.K.

SEA GUARD™ fenders give old dock facilities a new lease on life. Our SEA GUARD is a tough, superbly engineered dock fender that can turn old, non-productive dock facilities into highly productive assets. Its closed-cell foam interior allows it to absorb high berthing energy impacts with low reaction forces, providing both dock structures and vessel hulls with a rugged protection like they've never had before.



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**ASNE-Delaware Valley
Tours Computer-Aided
Design Facility at Lehigh**

The ASNE-Delaware Valley Chapter, Philadelphia, Pa., held its recent meeting at the Packard Laboratory of Lehigh University, Bethlehem, Pa.

Members and their guests traveled by chartered bus from the

Philadelphia Naval Base to Lehigh for a presentation by Professor Oats who described the university's course in the use of computer-aided design and drafting. The professor used slides to illustrate the equipment and techniques.

Following dinner and business meeting in the alumni dining room, the chapter members returned to the Engineering De-

partment where a tour was conducted of the CAD/CAM Uni-graphics equipment being operated by several students.

Gary Gray of the Macauto Company, whose CAD/CAM service was being demonstrated, explained some of the techniques of computer-aided design, computer-aided machining, and computer-aided drafting.

**Navidyne Names Jones
Marketing Vice President**

Navidyne Corporation, Newport News, Va., announced the promotion recently of Sanford Jones to the post of vice president, marketing. He assumes responsibility for the company's marketing effort for both new and existing products worldwide.



Sanford Jones

Mr. Jones joined Navidyne in 1979 as program manager for satellite communications. He was responsible for development of the company's most recent product—the ESZ-8000 Satellite Communicator—an advanced satellite communication terminal for service in the INMARSAT network.

Mr. Jones's background includes extensive experience in design and implementation of computer-based products for industrial and commercial use.

Navidyne is one of the leading manufacturers of marine electronic systems. The company's headquarters, engineering facilities, and manufacturing plant are located in Newport News, Va. Navidyne maintains a network of sales and service agents worldwide.

**Elect Stanley Kowleski
New President Of IMTA**

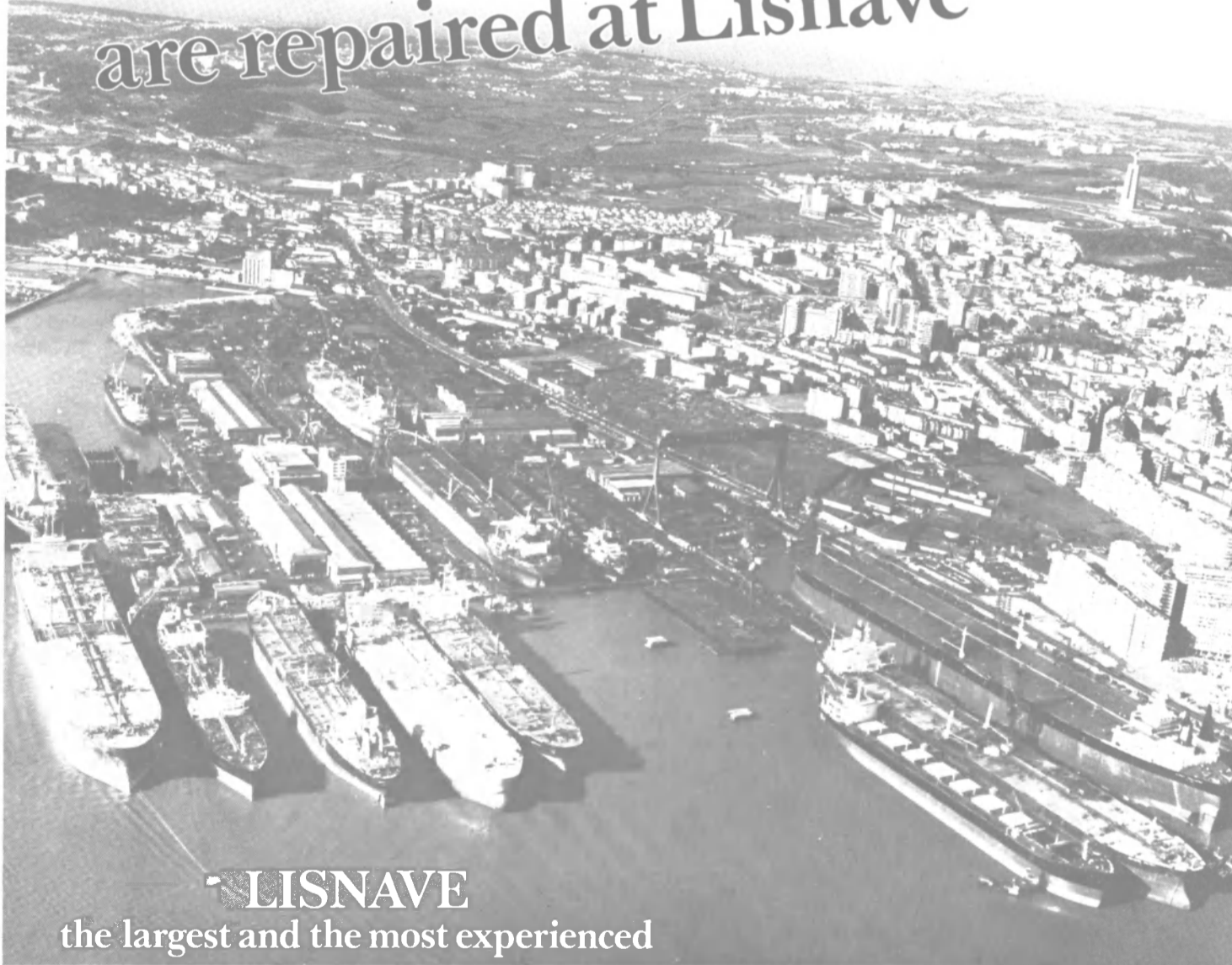
Stanley M. Kowleski, ferry transit manager for the Golden Gate Bridge, Highway, and Transportation District has been elected president of the International Marine Transit Association (IMTA).

The IMTA is an international organization representing ferry operations, naval architects, manufacturers, marine suppliers, shipyards, government agencies, marine consultants, and academia.

Mr. Kowleski joined San Francisco Ferry in 1971, with responsibility for planning, coordinating, and directing the expansion of passenger service. Previously, Mr. Kowleski was regional terminal manager with Matson Navigation and Terminal Company.

Mr. Kowleski announced that the 1982 international meeting will be held in San Francisco from November 9-11, 1982, at the Fairmont Hotel. The program will feature sessions on management operations, technology, financing, legislative and regulatory trends, and current research.

**20% of the tankers
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supplying crude oil to
Western Europe,
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LEVEL-SWITCHES—MARINE DUTY

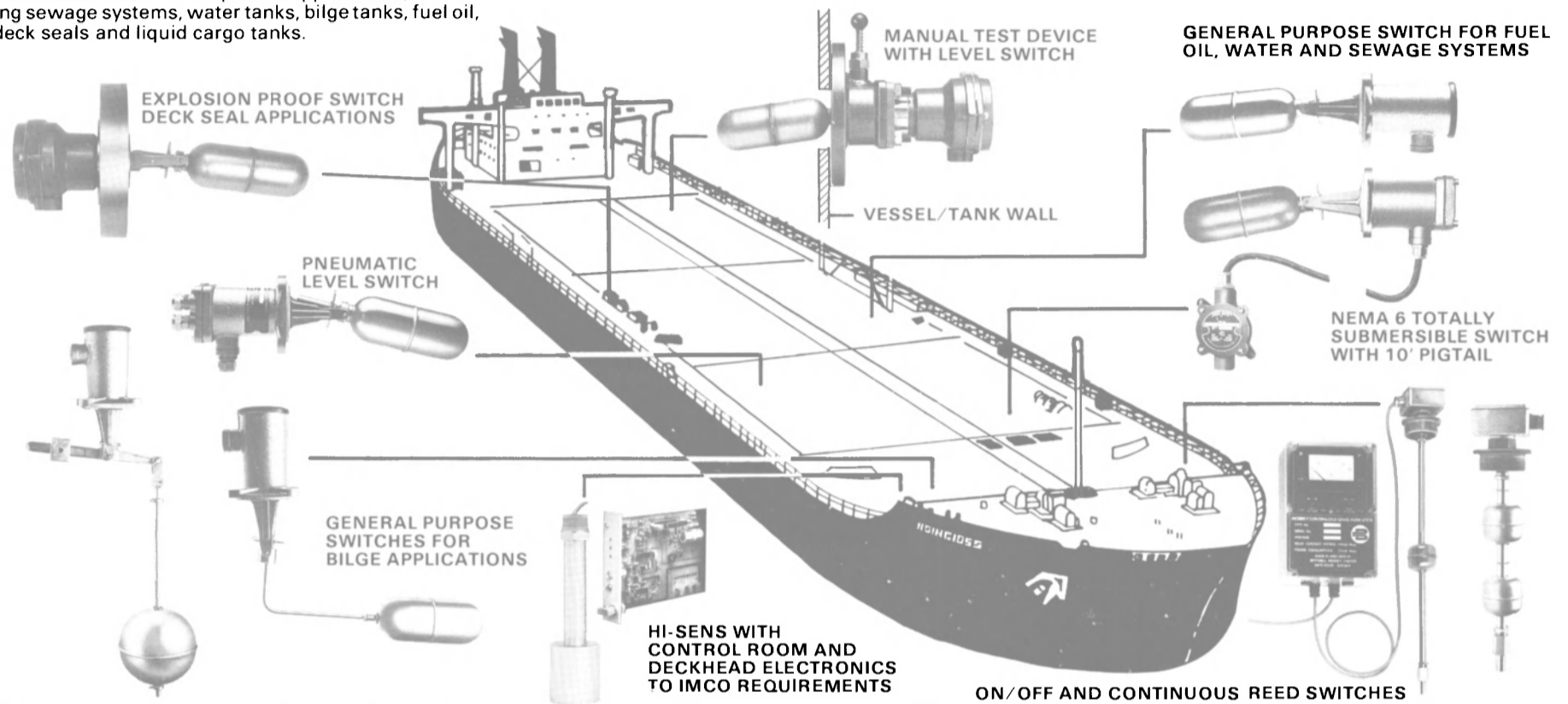
Bestobell Mobrey has an International reputation for the manufacture of a high quality range of controls and instrumentation for applications in almost every type of industry.

For the marine market they offer a comprehensive range of UL approved level switches accepted by the U.S. Coast Guard for Shipboard applications, including sewage systems, water tanks, bilge tanks, fuel oil, deck seals and liquid cargo tanks.

A manual test facility is available in accordance with U.S.C.G requirements, which may be fitted to the level switches to initiate high and low level alarms.

Bestobell Mobrey also offer a fully approved range of explosion proof level switches, displacer switches, and pneumatic switches.

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Bestobell has agents and subsidiary companies located in most countries throughout the world, who are technically capable of understanding details of Bestobell Mobrey products, and their applications within the Marine Industry.

It has taken many years to build an International Network of companies and agents, who were carefully selected for their high level of competence to successfully sell and service Bestobell Mobrey equipment world-wide.

FOR FURTHER INFORMATION CONTACT

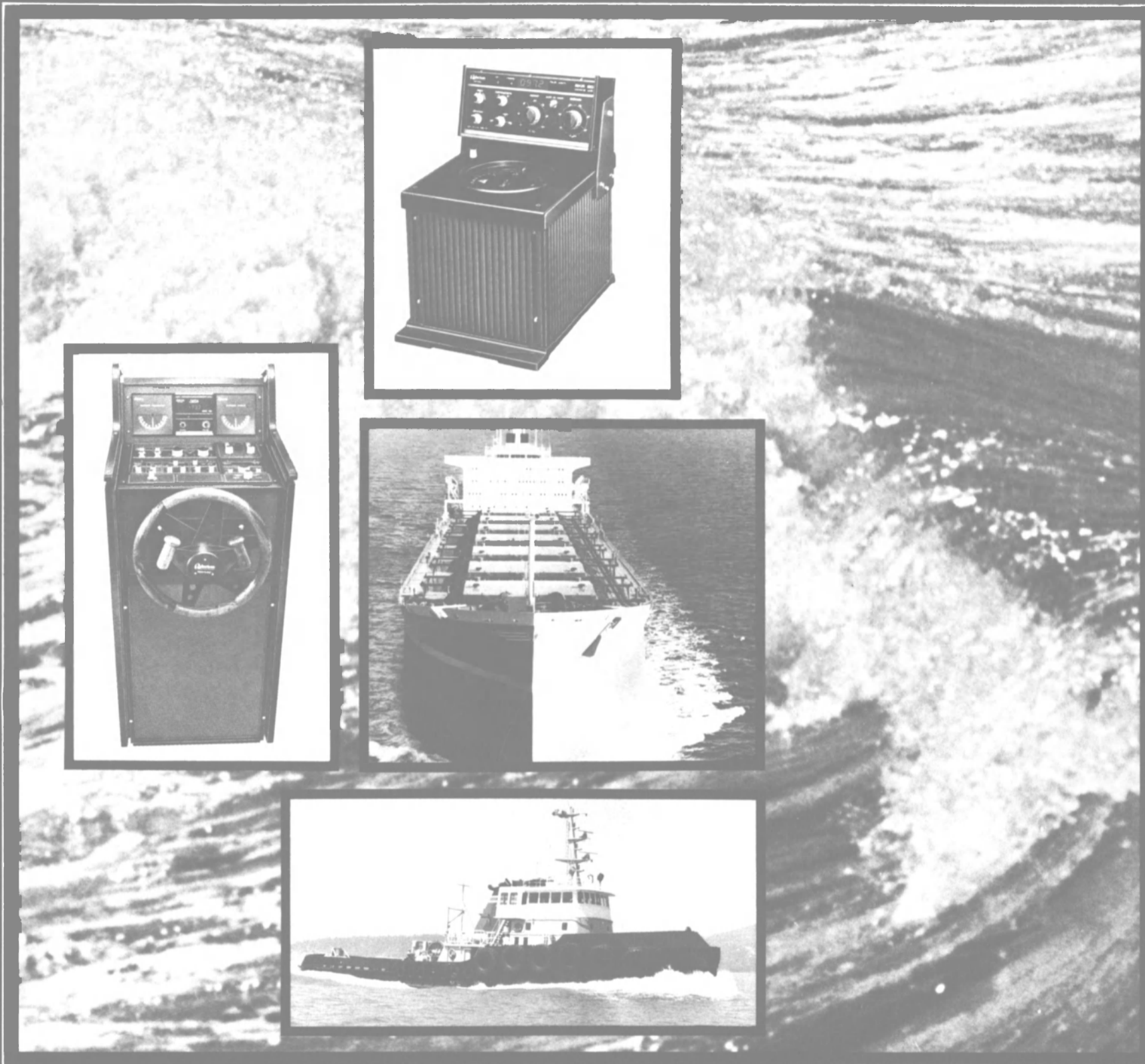
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The AP-8 pilot precisely steers under all weather and load conditions. Using patented aerospace technology, our air-suspended SKR-80 gyrocompass features very short settling time, extremely high dynamic accuracy and requires no periodic maintenance.

Robertson



The Kongsberg group, one of Norway's largest industrial organizations, has installed advanced electronics on board more than 50,000 vessels, advanced ARPA's, instrumentation and automation aboard more than 800.

This wealth of experience comes from an exceptionally broad background in design, engineering, quality control, manufacturing and distribution. Kongsberg has pioneered in development of shipboard systems such as weapons control for the Norwegian navy, dynamic positioning and maritime training simulators.

ROBERTSON

Steering systems ranging from simple yacht autopilots to the most complex, gyrocompass controlled modular steering stands. The SKR-80 gyrocompass features unique electronic design with servo control to provide extremely short alignment time and minimum error.

NORCONTROL

Navigation, automation, instrumentation and training systems. DataBridge includes collision avoidance, navigational, steering and load calculating systems. Complete instrumentation for unattended machinery spaces, control alarm systems, tank level and draft gauging systems. Maritime simulators for maneuvering and navigation, liquid cargo handling and ship propulsion plants. Complete Vessel Traffic Management systems for harbors and offshore platforms.

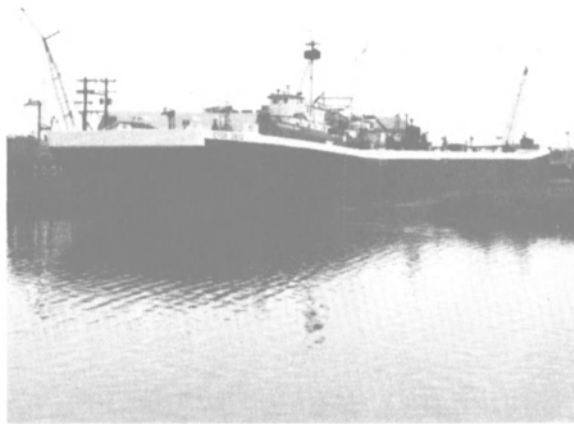
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Supports the offshore petroleum industry, providing a range of horizontal positioning reference and data processing and plotting services. Developed the Albatross series of dynamic positioning systems for virtually any type of offshore vessel and any configuration of power and thruster.

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Delta Delivers 235-Foot Tank Barge To Cenac Towing, Fifth Unit Built At New Facility



Delta Shipyard of Houma, La., recently delivered the tank barge CTCO-2602 (shown above) to Cenac Towing Co., Inc., also of Houma.

Delta designed and fabricated the 235 by 52 by 16-foot single-skin oil cargo barge for unlimited offshore service and built to ABS requirements.

The vessel has a cargo capacity of 26,000 barrels of crude oil cargo. Approximately 550 tons of steel was utilized in the vessel's fabrication. The barge is a sister vessel to Cenac Towing's CTCO-2601 which was fabricated by Delta and delivered in mid-1981.

The new barge is the fifth oil barge constructed by Delta Shipyard's new construction facility since its inception in 1980.



DELIVER SECOND GAS CARRIER—The 5,990-dwt liquified gas carrier *Gaz Nordsee* was delivered recently by Jos. L. Meyer shipyard Papenburg-Ems, Germany, to Friedrich A. Detjen GmbH & Co., of Hamburg. The second of a two-ship order, the *Gaz Nordsee* is under charter to Naftomar Shipping & Trading Ltd. The Germanischer Lloyd classed ship is powered by a B&W two-stroke diesel engine, model 6L 45GFCA, producing 4,350 kW—5,910 hp—at 175 rpm.

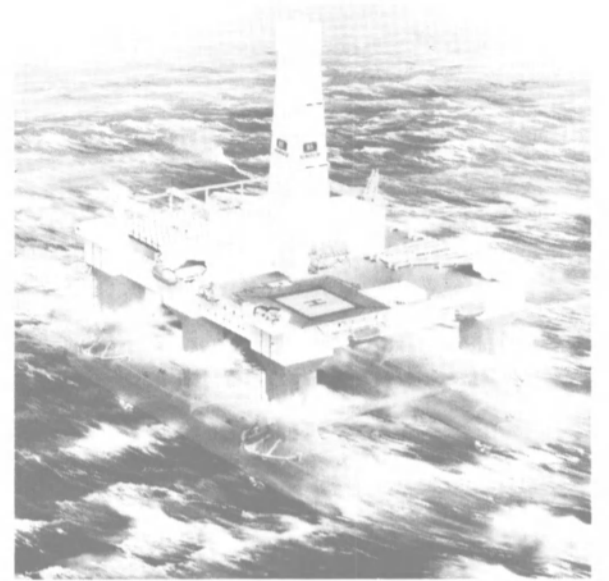
British Shipbuilders Introduces New Semisub Drilling Rig

The design of an advanced heavy-duty semisubmersible rig, capable of drilling in 4,921 feet of water and intended for worldwide use, has been announced by British Shipbuilders.

The BS 8000DP series is said to provide very advanced drilling techniques and can sustain itself on station for long periods even under severe arctic conditions.

The hull configuration is designed to minimize heave motion, to maximize load carrying, and to meet all current and proposed safety standards.

The rig, which is said to be economical to operate and maintain, also features a high payload at transit, operating and survival drafts; box-deck structure; below-deck



Artist's view of the new BS 8000DP series rig at sea.

storage for casing and drill pipe; and optional protected storage for risers.

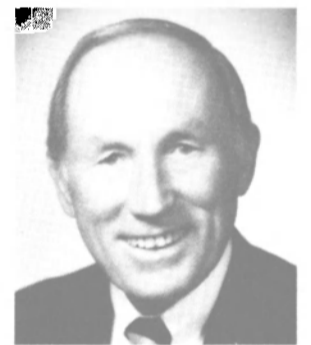
Full dynamic positioning equipment keeps the rig on station automatically. Physical and environmental data on wind speed, wave height, currents, and vertical reference to the seabed are obtained by sensors. The transponders are located on the ocean floor and retransmit pulses to hydrophones mounted on the ship's hull.

Information from the sensors, which is automatically fed to a computer, is converted to commands to the craft's thrusters or variable-pitch propellers which maintain the vessel on location without anchors.

Plant, Munroe Establish Naval Architectural And Marine Consulting Firm



Thomas G. Plant Jr.



Hugh F. Munroe

Thomas G. Plant Jr. and Hugh F. Munroe announced the establishment of Plant and Munroe, a division of Plant Contractors, Inc. The firm, headquartered in San Francisco, Calif., provides naval architectural and marine consulting services throughout the San Francisco Bay Area and the Pacific Basin.

The formation of Plant and Munroe extends an association of two well-known members of the maritime community that began in 1953 when Mr. **Plant**, then president of Plant Shipyard Corporation, Alameda, Calif., engaged Mr. **Munroe** as chief naval architect and manager of new construction.

Mr. **Munroe**, who will serve as division manager, has spent more than 30 years in marine engineering, design, and construction.

Following his shipyard experience, Mr. **Munroe** served 19 years with American President Lines. Following that, he served three years as project engineer with the marine projects group of Bechtel Corporation.

In 1978, Mr. **Munroe** was elected president of Morris Guralnick Associates, Inc., naval architects and marine engineering firm, the position he left recently to concentrate on the establishment of the new firm.

\$10-Million Overhaul Contract For USS Alamo Awarded To Arcwell Corp.

Arcwell Corporation, San Diego, Calif., has been awarded a \$10,328,577 firm-fixed-price contract for the overhaul and dry-docking of the USS Alamo (LSD-33). The Naval Sea Systems Command, Washington, D.C., is the contracting activity. (N62791-82-B-0029)

China To Build Nine Supply Vessels For Singapore Owners

The China Corporation of Shipbuilding Industry has been awarded a contract to build nine anchor handling tugs/offshore supply vessels for a joint venture of two Singapore owners. Timur Carriers and Selco Ltd. The contract will be signed in Hong Kong later this month by repre-

sentatives of the two owners, and by senior officials of CCSI.

The vessels will be built at Hudong Shipyard, Shanghai, with delivery to commence early in 1983. Five of the vessels will have main engines developing 6,000 hp, and the remainder will be of 4,000 hp. All will be equipped with anchor handling winch, extensive cement carrying capacity, fuel and water tanks, and passenger accommodation. They will be operated under the Singapore flag

by an operating joint venture to be set up by Timur and Selco.

Timur Carriers is a subsidiary of the Australian-based TNT Group, through its Bulkships shipping unit. Selco is part of the Singapore public company, Pan Electric Industries Ltd.

John T. Gilbride Jr. Named "Man Of The Year" By Puget Sound Port Engineers



John T. Gilbride Jr.

The Society of Puget Sound Port Engineers named **John T. Gilbride Jr.** of Todd Pacific Shipyards "Man of the Year" for 1981 at its recent annual banquet. Mr. Gilbride, vice president and general manager of Todd's Seattle, Wash., facility since 1979, has been active in local maritime affairs since 1968.

The Society instituted the award early in its history to honor the man or men, not necessarily society members, deemed to have rendered outstanding service to the society or to local maritime affairs in the course of the year.

Mr. Gilbride, the thirty-fourth to be so honored, also received the brass ship's clock and barometer on a teak base that has been the traditional gift to the honoree since 1969.

Hydranautics Receives BOP Skidding Contract For Sedco 600, 601, 602

Hydranautics Hydraulic Systems, Goleta, Ca., has received a contract from Sedco, Inc. of Dallas to provide three BOP hydraulic skidding systems for use on the Sedco 600, 601, and 602 semisubmersibles.

Each rig will be equipped with a system that consists of two 25-short-ton Gripper Jack assemblies operating at 5,000 psi with 24-inch stroke, one 25-hp combination power supply and control console, and hydraulic quick disconnect hoses. Shipment of the equipment is scheduled for summer 1982.

The mid-sized semisubmersibles, the first of their kind for Sedco, are being built by Promet Pte., Ltd. of Singapore. Sedco 600 is contracted to Sedco Energy Corp. for work in the South China Sea. Sedco 601 is contracted to Union Oil. Sedco 602 is contracted to Occidental.

Now the watch officer has a lot less to watch...



because Sperry knows how to listen

For the first time, every essential element needed by the watch officer for total ship course control is centered in one console—the Sperry SRP-2000 Ship Control System. Information formerly obtained from annunciators, remote indicators and communication relays is now displayed at this one control center using Sperry's advanced design concepts and digital microprocessor technology.

The SRP-2000 is an integral adaptive autopilot giving unparalleled fuel savings through precise monitoring of sea conditions by continually adjusting system gain settings for optimal steering.

As a ship control center, it displays real-time alphanumeric readout of all navigation data and steering system conditions, at the touch of a button.

In automatic navigation mode, the SRP-2000 reacts to log speed, NAVSAT, Loran and other input sources on board. It will also accept manual mode commands.

To free the watch officer for his command function, there is fingertip call-up of step-by-step operating procedures for all normal, emergency and troubleshooting conditions.

The Sperry SRP-2000 Ship Control System provides the ultimate in fuel efficiency, functional information display and simplicity of control, without extra modules or add-ons.

Want to know more about how Sperry can help you obtain substantial fuel savings and peak performance from your watch crew? Talk to us... we understand how important it is to listen.

Write to Sperry Division Headquarters, Marine Systems Marketing, Great Neck, NY 11020.



SPERRY

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For two upriver coal customers with different operations: upper left, two 195 x 26 x 11 barges; right, a 175 x 26 x 11 barge; foreground, 195 x 35 x 12 hazardous cargo tank barge.

We design each barge for your cargo, so it works more efficiently than one designed for everyone's cargo.

Regardless of similarities between two cargos, a barge built to handle your particular shipping operation and cargo works more efficiently than a standard design, assembly-line barge built for everyone. For whatever cargo you ship, we'll design and build a barge to your specifications and requirements.

Whether you need a general commodity deck or hopper barge, or a sophisticated tank barge with Subchapter "O" cargo requirements, HBC will design a barge with the features and accessories to ship your cargo, your way. And we build them in the size you need, up to 300-feet in length, for single or multiple cargos.

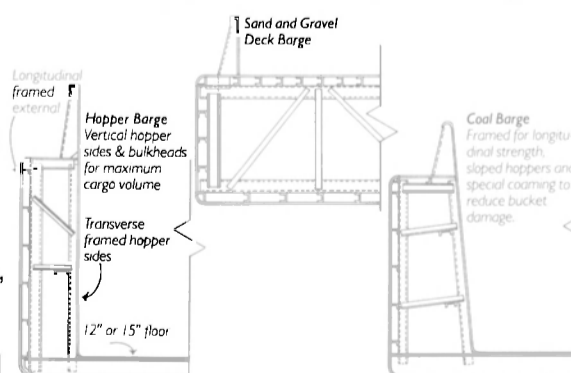
Specify: A hopper and coaming to speed unloading and deflect clamshell

buckets. Rub bars on each barge side to reduce plate wear and deflect other barges. A hopper liner that speeds vacuum unloading of fine powdery cargo. Any combination, layout or capacity of pumping, piping, power, heating or cover systems. Framing, welding, plating or coatings and linings.

Go beyond options and get what you want.

Whatever your cargo, we'll design a barge to match the way you ship it. Like nobody else's barge, for nobody else's cargo.

Our design and construction flexibility, experienced craftsmanship, and advanced facilities, produce quality barges built for each customer's shipping operation, that are competitively priced with barges built for everyone's operation. Contact us, and we'll build one your way.



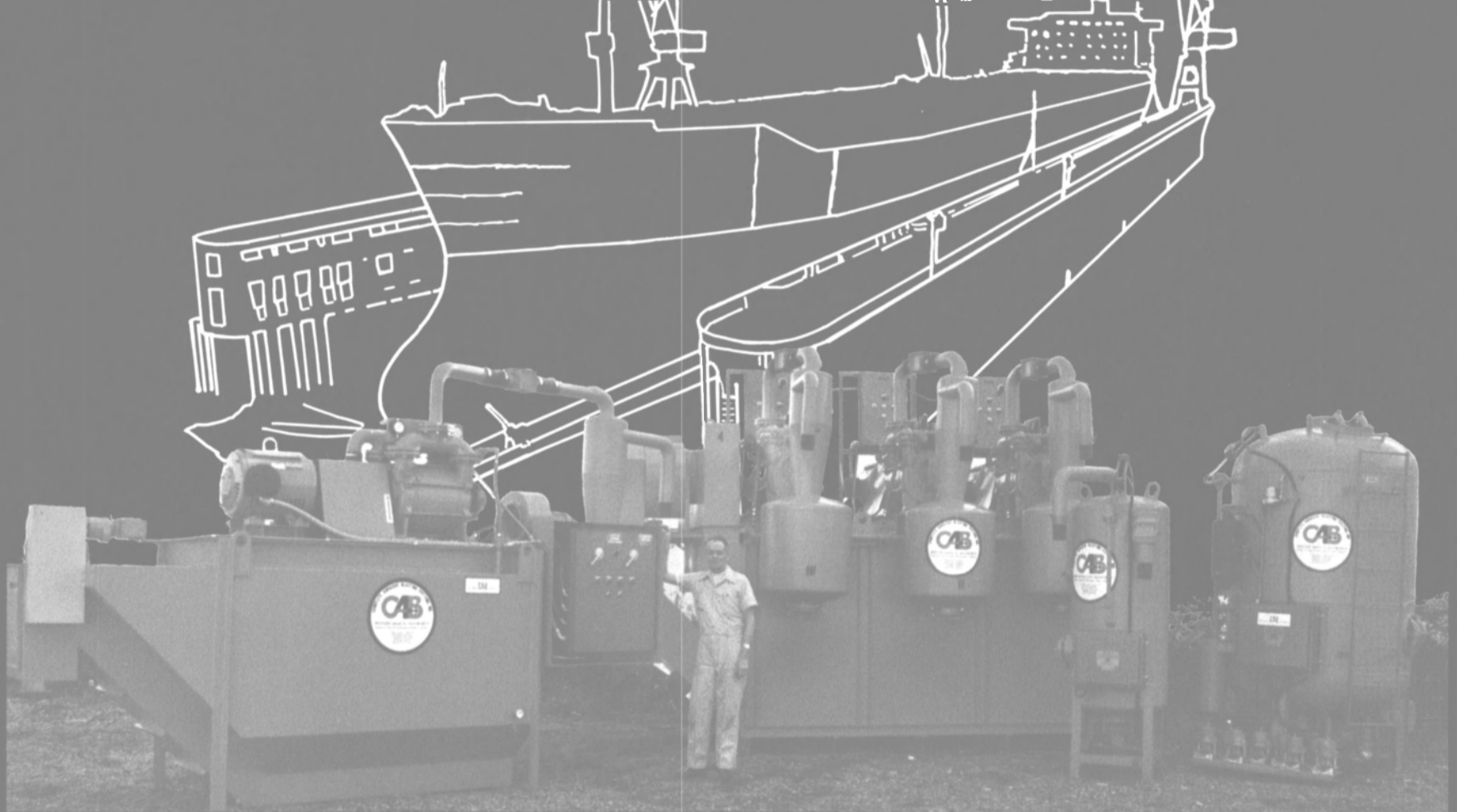
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HBC Barge, Inc.

Brownsville, Pennsylvania 15417

Phone: (412) 785-6100

How to get what you pay for . . . in surface preparation equipment



Jim Giese Sr., President of Complete Abrasive Blasting Systems, Inc., pictured above with a few of his "Orange Machines." Jim Sr. introduced the concept of bulk sandblasting machinery with his "yellow machines" in 1967. Today he continues to be the "idea man" behind all CAB Systems Equipment.

Buy CAB... "The Orange Machines"

CAB's reputation for innovative abrasive blasting equipment and reliable products is the result of years of on-the-job experience. This experience combined with CAB's single source responsibility and prompt, professional service ensures CAB clients of the value of each CAB product.

Single Source Responsibility means that CAB has the ability to provide a single piece of equipment or a systems approach to solve your surface preparation problems. From portable blast units to complete environmentally controlled abrasive blasting facilities, CAB has the know-how to provide the

most productive equipment for the application... And we install and service what we sell. You can buy a lot less for less, but you can't buy better than CAB!

CAB encourages you to protect your investment by comparing our products with all others before you buy. Call Jim and find out why CAB Systems has recently been selected to supply equipment on important marine, industrial and nuclear energy projects in the U.S., Mexico, Venezuela, Taiwan, Argentina, Korea, Australia and Kuwait.

CAB offers a complete line . . . from portable and stationary bulk abrasive blasting equipment . . . automatic wheel blast systems . . . automated systems for blasting drill pipe . . . to complete environmentally controlled enclosed blasting facilities including vacuum recovery units, compressed air dryers, dehumidification and air filtration systems.

For more information contact:



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BLASTING SYSTEMS, INC.**

18250 68th Avenue South
Kent, Washington 98031, U.S.A.
Phone (206) 251-0820
Int. Telex 32-0025/CAMIND KENW



For two upriver coal customers with different operations: upper left, two 195 x 26 x 11 barges; right, a 175 x 26 x 11 barge; foreground, 195 x 35 x 12 hazardous cargo tank barge.

We design each barge for your cargo, so it works more efficiently than one designed for everyone's cargo.

Regardless of similarities between two cargos, a barge built to handle your particular shipping operation and cargo works more efficiently than a standard design, assembly-line barge built for everyone. For whatever cargo you ship, we'll design and build a barge to your specifications and requirements.

Whether you need a general commodity deck or hopper barge, or a sophisticated tank barge with Subchapter "O" cargo requirements, HBC will design a barge with the features and accessories to ship your cargo, your way. And we build them in the size you need, up to 300-feet in length, for single or multiple cargos.

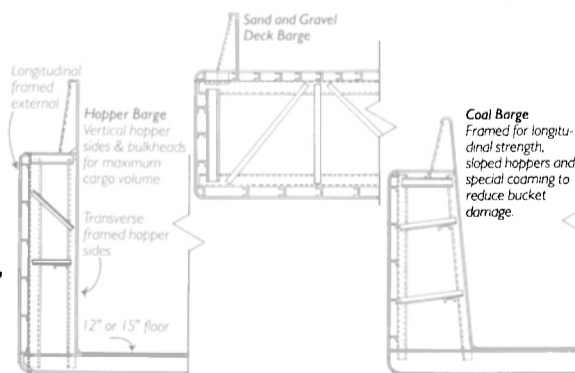
Specify: A hopper and coaming to speed unloading and deflect clamshell

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Go beyond options and get what you want.

Whatever your cargo, we'll design a barge to match the way you ship it. Like nobody else's barge, for nobody else's cargo.

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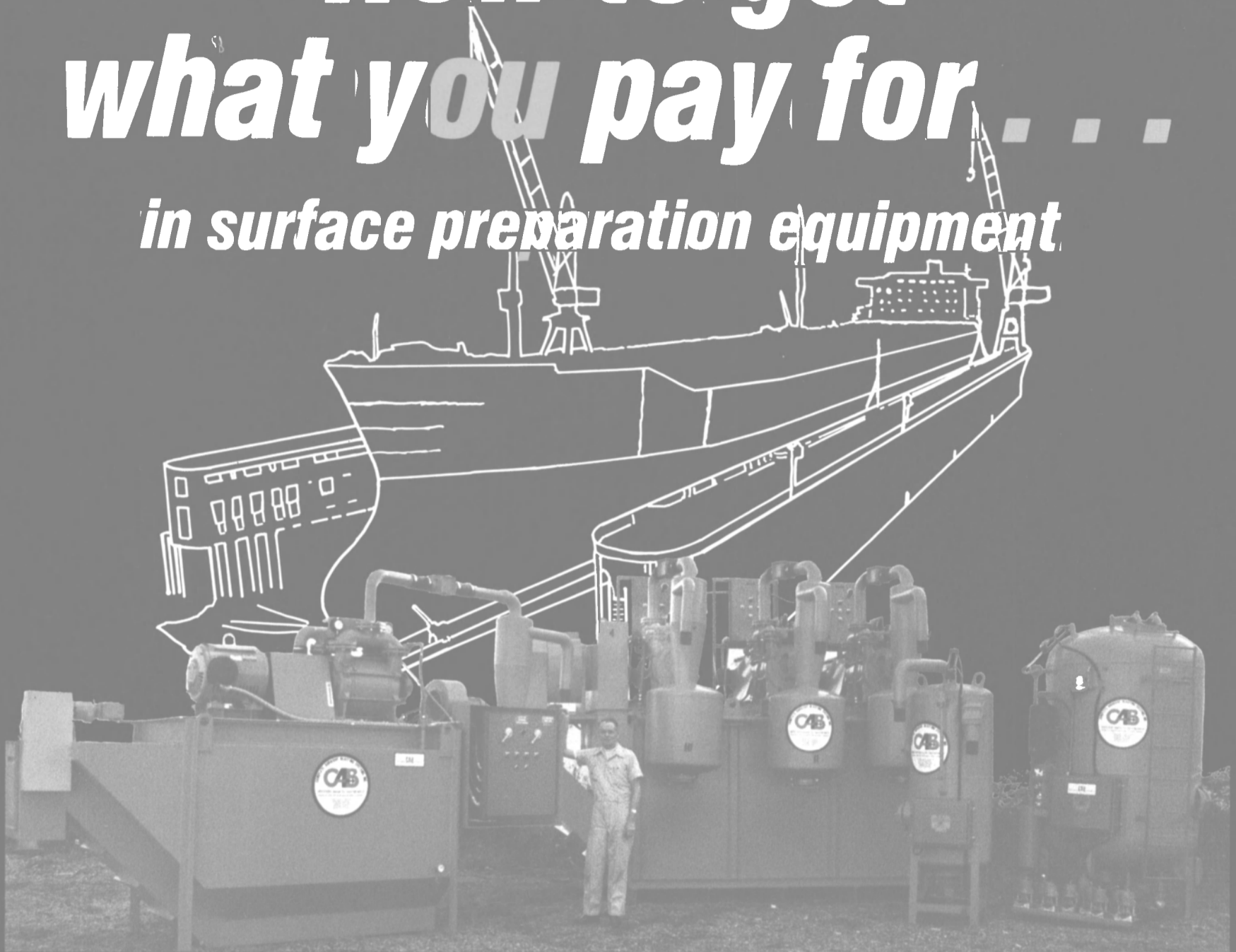
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AWO Perspective

Tax Act Creates 'New Subsidy' For Railroads

The nation's railroads will receive major profit windfalls in the next few years due to a change of accounting methods allowed them in the Economic Recovery Tax Act of 1981, according to a study conducted by the Chicago law firm of Lord, Bissell & Brook.

The study was jointly published by a coalition of barge industry associations, including The American Waterways Operators, Inc. (AWO). It was commissioned by members of the industry who are concerned with the competitive impact of this major new tax break for the railroads.

The study cites findings in independent reports by several banks and investment houses, showing that the 1981 Tax Act provides a special bonanza worth over \$16 billion for railroads by switching them from one form of accounting, which was previously available only to railroads, to the new accelerated cost recovery system (ACRS accounting), which is applicable to taxpayers generally.

Under the accounting system used by railroads prior to the 1981 Act — retirement-replacement-betterment tax accounting ("betterment accounting") — a GAO study showed that 10 selected, high-revenue Class I railroads received benefits during 1976-78 totaling nearly \$1 billion.

AWO president **Anthony L. Kucera** said, "Betterment accounting has long given the railroads a financial benefit not available to any other industry. This large infusion of cash from the write-off of railway roadbeds is being given by the government to the railroad industry as a sweetener for converting ACRS, the tax depreciation system applicable to taxpayers generally. We regard

this as yet another federal subsidy to the railroads," said Mr. Kucera.

A First Boston Corporation report dated June 26, 1981, concluded that the new depreciation accounting procedures for railroads "will dramatically increase depreciation for tax purposes, and for the most profitable railroads could eliminate much of current tax liability for the first three to four years."

A report by Harris Trust and Savings Bank of Chicago said about the railroads it studied that "it is doubtful that any of these companies would have to pay taxes over the next five years," because of benefits received from this act. For example, the vice president of a major railroad was quoted in the Wall Street Journal as saying, "this year's working capital figure includes \$66.5 million due to the company's decreased current tax liability."

Dean Witter Reynolds Inc., the investment firm, concluded in a separate study that "the cash flow ramifications are enormous" for railroads as a result of the 1981 act.

AWO's Mr. Kucera said, "The underlying significance of the over \$16-billion tax break is that it comes at a time when the railroads are leading a move to burden, if not cripple, the barge and towing industry with numerous tax increases. The net effect is to reduce the competitiveness of the barge lines while increasing the competitiveness of the railroads — all working in total contradiction to the free market objective being promoted by the Administration."

AWO is a 300-member national trade association that represents the interests of the barge and towing industry.

Oceaneering Selected To Support Deepwater Platform Installation In Gulf

Union Oil Co. has awarded a diving services contract to Oceaneering International, Inc., Houston, Texas. Oceaneering will supply diving support and remotely operated vehicle inspection services during the installation of Union's drilling and production platform, "Cerveza Ligera."

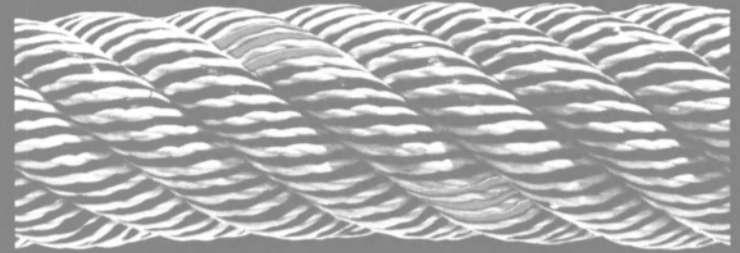
The "Cerveza Ligera," Union's second deepwater platform in the Gulf of Mexico, will be installed in East Breaks 159 A, located about 100 miles south of Galves-

ton. Water depth at centerline of platform location is surveyed at 925 feet. The eight leg structure is scheduled to be installed beginning in June 1982.

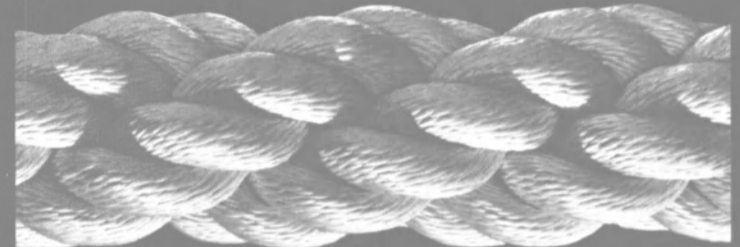
Michigan Yard Completes 180-Foot Deck Barge

Kobasic Marine, Inc., of Escanaba, Miss., recently completed a 180-foot by 54-foot by 12-foot deck barge for Midas Offshore International of New Orleans, La. It was the largest barge built by the four year old shipyard that specializes in barge and trawler building.

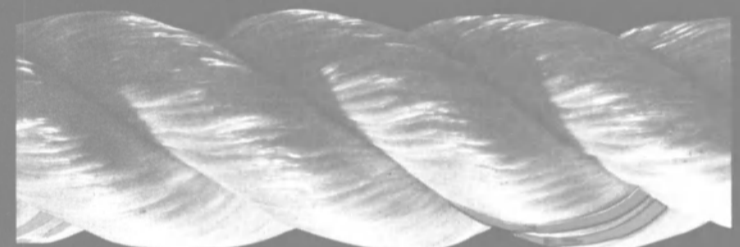
4 OUT OF 4 from AMERICAN



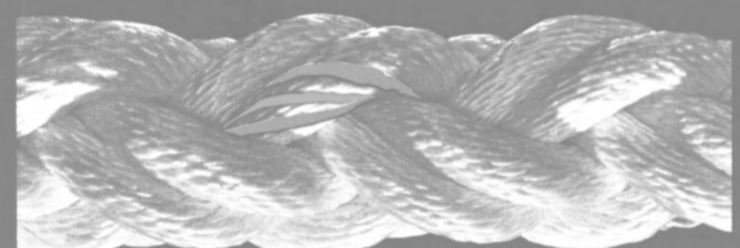
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\$4.6-Million Overhaul Contract For Navy Ship Awarded To Detyens Yard

Detyens Shipyard, Mt. Pleasant, S.C., has been awarded a \$4,651,548 firm-fixed-price contract for the overhaul of USS Alamogordo (ARDN2). Work will be performed at Wando, S.C. The Supervisor of Shipbuilding, Conversion and Repair, USN, Charleston, S.C., is the contracting activity. (N62673-C-0002)

Edward Peterson Named Vice President Of Sales At Dravo Mechling

Dravo Mechling, of Pittsburgh, Pa., the barge line subsidiary of Dravo Corporation, announced the appointment of Edward Peterson as vice president, sales. He will be located at the barge line's Pittsburgh headquarters.

Mr. Peterson was formerly

sales manager for American Commercial Barge Line, Inc. where he also had served as southern regional manager, located in New Orleans, and as director of regulated sales. Previously, he was superintendent, marine operations, for International Paper Company.

Dravo Mechling provides common carrier and contract barge transportation and river towing services on the inland river and

Intracoastal Waterway System, and on the Great Lakes through regional offices located at Chicago, Houston, New Orleans, New York, and St. Louis.

Award \$35-Million Increase To Westinghouse Contract For Nuclear Propulsion

Westinghouse Electric Corporation, Plant Apparatus Division, Wilkins Township, Pa., has received a \$35,810,153 face value increase to a previously awarded cost-plus-fixed-fee contract to provide naval nuclear propulsion components. The Naval Sea Systems Command, Washington, D.C., is the contracting activity. (N00024-74-C-5010)

David Watson Appointed General Manager At Bethlehem, Sparrows Point

The promotion of David Watson to general manager of Bethlehem Steel Corporation's shipyard at Sparrows Point, Md., was announced recently by David H. Klinges, vice president in charge of shipbuilding.



David Watson

Mr. Watson has been assistant general manager at the yard since 1976, and succeeds George S. Hamilton, who retired after 41 years of service with the company.

The new general manager, a native of Kilbirnie, Ayrshire, Scotland, was employed by several shipbuilders in the U.K. for 11 years. He joined Bethlehem Steel at the Sparrows Point yard in 1965 as an engineer in the shipbuilding department's central technical division.

Two years later he was appointed chief industrial engineer for the shipyard. In that post, he was a key figure in the expansion that occurred at the yard during the late 1960s and early 1970s. The projects included the shipbuilding basin, panel shop, and blast and paint shop.

In 1971, Mr. Watson became assistant hull superintendent, hull superintendent in 1973, and general superintendent in 1974. Two years later he was promoted to assistant general manager.

Akasaka Engines from Schnitzer-Levin Cut Your Annual Fuel Costs 46%

World's most fuel-efficient tug boat, tow boat, supply boat engines. First time available in U.S.

Schnitzer-Levin Marine introduces Akasaka A-Series engines. World leaders in fuel-efficiency for their horsepower range.

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Fuel savings alone will pay off entire engine cost—including re-engining—in about four years.

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- Horsepower rating

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Engine Model		A28	A31	A34	A37	A41
Maximum continuous output	bhp	1500	1800	2200	2600	3300
Maximum continuous speed	rpm	320	290	270	250	230
Number of cylinders		6	6	6	6	6
Cylinder bore	mm	280	310	340	370	410
Piston stroke	mm	550	600	660	720	800
Mean piston speed	m/s	5.87	5.80	5.94	6.00	6.13
Maximum pressure in cylinder	kg/cm ²	130	130	130	130	130
Mean effective pressure	kg/cm ²	20.76	20.56	20.40	20.15	20.38
Overload limit	%	10	10	10	10	10
Specific F.O. consumption	lbs/BHP-hr	.315	.310	.308	.306	.302

Excellent fuel rates shown are guaranteed at full power, even better at 85% power.

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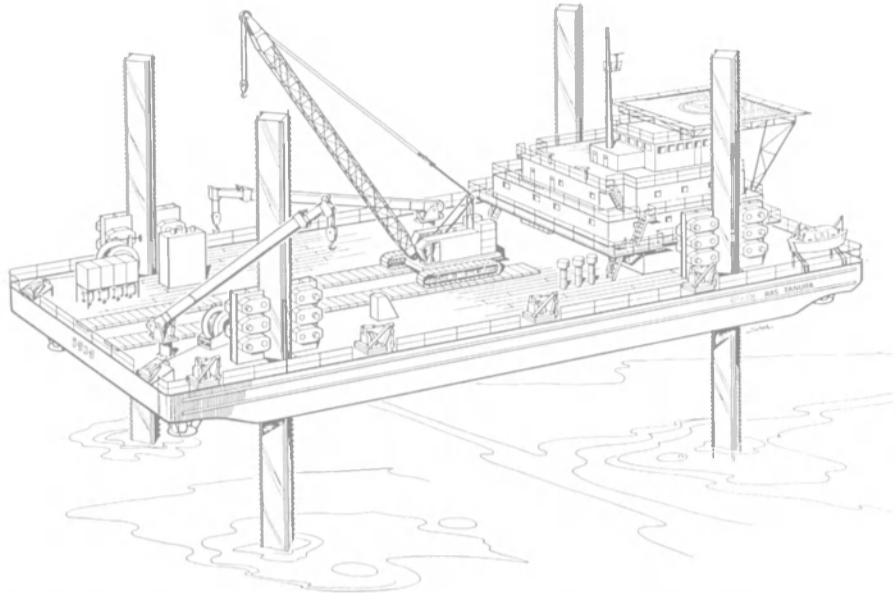


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The Gusto-designed maintenance platform for ARAMCO will be 95.1 meters long by 37 meters wide and 5.3 meters deep, having a draft of 2.13 meters. The four enclosed box construction legs will be operated by a rack and pinion system. The platform will be equipped with a 245-ton crawler crane, four 100-ton mooring winches, and four 15-ton pipe repair davits.

ARAMCO Awards \$125-Million Order For Four Self-Elevating Platforms

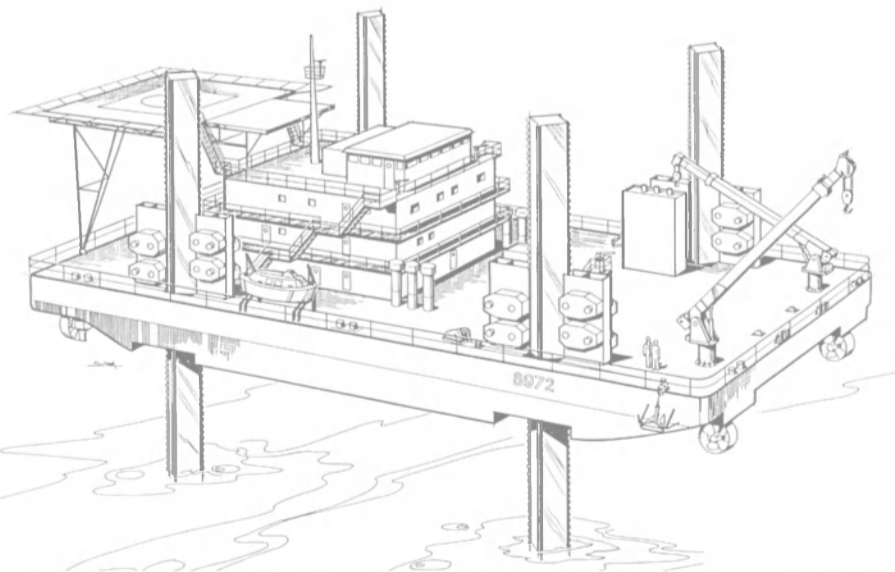
ARAMCO has awarded a contract to Verolme Brazil (VERB) for the construction of four self-elevating platforms. The contract is valued at more than \$125 million. The platforms were designed by Gusto Engineering of Schiedam, Holland.

Three will be used for well-servicing and fire-fighting, and the fourth for maintenance operations on production platforms, light construction work, and the repair of underwater pipelines.

While it is fairly common for self-elevating platforms to be used for such purposes, the requirements laid down by ARAMCO render the design of these units unique in many ways. First, the platforms must operate in water depths ranging from eight to 180

feet and be capable of moving from one location to another under their own power. Second, the presence on the seabed of numerous pipelines precludes the use of the four-point mooring system normally employed to keep a platform in position during jacking-up and jacking-down. Finally, the design had to allow for three-knot currents in the operational area and the sudden storms which can occur in the Arabian Gulf.

The requirements resulted in platforms with relatively large dimensions to permit operation in only 8 feet of water. For movement between locations, and positional stability during jacking-up and jacking-down each platform is equipped with four Schottel-Lips 1,360-hp steerable thrust-



Three well-servicing platforms to be built by Verolme Brazil will be 61.5 meters long by 30 meters wide and 5.3 meters deep, having a 1.74-meter draft. The enclosed box construction legs will operate with a rack and pinion type system. The platforms can house up to 40 persons, and will be fitted with fire-fighting equipment having 23,000 liters per minute capacity.

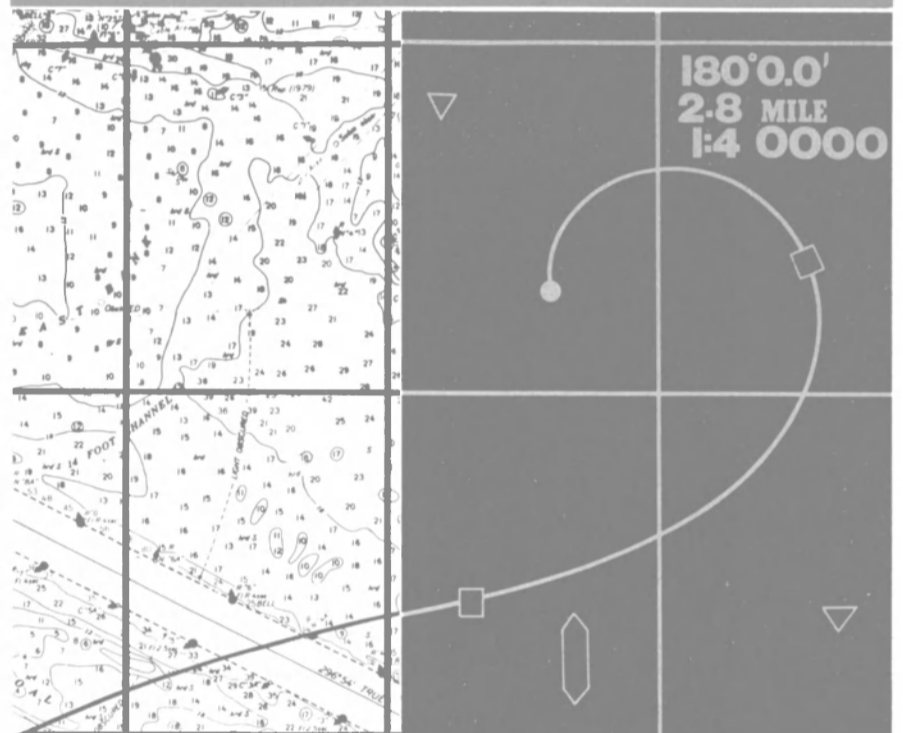
ers with controllable-pitch propellers. Model tests conducted at Duisburg showed that a speed of two knots can be obtained with only one-foot of water beneath the keel, and six knots in deeper water.

In view of the frequent movements between locations and the need to minimize the risk of damage to subsea pipelines, the platforms will be equipped with a high-speed jacking system. De-

signed by Gusto, the system is of the hydraulic type and enables the platform to be raised at a rate of about 6 feet/min.

In designing these platforms for ARAMCO, Gusto Engineering's role was not limited to the provision of a basic design, but embraced a design package including specifications, calculations and drawings to the classification requirements of the American Bureau of Shipping.

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New Solid-State Welding Control From Duraline
—Literature Available

Duraline, Central Islip, N.Y., manufacturer and supplier of multiple-operator welding equipment to the shipbuilding and ship repair industry, will introduce its latest state-of-the-art, solid-state welding control at this year's AWS Welding show, to be held in Kansas City, April 27-29.

The new solid-state welding control is designed to operate off standard 80VDC rectifier power supplies, and expands the capabilities of the conventional M-O system, currently limited to manual arc welding with straight or reverse polarity, to include arc driven, semiautomatic hard and fluxcore wire welding processes.

With the all-new design, welding power is controlled and supplied to welder by means of a

high frequency switching system which pulses the 80VDC rectifier power output at the point of welding. Power is supplied to create the weld puddle with little or no loss. The result is a reduction in the number of rectifiers required to supply power to a given number of welders that can be serviced from a given DC rectifier.

Overall system efficiencies of 85 percent are reported and bet-

ter than 60 percent savings in energy costs.

Free literature is now available completely describing this revolutionary new system.

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Name Bruce Ball Ameroid Marine Product Manager

Bruce E. Ball has been appointed product manager, mechanical goods, for the Ameroid® Marine Division of Drew Chemical Corporation, Boonton, N.J.



Bruce E. Ball

Before joining Drew in 1967, Mr. Ball was chief engineer and port engineer with an international liner company in London. At Drew, he has held posts in management and staff in sales, marketing, and technical departments. He is the author of numerous technical papers on marine fluid systems.

Mr. Ball received his New Zealand diploma in mechanical engineering and British Ministry of Transport certificate as a first class engineer. He is a fellow of the Institute of Marine Engineers and is registered as a chartered engineer in the U.K.

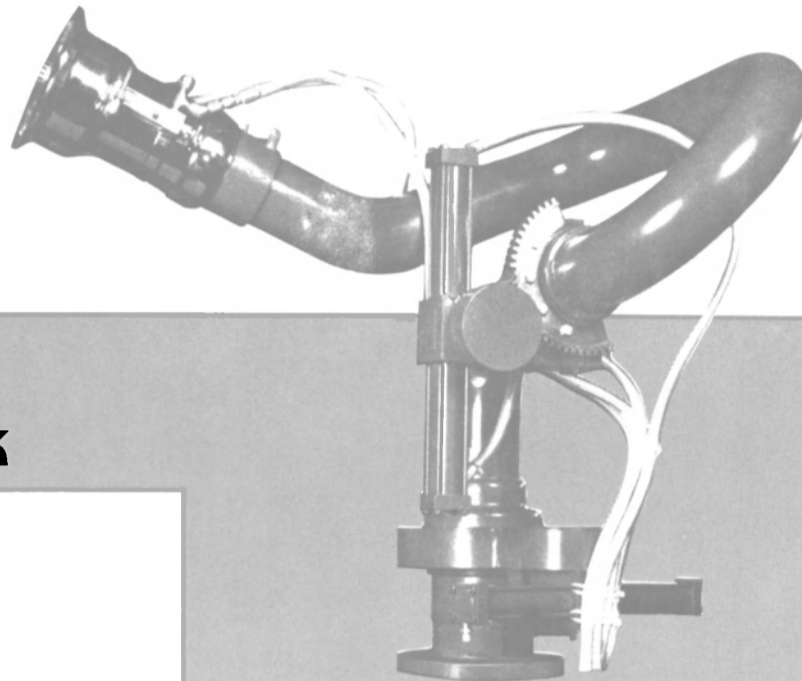
Waterman Steamship Appoints George Hearn As Senior Vice President

The appointment of **George H. Hearn** as senior vice president, conference and regulatory affairs, was announced recently by **Edward P. Walsh**, president of Waterman Steamship Corporation. Mr. Hearn is a former commissioner and vice chairman of the Federal Maritime Commission. Prior to joining Waterman, Mr. Hearn was counsel to the admiralty law firm of Hill, Rivkins, Carey, Loesberg and O'Brien of New York, N.Y., representing shipowners, shippers, foreign freight forwarders, and N.V.O.-C.C.'s. Mr. Hearn has specialized in admiralty law since 1954.

Mr. Hearn received his bachelor of arts degree from St. Francis College and his law degree from St. Johns University, both of New York. During World War II, he enlisted in the Navy, serving in the Pacific Theatre aboard the U.S.S. Iowa. Prior to his 14-year service in Washington he was associated with the law firm of Haight, Gardner, Poor and Havens from 1954 to 1961.

REMOTE CONTROLLED MONITORS

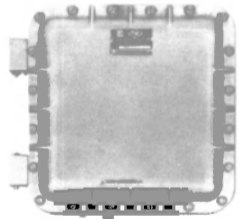
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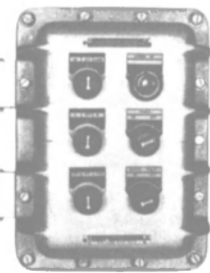
299-20 XBHC
For flows of 1500, 2000, or 2500 GPM



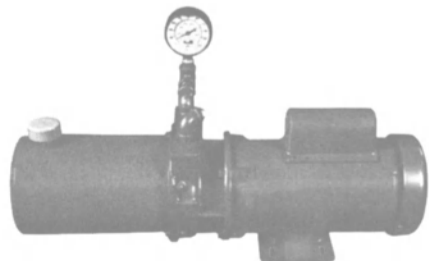
294-11 XBHC
For flows from 300 to 1000 GPM



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CONTROL BOX



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Like sentries, these Elkhart Brass monitors are designed to stand guard over industrial complexes, loading docks, railroad yards, tanker berthings, refineries, chemical plants, offshore platforms and more. The instant the monitor is needed for fire protection, it can be activated from a remote location where the operator can turn on the water supply, direct the monitor horizontally and vertically, and change the pattern on the nozzle — ALL FROM A SAFE DISTANCE. There is even an optional automatic oscillating feature. Each monitor package includes monitor, nozzle, valve box, hydraulic pump, and control box. The package can be furnished either weather tight or explosion proof. Many monitors can be operated from one control panel. An optional hand-operated stand-by system is also available.

CONSULTING ENGINEERING SERVICE

Consulting engineering services are available for new or revised fire protection systems. Please contact Engineering Department.

For additional information on these remote controlled monitor systems, call or write:



ELKHART BRASS MFG. CO., INC.

P.O. Box 1127 Elkhart, IN 46515
219/295-8330 Telex 23-3127

Halter And Zapata Sign Contract For Four Tug Supply Boats

Halter Marine, Inc., and Zapata Marine Service, Inc. have signed a contract for the construction of four 185-foot tug/supply boats.

The new vessels will be the first supply boats to be built by Halter for Zapata. All will be built at Halter's Moss Point, Miss., division and will be delivered in the fourth quarter of 1982.

Each will be 185 feet in length, with a 40-foot beam and 14-foot depth. They will each be powered by two EMD16-645-E6 engines developing 3,900 hp and will be equipped to carry bulk mud and perform a variety of towing and anchor-handling functions.

The new boats will be named Palmas Service, Trafalgar Service, Falcon Service, and Sable Service.

Halter Marine, Inc. owns and operates a group of shipyards in the Southeastern United States and is the world's largest builder of supply boats for the offshore oil and gas industry.

Award \$6-Million Contract To Syscon For Aegis Shipbuilding Project

Syscon Corporation, Washington, D.C., has been awarded a \$6,461,577 cost-plus-fixed-fee contract for engineering support to the AEGIS Shipbuilding Project. The Naval Sea Systems Command, Washington, D.C., is the contracting activity. (N00024-82-C-5506)

Bulk Carrier Launched At Italcantieri Yard

Italcantieri's Castellamare di Stabia shipyard recently launched the 49,000-dwt bulk carrier Serafina F., one of four sister ships Italcantieri is building for the Ferruzzi Group-Ravenna. Two are building at Castellamare and two at the Genova-Sestri yard.

The vessel is designed with a bulbous bow and transom stern. The Serafina F. is powered by a B&W 7L67 GFC two-stroke diesel engine developing a maximum continuous output of 13,000 bhp at 119 rpm and a service speed of 16.4 knots.

Italcantieri's Monfalcone yard is currently outfitting an 81,400-dwt bulkcarrier, Purple Planet, for Evansmore Corp. of Bermuda. Designed to transport dry bulk in all holds and ore in alternate holds, the ship has a double bottom from the aft bulkhead of the engine room to the fore bulkhead of hold No. 1. The ship is powered by a GMT B780.7 two-stroke diesel engine directly connected to the shaft. The diesel develops a maximum continuous output of 17,500 bhp for a service speed of 16.8 knots.

A keel-laying ceremony was held at the Genova-Sestri yard for a 24,900-dwt petroleum products tanker able to carry four different types of cargo simultaneously. Building for SNAM S.p.A. of Milan, the tanker will be powered by a GMT B 600.6 diesel driving a fixed-blade propeller.

Beebe International Is New Name For Famous Marine Manufacturer

Beebe Bros., Inc., Seattle-based manufacturer of winches, hoists, and crane components since 1924, has changed its name to Beebe International, Inc., to better iden-

tify the company's expansion into international markets.

Now in the process of establishing distribution points in several international markets, company marketing manager Mike Southard said "the name change more closely reflects our commitment to service, the scope of our business, and our worldwide growth."

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September 15, 16, 17, 1982




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The Conference and Exhibition will present a rare opportunity for experts to benefit from the cross pollination of technological know how.

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\$49-Million Gas Turbine Subcontract Awarded To AVCO Lycoming Stratford

AVCO Lycoming Stratford Division, Stratford, Conn., has received a \$49-million subcontract from Bell Aerospace-Textron for 96 TF40B marine gas turbine engines for the Navy's new Landing Craft Air Cushion (LCAC). The award includes \$8.0-million

this year for detail design, long-lead procurement, and construction of the first 12 engines, with options totaling over \$41-million for subsequent deliveries.

The LCAC craft are the newest addition to the U.S. Navy's amphibious assault landing craft program designed to preserve the capability for the ship-to-shore movement of men, vehicles, and equipment during an amphibious assault. The vehicles can trans-

port a 60-ton payload at 50-knot speeds and are able to cross beach terrain. They will be built at the Bell-Halter facility in New Orleans, La. Each craft will use four of the Lycoming TF40B engines to provide lift as well as thrust. The basic core engine, on which the TF series of Lycoming turbines is based, have accumulated 3,500,000 operating hours. The marine version has more than 250,000 hours powering fer-

ry boats, patrol ships, and hovercraft. This commonality of core engine components with the T55 aircraft engines will give the Navy the advantage of being able to draw upon the existing support and spare parts depots established where AVCO-powered helicopters are flying. They will also be able to draw on an established training base in the U.S. and on the established overhaul facilities in the states and in NATO nations.

The initial contract calls for the delivery of engines starting in late 1983 and continuing until early 1985. There is the potential for production deliveries of four hundred engines, plus spare parts, through the 1990s.

Joseph G. Koelbel Joins Advanced Marine Firm



Joseph G. Koelbel Jr.

Joseph G. Koelbel Jr. has recently joined Advanced Marine, Virginia Beach, Fla., as senior project engineer, it was announced by George Ponton, general manager of the southeast division. Mr. Koelbel has over 30-years' experience in naval architecture. His initial assignment will be the development of a plan and specification package for a new 200-foot passenger/vehicle ferry for the State of Virginia. While assigned to the Virginia Beach Office, he will also be serving the company's home office in Arlington, and the New York Office.

Advanced Marine is a naval architecture/marine engineering firm serving the Naval Sea Systems Command, Military Sealift Command, U.S. Coast Guard, and several major shipyards.

SNAME New England Section Hears Waste Heat Recovery Paper

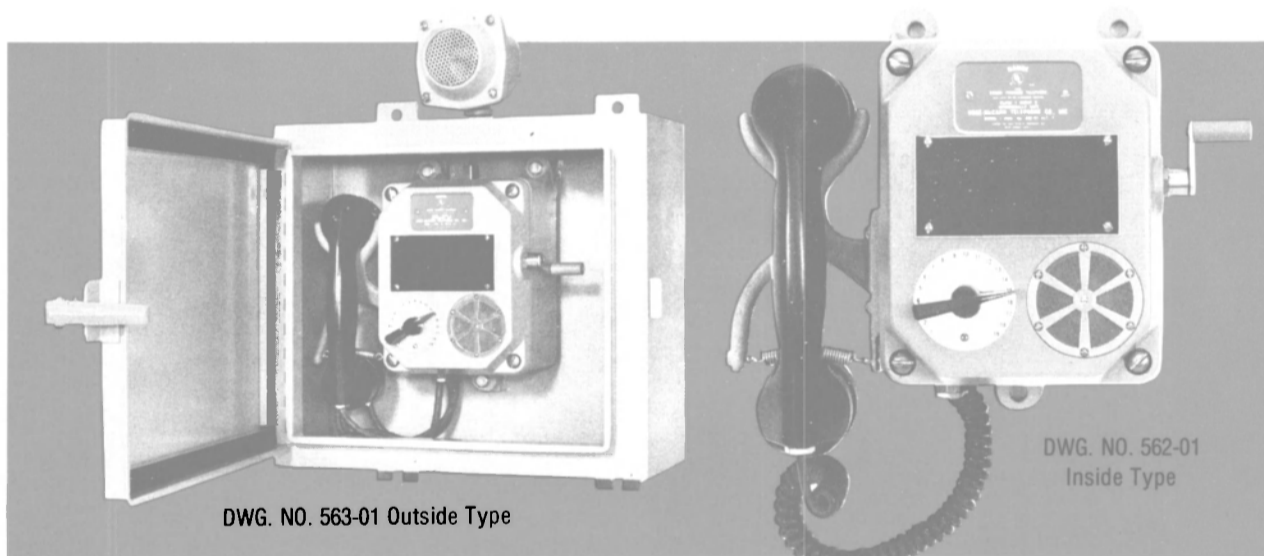
A recent meeting of the New England Local Section of SNAME was held in Newton, Mass., at which a paper entitled "Standard Waste-Heat Recovery Systems", authored by P. Schneider, was presented by his collaborator, Ernst H. Schaad.

Mr. Schneider is the head of the Diesel Installation Department of Sulzer Bros., Inc., Winterthur, Switzerland. Mr. Schaad works in this same department and is responsible for advanced projects.

In his presentation Mr. Schaad

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started by discussing the effects of the 1973 energy crisis on marine propulsion systems, and the efforts made by engine manufacturers toward contributing to an increased economy in ship operations. Waste-heat recovery systems were then discussed in detail, including recovery of waste heat of the charge air coolers, and recovery of engine cooling water heat. The possible savings resulting from the use of these systems were then examined. Alternatives and future solutions for economic sources for power were finally discussed.

The meeting was attended by over ninety members, student members and guests.

Nichols Joins DEBEG's Marine Sales Management



David B. Nichols

David B. Nichols has been named assistant to the U.S. sales manager for DEBEG Marine Inc., Salem, N.H., according to sales manager Robert McCarthy.

DEBEG is a subsidiary of DEBEG GmbH, the marine communications and navigation equipment company headquartered in Hamburg, Germany. Mr. Nichols's background includes positions with the Texaco U.S. fleet and the Inter-Lake Steamship Co.

Camcraft Names Selco As Exclusive Far East Agent

Camcraft, Inc., of Marrero, La., builder of aluminum crewboats and patrol boats, has selected Selco (Shipyard) Pte. Ltd. as its exclusive agent for the area consisting of Singapore, Malaysia, Brunei, Thailand, Indonesia, Philippines, and Hong Kong. Selco will build the full range of vessels using the complete Camcraft design package under the supervision of Camcraft personnel.

St. Louis Ship Opens New Propeller Shop

St. Louis Ship recently opened its new Propeller Shop as part of the shipyard's expanding marine services.

The Propeller Shop is built on a site in the northwest portion of the shipyard, near the foot of Marceau Street, on the Mississippi River in South St. Louis. The location is adjacent to consolidated propeller, shaft and rudder storage areas. The approximately 8,400-square-foot facility

is serviced by two overhead cranes and is outfitted with the latest in repair, welding, and machining equipment.

According to a spokesman for St. Louis Ship, the construction of the consolidated Propeller Shop facility enables the firm to provide "full service" including propeller straightening, build-up, machining and repair work, and rudder manufacture and repair.

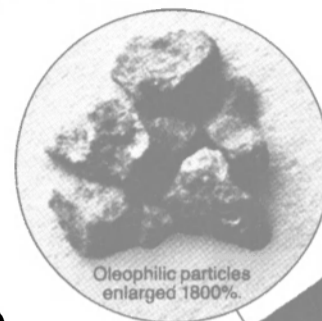
The preengineered building houses a prototype hydraulic propeller straightening press capable of straightening propellers up to 12 feet in diameter, six propeller work stations, 2,500 square feet of rudder repair area, a shaft machining lathe capable of machining shafts of 16-inch diameter, 40 feet long, and weighing as much as 12 tons, and a shaft welding fixture capable of weld-

ing operations on 16-inch-diameter by 40-foot-long shafts employing the latest technological advances in strip welding.

St. Louis Ship is one of three major inland shipyards operated by Pott Industries, Inc., a subsidiary of Houston Natural Gas Corporation.

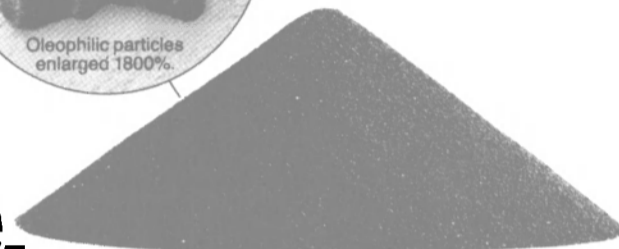
For complete details on St. Louis Ship's new Propeller Shop, Write 34 on Reader Service Card

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Oleophilic particles enlarged 1800%.

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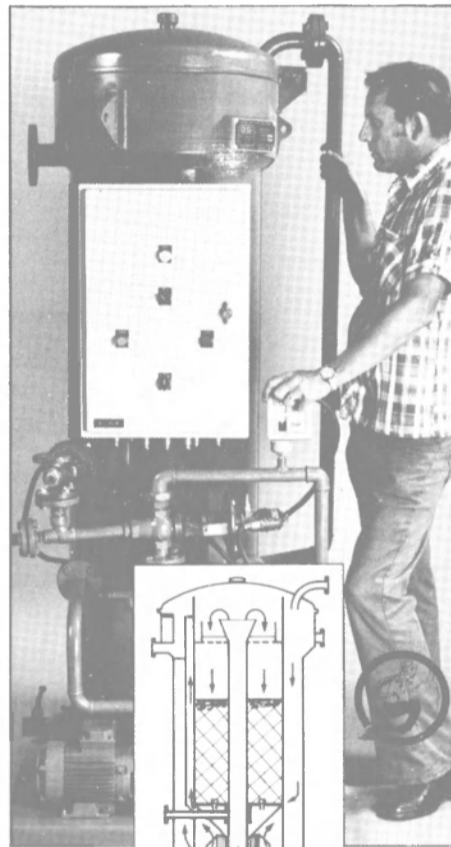
BUTTERWORTH® SFC BW separators feature a permanent filter bed (no dirty cartridges to change, no messy disposal). Automatic operation without attendance is available. U.S. Coast Guard approved.

Special Filtering Material.

One outstanding feature of SFC BW (Separator Filter Coalescer Bilge Water) Oil/Water Separators is the permanent final filter bed. Composed of specially treated oleophilic particles, it can be used over and over again. With heavy use, an annual topping of 5% to 15% is the only filter bed maintenance required. Moreover, treated water discharges are typically less than 2 parts per million of oil... well below the allowable 15 parts per million.

Unattended Operation with Automatic Option.

Because of the permanent final filter bed, SFC BW Separators ordered with the automatic option can operate unattended for weeks at a time. Whenever the filter bed reaches



sounds an alarm. After back-flushing, separation automatically starts again.

The 20-minute back-flush cycle occurs only once every 12 to 24 hours of operation, depending upon oil concentration.

Unique Compact Design.

Because of the permanent filter bed, which requires only limited access annually, SFC BW units are very compact. All processing takes place in a single vertical cylinder requiring a minimum of deck space. A 2 cubic metre per hour unit, for example, is only 2 feet in diameter.

Every SFC BW unit is equipped with its own pumps designed to meet a vessel's needs. They do not

rely on existing bilge pumps.

U.S.C.G. Approved.

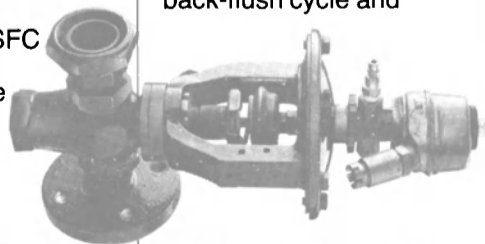
In U.S. Coast Guard certification tests, BUTTERWORTH SFC BW Oil/Water Separators exceeded U.S.C.G. and IMCO A. 393(X) requirements.

SFC BW Oil/Water Separators have also been approved in conformance with A.393(X) by France, Germany, Greece, Italy, Netherlands, Norway, Poland, Sweden, United Kingdom, and Yugoslavia.

Get All the Facts.

SFC BW Oil/Water Separators are available with capacities from 1/2 to 10 cubic metres per hour. Write or call for full details... and for a copy of "From A to X about Oil/Water Separators". This six-page report has facts on MARPOL, IMCO, and U.S. regulations for shipboard oil/water separators.

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Burton Delivers 224-Foot Seiner, Third Of Seven For Van Camp



EMD-powered Deolinda on way to sea trials.

Burton Shipyard, Inc., Port Arthur, Texas, recently delivered the 224-foot tuna vessel Deolinda. The steel-hulled tuna purse seiner is the third of a seven-vessel contract awarded to Burton by Van Camp Sea Food Co., a division of Ralston Purina Co., and is jointly owned by Van Camp and Capt. Ray Medeiros. The purse seiner will operate primarily with the Pacific fleet, docked in San Diego, Calif., and will fish the Pacific Ocean for skipjack and yellowfin tuna.

The Deolinda measures 42 feet wide, with an 18-foot draft, and cruises at 16 knots. The vessel is designed to operate with a crew of 21, and is capable of carrying a 1,200 short-ton payload of frozen tuna.

The Deolinda will travel

through the Panama Canal and into the Pacific, fishing the eastern Pacific waters before being introduced to the San Diego tuna fishing community.

The new tuna seiner is propelled by a turbocharged EMD marine diesel engine developing 3,600 shp at 900 rpm. The 20-cylinder engine drives a 132-inch-diameter, five-blade stainless-steel propeller, built by Avondale, through a Falk 5.033:1 reduction/reversing gear. Shaft speed development is rated at 179 rpm. Auxiliary power for the vessel is provided by three Caterpillar D-353 TA diesels with 300-kW Kato brushless generators. The ship's bow thruster is a Bird Johnson model 10/35/FP with direct Caterpillar drive.

A passive stabilizer has been incorporated into the hull struc-

ture and was engineered by John J. McMullen Associates. Fishing gear and hydraulic equipment are by Marco and include a model WS444 purse seine winch and the Puretic power block model B56-61990-185. A Whaley model B-102-H hydraulic ring stripper is also provided.

The ammonia systems utilize Vilter components, subcontracted by Refrigeration Systems of New Orleans, La.

Navigational aid and communications equipment consist of a Magnavox 1102 satnav receiver, Furuno FRJ-100 and DRA-1064 radars, FE812 depth sounder, FDK-245 ADF and scanning sonar. Other nav/com gear includes Sperry MK 37 gyrocompass, gyropilot, Furuno weather recorder

model FAX 143, and a broad assortment of radio communications equipment.

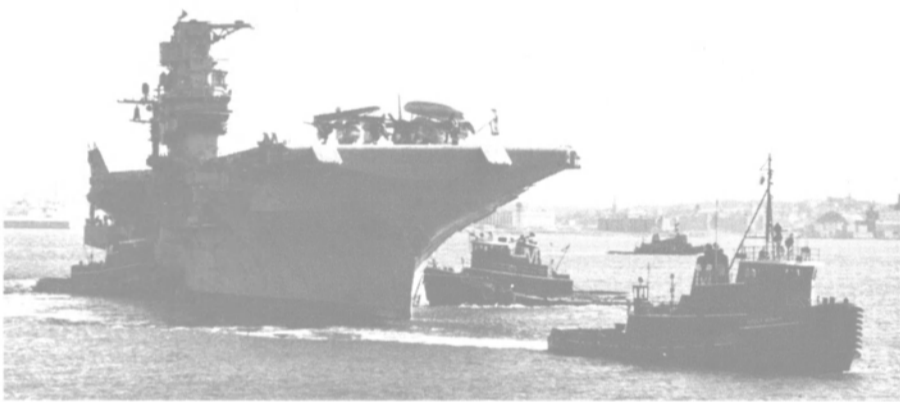
A helicopter rides on the pad located on the wheelhouse top. A private stateroom is provided for the pilot and his mechanic, who also have a workroom on the boat deck.

Five outboard chase boats are stored on both the boat deck and the upper deck. The diesel powered skiffs are from Mauricio & Sons, San Diego.

The Deolinda is also fitted with a Red Fox model 750M sanitation system.

The vessel is equipped to stay at sea for as long as three months. Burton expects delivery of the fourth tuna vessel, the Lone Wolf, to be in May 1982.

Beth Steel's Hoboken Yard Converting Carrier Intrepid To Naval Museum



The USS Intrepid arrived recently at the Military Ocean Terminal at Bayonne, N.J., to be converted into a floating museum. Bethlehem Steel Corporation's shipyard at Hoboken, N.J., which operates extensive ship repair facilities at the MOT, is doing the conversion work. Upon completion, the Intrepid will be towed to New York City (Hudson River at 46th Street), where various exhibits will be added.

Conversion work has begun that will turn the USS Intrepid into a floating museum for the Intrepid Museum Foundation.

Upon completion of the conversion work at Bethlehem Steel's Hoboken, N.J., yard, the aircraft carrier will be towed to the Hudson River at 46th Street in New York City, where the various exhibits will be added.

Floats to moor her properly while at Bayonne and access for shore cranes were installed immediately upon the Intrepid's arrival. Bethlehem will provide shore-based electrical power, air, and other industrial needs to perform the conversion.

Richard E. Blackinton, general manager of the Hoboken yard, said: "To complete the job on time, we developed a comprehensive production schedule before the contract was awarded. We drew upon the talents of many employees and the resources of our production, estimating, planning and engineering departments. With help from the Intrepid Museum Foundation, we have a sound, economical plan to carry out the program."

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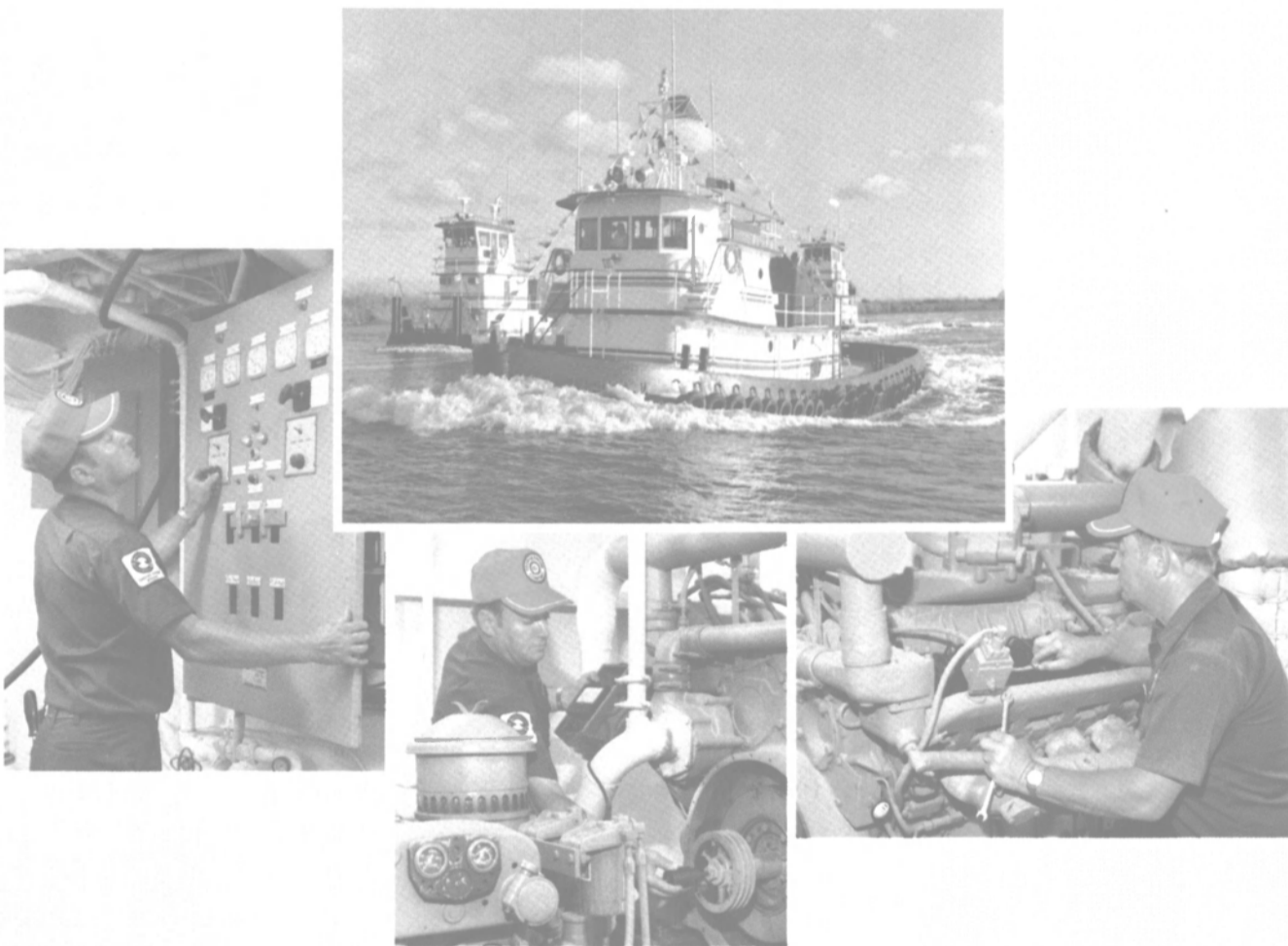
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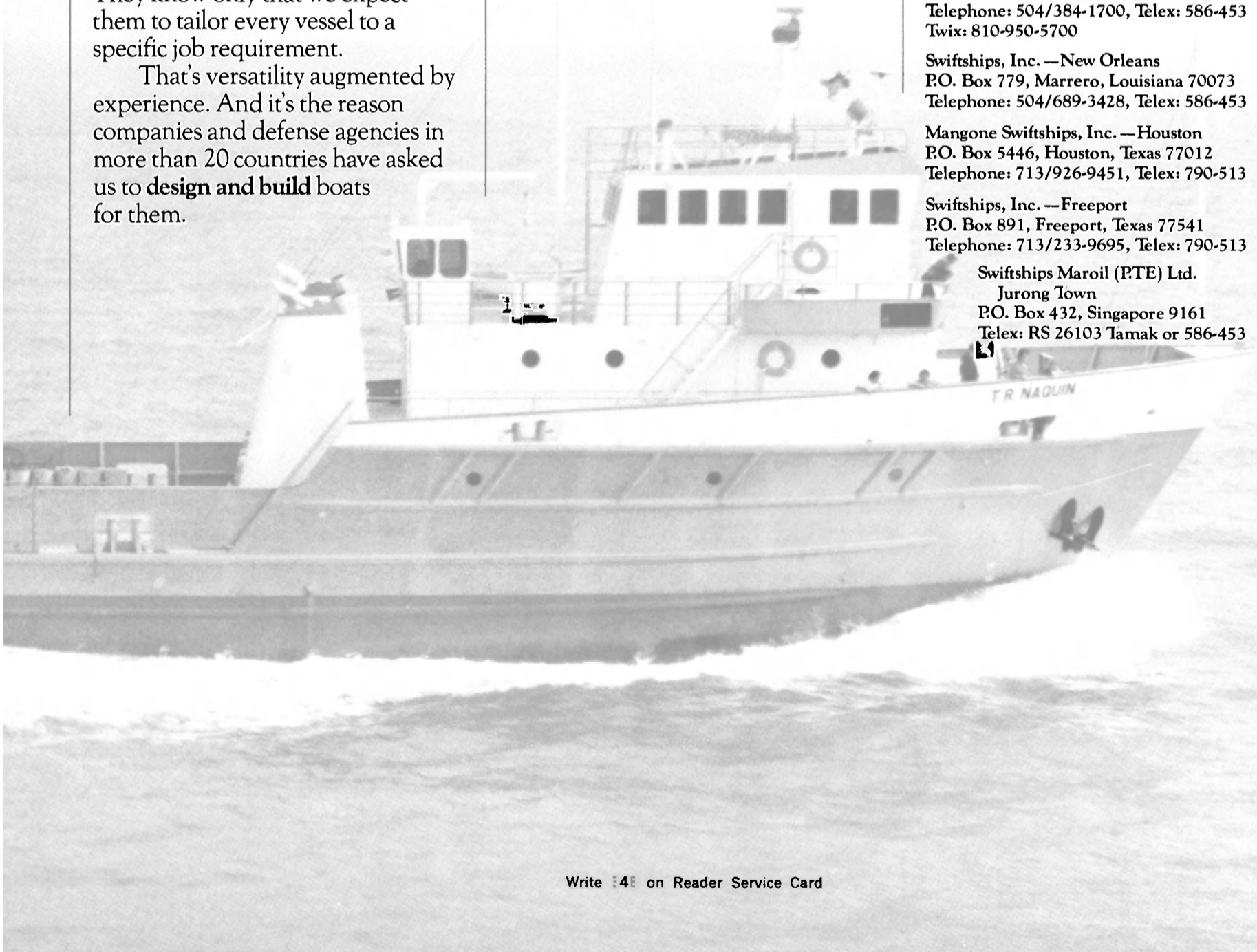
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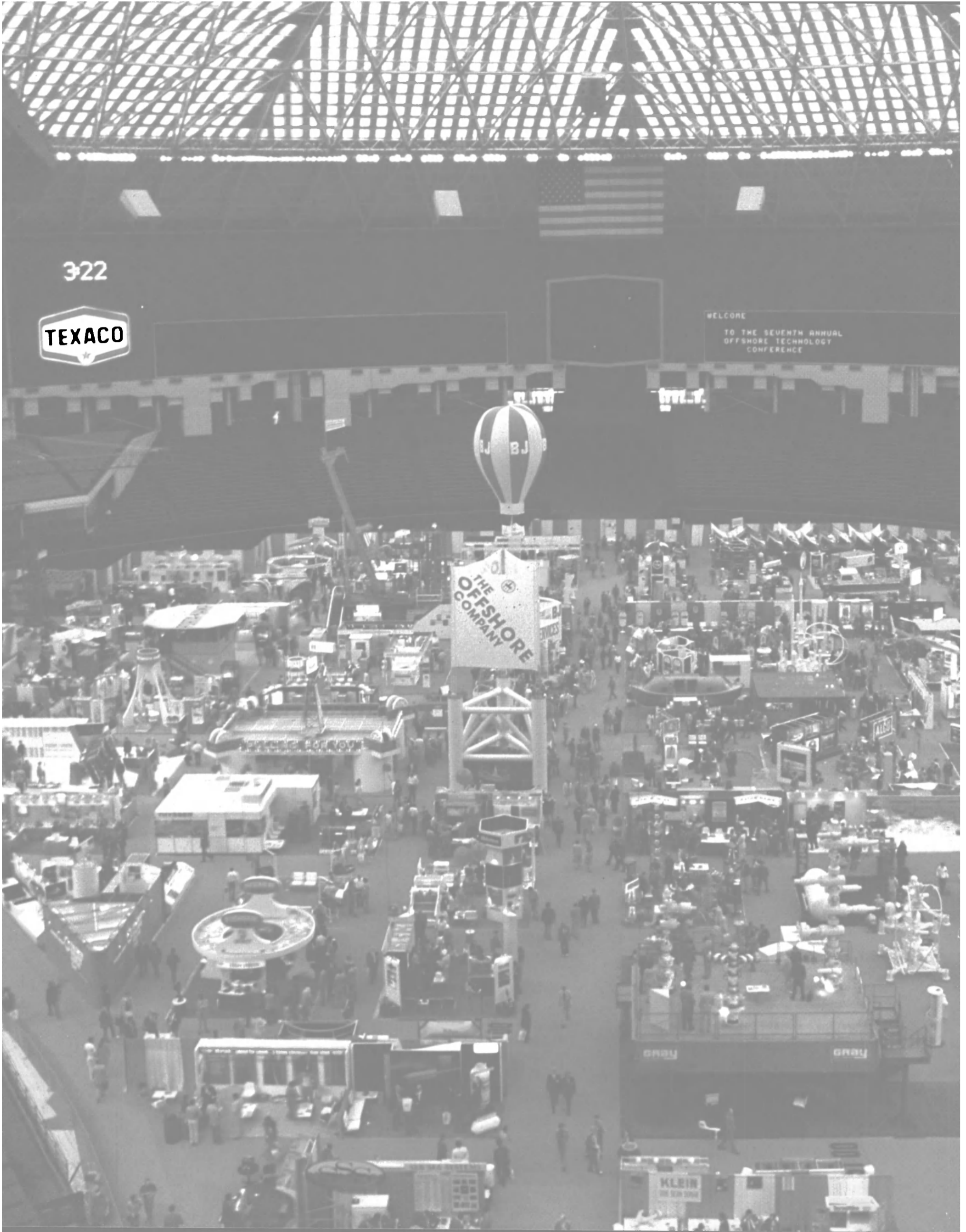
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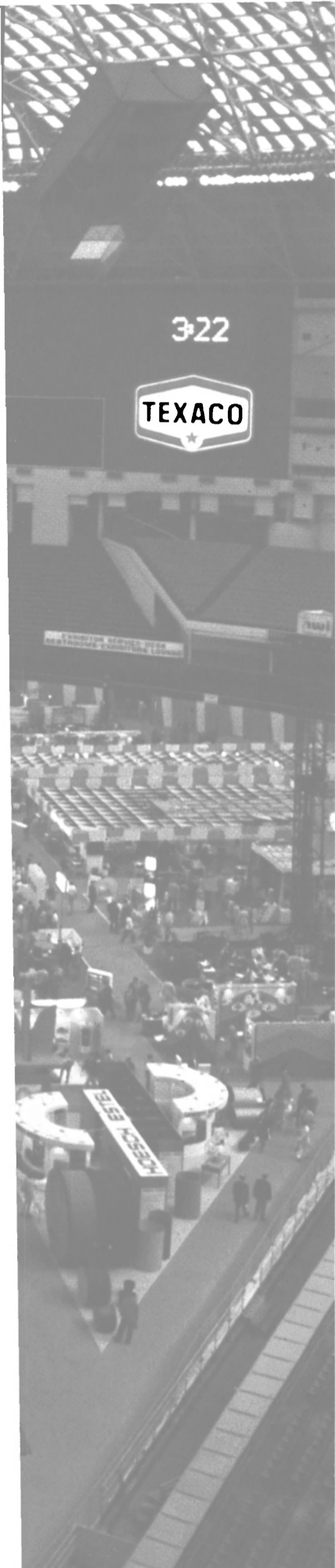


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CONFERENCE



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OTC-'82

SPECIAL PREVIEW

May 3-6, 1982 Houston

photo —
E.T. Mosley,
ALCO Power Inc.

The technology used to find and produce offshore resources has probably undergone more advancement over the last decade than any other segment of any other industry.

The most recent advances will be revealed at the 14th annual Offshore Technology Conference set for May 3-6 at the Astrodome complex in Houston, Texas. In the scope of its exhibits and technical presentations, OTC will be proportionally as vast, as challenging, and stimulating as the oceans with which it is concerned.

An expanded technical program featuring scholarly papers from more than 23 countries, more

than one-million total square feet of technical exhibits, and an unsurpassed opportunity to exchange ideas with the industry's best-known experts await the 1982 OTC participant.

About 300 authoritative papers, never before published, will be delivered at 48 technical sessions that have been organized by 12 of the world's leading scientific and engineering societies. A special feature of the program will be a session titled "National Plans for Offshore Energy Development," featuring officials from several countries who will present their respective points of view on the development of offshore resources in light of each

country's total energy requirements.

Exhibits totaling a record 625,000 square feet of space displaying products and services applicable to the offshore sector will be available for the visitor—presentations unequalled in size and scope by any other industry-related show. From offshore oil and gas drilling, completion, and production equipment to navigation and communication devices, pollution control systems, power generation, and research equipment—the technical exhibits will present more accumulated equipment and services for ocean resource development than has ever

(continued on page 53)

OTC '82

(continued from page 53)

reserved in 88 Houston area hotels/motels. During OTC '82 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 3. Registrants who desire accommodations for Monday should plan to arrive on Sunday, May 2. Any housing requests indicating an arrival on Monday will automatically be changed to reflect an arrival on Tuesday, May 4.

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 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.

CONFERENCE SCHEDULE

Monday, May 3

Registration

7:30 a.m. — 6:00 p.m.

Exhibition

8:30 a.m. — 6:00 p.m.

Technical Program

9:00 — 11:30 a.m.

2:00 — 4:30 p.m.

Awards Luncheon

12:15 — 2:00 p.m.

Tuesday, May 4

Registration

8:00 a.m. — 6:00 p.m.

Exhibition

8:30 a.m. — 6:00 p.m.

Technical Program

9:00 — 11:30 a.m.

2:00 — 4:30 p.m.

Wednesday, May 5

Registration

8:00 a.m. — 6:00 p.m.

Exhibition

8:30 a.m. — 6:00 p.m.

Technical Program

9:00 — 11:30 a.m.

2:00 — 4:30 p.m.

Thursday, May 6

Registration

8:00 a.m. — 3:00 p.m.

Exhibition

8:30 a.m. — 3:00 p.m.

Technical Program

9:00 — 11:30 a.m.

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

Registration

Registration for the 1982 OTC is based on two alternatives: (1) A four-day registration allowing access to both conference and exhibition for the duration of OTC '82; 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 the Offshore Technology Conference before April 9 by contacting OTC, 6200 North Central Expressway, Drawer 64705, Dallas, Texas 75206.

For early-bird registration, and for the convenience of Houston residents and out-of-town visitors who plan to be in Houston Wednesday, April 28 through Friday, April 30, there will be four advance registration sites located at the Hyatt Regency's Ebony Room, the Astro Village's Forum Five Room, Marriott's Galleria Sundance-One Room, and the Stouffer's Greenway Plaza's Poinsettia Room.

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

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OTC Executive Committee

The Offshore Technology Conference is one of the most comprehensive interdisciplinary, cooperative undertakings of the engineering and scientific community. The 12 societies that sponsor OTC have more than 500,000 members worldwide, and include every discipline associated with the exploration and production of ocean resources and environmental protection.

OTC is governed by an executive committee composed of a representative of each sponsoring society, plus an exhibitor's representative and the executive manager. The OTC program committee is similarly organized, with representatives from each of the societies jointly responsible for the solicitation, selection, and scheduling of papers presented during the OTC technical program. Members of the executive committee are:

D.K. Adamson, OTC Executive Manager
R.C. Rieder, Exhibitors' representative, Continental Emsco Co.
D.G. Russell (SPE-AIME), Shell Oil Co.
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M.M. Livingston (ASME)
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J.C. Redmond (IEEE), GTE Products Corp.

NASA Tours

Tours are scheduled for Tuesday, May 4, and Wednesday, May 5, 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.

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Monday 9:00 to 11:30 a.m.

- Geotechnical Investigation & Hazard Analysis
- Mooring & Anchoring
- Submersible Technology I
- Cerveza Project
- Structural Design
- Material Technology for Offshore Applications
- Drift Forces on Floating Bodies

2:00 to 4:30 p.m.

- Pile Driving & Pile Design
- Diving & Repair Operations
- Platform Fabrication & Installation
- GENERAL SESSION: National Plans for Offshore
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- Wind and Wave Loading Forces I
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- Ocean Mining I
- Support & Service Vessels

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- Internal Corrosion & Control
- Environmental Protection for Offshore

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- The Hutton TLP Project

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American Association of Petroleum Geologists — "Geology of Passive Continental Margins:

(continued on page 56)

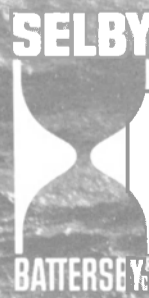
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OTC '82

Technical Program

Monday Morning

(continued from page 56)

- Drift Forces On Floating Bodies

OTC

4435 Slow Drift Forces on a Barge Type

- Structure Comparing Model Tests with Calculated Results
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- Pile Driving and Pile Design

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- 4205 Evaluating Pile Drivability for Hard Clay, Very Dense Sand, and Rock

- 4206 Suction Piles — A Proven Alternative to Driving or Drilling
- 4207 Piling of Garoupa Platform
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OTC

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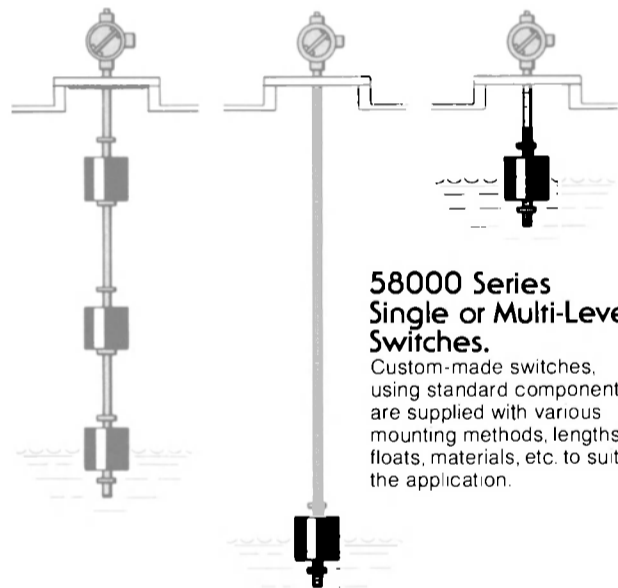
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The Offshore Technology Conference is one of the most comprehensive interdisciplinary, cooperative undertakings of the engineering and scientific community. The 12 societies that sponsor OTC have more than 500,000 members worldwide, and include every discipline associated with the exploration and production of ocean resources and environmental protection.

OTC is governed by an executive committee composed of a representative of each sponsoring society, plus an exhibitor's representative and the executive manager. The OTC program committee is similarly organized, with representatives from each of the societies jointly responsible for the solicitation, selection, and scheduling of papers presented during the OTC technical program. Members of the executive committee are:

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D.G. Russell (SPE-AIME), Shell Oil Co.
A.M. Olander (SEG), Exxon Co., U.S.A.
J.A. Rickard (MTS), Exxon Prod. Research Co.
J.R. Jackson Jr. (AAPG), Exxon Co., U.S.A.
C.G. Welling (SME-AIME), Ocean Minerals Co.
W. duB. Thomas (SNAME), J.J. Henry Co., Inc.
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American Association of Petroleum Geologists — "Geology of Passive Continental Margins:"

(continued on page 56)

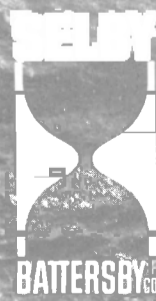
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OTC '82

(continued from page 55)

History, Structures, and Sedimentary Record," to be held at the Shamrock Hilton. Contact **Susan Bitner**, manager, Education Department, AAPG, 1444 South Bolder, Tulsa, Okla. 74101; (918) 584-2555.

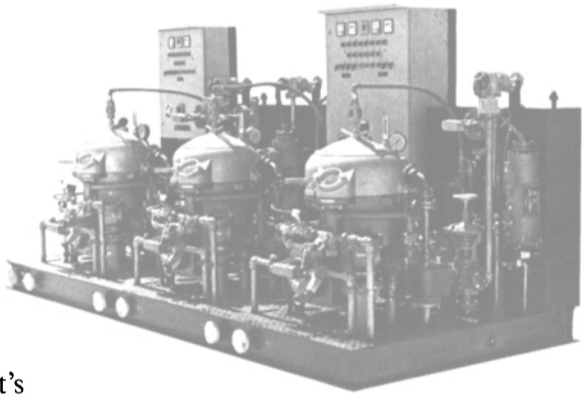
Institute of Electrical and Electronics Engineers — courses on

"Engineering Considerations for Microwave Communications Systems," and "Satellite Communications Systems," to be held at the Marriott Astrodome. Contact **Carolyn A. Yankoski**, course coordinator, IEEE, 445 Hoes Lane, Piscataway, N.J. 08854; (201) 981-0060.

American Society of Mechanical Engineers — courses entitled "Compliance Requirements of ANSI ASME SPPE Surface and

Subsurface Safety Valves Used in Offshore Oil and Gas Operations Including Code Procedures, Repairs, and Remanufacturing," and "Safety and Hazard Control for Offshore Exploration and Production Operations," to be held at the Marriott Astrodome. Contact **Joy Collier**, manager ASME, Professional Development Program, 345 East 47th Street, New York, N.Y. 10017; (212) 644-7743.

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OTC '82

Technical Program

Monday Morning

9:00 to 11:30 a.m.

• Geotechnical Investigation and Hazard Analysis

OTC

- 4168 Case Study for an Integrated Geophysical and Geotechnical Site Investigation Program for a North Sea Platform
- 4169 Geotechnical and Engineering Geological Investigations of Deep-Water Sites
- 4170 U.S. Geological Survey Studies of the Surficial Geology of the Continental Slope in the Baltimore Canyon Area—Techniques and Findings
- 4171 East Coast Hazards Observation (ECHO) Program—Deep-Water Geologic Surveying for Platform Siting
- 4172 Geologic Hazards in Navarin Basin Province, Northern Bering Sea
- 4173 Hazard Analysis on the Mid-Atlantic Continental Slope, Proposed OCS Lease Sale 59 Area

• Mooring and Anchoring

OTC

- 4174 Assessment of Deep Water Anchorings Based on Their Dynamic Behavior
- 4175 The Break-out Behavior of Suction Anchors Embedded in Saturated Sands
- 4176 Installation of Fleet Moorings at Diego Garcia, B.I.O.T.
- 4177 Deep Ocean Mooring Design Technology—Present Status and Future Development
- 4178 The Influence of Chain Friction on Anchor Pile Design
- 4179 Static and Fatigue Tests on Chainlinks and Chain Connecting Links

• Submersible Technology I

OTC

- 4180 Ten Years of Operational Experience with CURV III
- 4181 The Evolution and Design of a Force Balanced ROV
- 4182 A Non-Buoyant ROV for Performing Heavy Sub-Sea Work
- 4183 On the Development of Japanese 2,000m Deep Submergence Research Vehicle SHINKAI 2000 System
- 4184 The Design of a One Atmosphere Submersible/Diving System

• Cerveza Project

OTC

- 4185 Cerveza—A Project Overview of a Deepwater Platform for the East Breaks 160 Field
- 4186 The Design Experience for a One Piece Jacket, 935 Feet of Water, Gulf of Mexico
- 4187 Fabrication of Platform Cerveza
- 4188 Installation of Platform Cerveza

• Structural Design

OTC

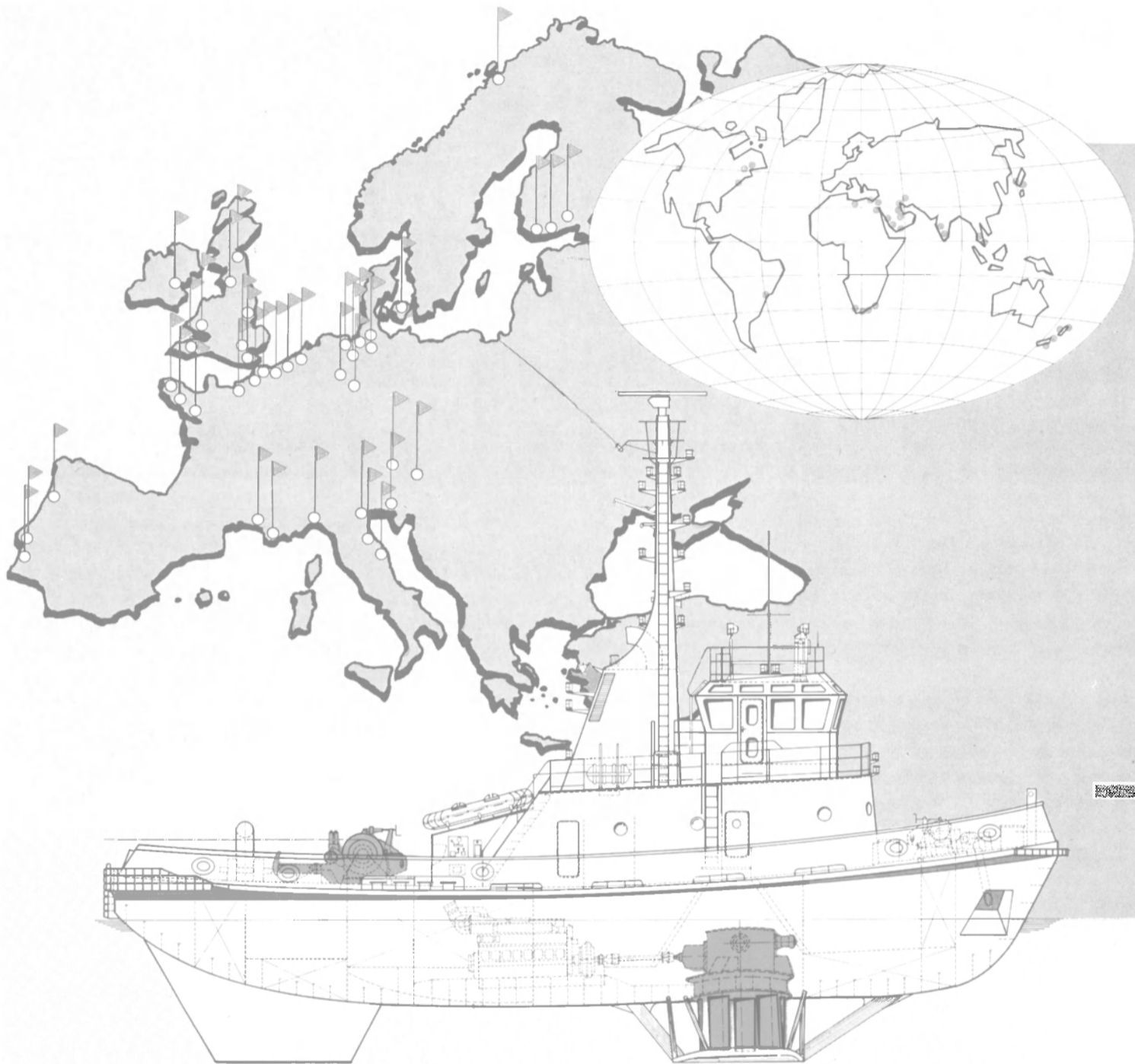
- 4189 Background to New Formulae for the Ultimate Limit State of Tubular Joints
- 4191 Comparison of Limit State Design Code with API RP 2A
- 4192 Development of Unified Design Criteria for Heavy Lift Operations Offshore
- 4193 Design for Accident Damage—Clyde Jacket Structure
- 4194 The Reappraisal of Steel Jacket Structures Allowing for the Composite Action of Grouted Piles
- 4195 Laminated Rubber Articulated Joint for the Deep Water Gravity Tower

• Material Technology for Offshore Applications

OTC

- 4196 Development of 50-60 kg/mm² UTS (X-70) Large Diameter Pipe and Experience of Application in Siberia
- 4197 Induction Bent Pipe for the Offshore Industry
- 4198 Recent Advances in the Technology of Cast Steel Nodes for Use in Offshore Structures
- 4199 New Welding Technologies for the Thick Plate of Offshore Structures
- 4200 The Development of Premium Joint for Metal Lined Tubing and Casing
- 4201 Ceramics as Alternative Materials for Critical Erosion/Corrosion Applications

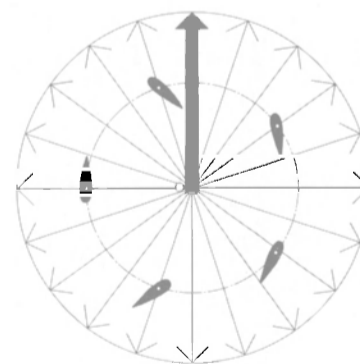
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OTC '82

Technical Program

Monday Morning

(continued from page 56)

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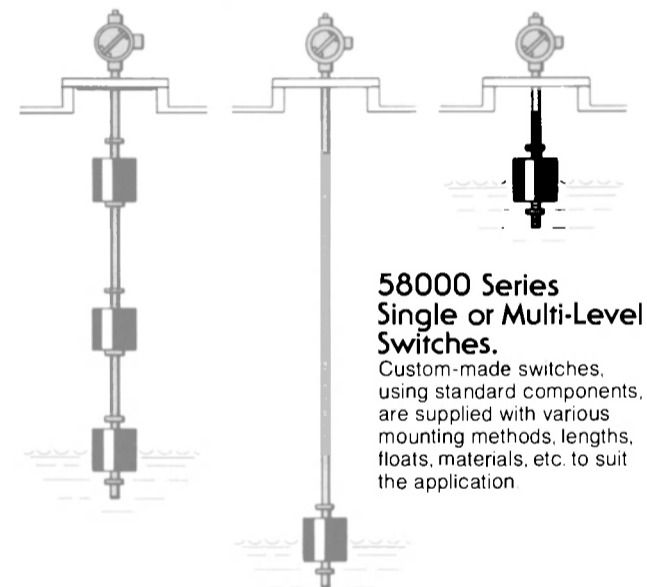
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• Fracture and Fracture Control

- OTC
 4236 Investigation of the Break-Down of Alexander Kielland Metallurgical and Fracture Analysis
 4237 Weld Defect Distributions in Offshore Structures and Their Influence on Structural Reliability
 4238 COD and Fatigue Crack Propagation Characteristics of Heavy Section C-Mn-V Forged Steel for Offshore Structure
 4240 Fatigue Life Improvement Factors Obtained By Weld Reinforcement and Toe Grinding
 4241 Factors Affecting Ductile Fracture in Offshore Gas Pipelines

• Wind and Wave Loading Forces II

- OTC
 4242 Wave Prediction in Shallow Water
 4243 Analysis of Vessels Moored in Shallow, Unprotected Waters
 4244 Methods for Dynamic Analysis of Floating Vessels
 4245 Windtunnel Tests on a Model of a Semi-Submersible Platform and Comparison of the Results with Full Scale Data
 4246 The Behavior of Semi-Submersible Platforms at Large Angles of List
 4247 Predictions of Pitching Motions and Loads of an Articulated Loading Platform in Waves

• Subsea Production Systems

- OTC
 4248 The Casablanca Subsea Completion System Design, Installation and Operation
 4249 North East Frigg Subsea Gas Production System
 4250 Case History of the Cormorant Field Single Satellite Well
 4251 Guidelineless Caisson Sub-Sea Completion System
 4252 An Improved Design of the Subsea Atmospheric System (SAS)
 4253 New Safety Valve for Subsea Installations

• Geophysical Data Gathering and Interpretation

- OTC
 4254 Some Geometric Aspects of Towed Air Gun Arrays
 4255 Marine Seismic Energy Sources: Acoustic Performance Comparison
 4256 Coherent Noise in Marine Seismic Data: Its Understanding and Suppression
 4257 The Exploration Applications of Seismic DHI Analysis in the Malay Basin
 4258 Three Dimensional Seismic Interpretation of a Piercement Salt Dome
 4259 Multichannel Seismic Transect of the Somali Continental Margin

• Ocean Mining I

- OTC
 4260 Remote Acoustic Sensing of Manganese Nodule Deposits
 4261 Soil-Machine Interaction Studies for Manganese Nodule Mining
 4262 Design and Observation Tests of an Experimental Nodule Collection Vehicle
 4263 Implementation of the Deep Seabed Hard Mineral Resources Act
 4264 Industrial Response to Ocean Mining Regulations — Panel Discussion

• Support and Service Vessels

- OTC
 4431 Four Years Experience Operations of MSV (Multi-Functional Support Vessel)
 4432 The Developing Technology for SWATH Ships
 4433 Natural Environment Stability Tests of an Industrial Vessel Hull Form
 4434 Diving Support Vessel: Mono Hull vs Semi-Submersible — A Cost Effective Analysis

Tuesday Afternoon
 2:00 to 4:30 p.m.

• Offshore Pipelines II

- OTC
 4265 Route Selection and Construction Techniques for the Marine Pipeline Crossing to Vancouver Island
 4267 Dynamic Lay Stresses for Pipelines
 4268 A Modern Approach to Flowline Stress

Relief on Deep Water Offshore Production Platforms

- 4269 Method for Laying and Connecting Intrafield Flowline Bundles in Deep Water
 4270 Slug Detection in Offshore Gas Lines from Variations in the End Pressure

• Floating Production and Processing Systems

- OTC
 4271 Offshore Storage and Treating of Crude Oil Aboard a Modified Oil Tanker
 4272 Offshore Facilities Weight, Area and (continued on page 60)

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OTC '82

Technical Program

Tuesday Afternoon

(continued from page 59)

- Cost Estimation Performed by Systems Computer Simulation
- 4273 Evolutionary Developments Advancing the Floating Production, Storage and Offloading Concept

"Kordek® fiberglass grating gives us a better boat deck than we ever thought possible."



Frank Bertolino (right), purchasing agent and Archie Flowers, marine superintendent, Marine Transport Division, Western Geophysical, examine sample of Kordek fiberglass grating. They discovered 14 good reasons to put Kordek on every ship in the fleet, after trying it once to improve footing for crews

Western Geophysical installed Kordek on one seismic vessel for safer footing, then discovered 14 more reasons to expand program to entire fleet.

Here are the reasons Western Geophysical's marine superintendent, purchasing agent and ship crews give for switching to Kordek fiberglass grating on their fleet of more than 40 ships:

Safety first

1. Nonskid footing was the first reason for installing Kordek fiberglass grating in place of other decking. Nonskid grit is epoxied onto Kordek. It does not wear off like painted grit on wood and gives surer footing than ordinary ridged fiberglass.
2. Kordek is flat when installed and stays flat. No tripping hazards.
3. Kordek resists fire better than wood, plus it allows fire-fighting chemicals or water to reach the steel deck underneath.
4. Selection of fine-grit, nonskid surface means seismic cable skin is not damaged.

Kordek is convenient.

5. Installation is easy. 1/4-inch pipe raises deck, angle iron forms outer edge, and Kordek panels fit flat in 1/2-inch "T" bar. Corners and holes cut easily with a sabre saw.
6. Deck maintenance is simplified. Crew can see through grate to steel deck and 7. remove lightweight panels easily to reach tanks and to clean steel deck.
8. Kordek fiberglass grating cannot rust. Also, it helps prevent steel deck rust by allowing water to drain away quickly.

Crew comfort, productivity

9. Waves coming over the side hit Kordek and disperse down through grate holes. No splashing or slippery water under foot. No fighting to stand up or running for cover with big waves.
10. Because of this, the crew does not tire as quickly from fighting to stand up in high seas.
11. Kordek does not float up and out of place when a large wave sweeps the deck.
12. Kordek is cooler than board decking. Air circulates under and through the decking to dissipate heat waves from underneath.

Improved appearance

13. Kordek fiberglass grating makes an attractive and organized deck. It makes the vessels look good. (See the photograph above.)

Savings

14. Kordek fiberglass grating is a long-life decking compared to other types. It will not rot or rust and does not wear as quickly.
15. Kordek extends deck paint life since general housekeeping and maintenance can be performed while the decking is in place.

Why Kordek brand fiberglass grating?

With 60 percent fiberglass by weight, Kordek is up to twice as strong as ordinary fiberglass grating. An exclusive, patented matched-die process compression molds glass and resin at high temperature and pressure to assure superior adhesion and dispersion of glass. No other fiberglass grating is made this way.

Kordek gives you the strength of steel with the durability and lightweight of fiberglass. After thousands of load cycles at maximum load rating, Kordek does not fatigue, creep or permanently deform. It is nonsparking, nonconductive and will not rust or corrode even under the severest salt spray.

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- 4274 FPSO II—A Second Generation Floating Production System for Offshore Philippines
- 4275 The Topside Design for the North Sea Brae Field Platform
- 4276 Influence of Irregular Motion of a Floating Structure on Offshore Absorption and Distillation Processes

• Submersible Technology II

- OTC:
- 4277 Experimental Assessment of Manipulator Performance with Particular Emphasis on Tool/Work-Object Interface Choice of Umbilical Cable for Submersibles Footprint Optimization
- 4278 Specialized Deepwater Drilling Support — Remotely Operated Vehicle
- 4280 A Tethered Submersible for Use as a Tool by a Diver
- 4281 Control System and Hydrodynamic Analysis for TUMS (Towed Unmanned Submersible)
- 4282 Protecting Submarine Cables from Accidental Damage

• Dynamics of Fixed Structures

- OTC:
- 4283 Damping and Natural Frequency Estimation Using Least Pth Optimization Technique
- 4284 Analysis of Ambient Vibration Data by Multiple Shape Vectors
- 4285 Measured and Predicted Dynamic Response of a Single Pile Platform to Random Wave Excitation
- 4286 Multichannel Maximum Entropy Method of Spectral Analysis Applied to Offshore Platforms
- 4287 Full-Scale Measurement of Natural Frequency and Damping Ratio of Jack-up Oil Rig and Some Theoretical Considerations
- 4288 Wind Tunnel Test of a Guyed Tower Deck

• Marine Seismic Data Processing

- OTC:
- 4289 Improved Synthetic Seismic Trace Generation Using Check Shot Survey Data
- 4290 How to Improve Your Exploration Success Ratio — A Case Study
- 4291 New Developments in the Processing of Marine Seismic Data — Panel Discussion

• Ocean Mining II

- OTC:
- 4292 French Shelf Sand and Gravel Regulations
- 4293 Massive Enriched Polymetallic Sulfides of the Ocean Floor — A New Commercial Source for Strategic Minerals
- 4294 A Continuous Seafloor Sediment Sampler (CS3)
- 4295 Phosphate Exploration and Resource Potential on the North Carolina Continental Shelf
- 4296 Geological and Geophysical Exploration for Offshore Ilmenite Placers Off the Konkan Coast, Maharashtra, India
- 4297 Lifting Characteristics of Solid Particles by Air-Lift Pump

• Modeling Ice Behavior

- OTC:
- 4420 Recent Developments in Physical Ice Modeling
- 4421 Applications of Fracture Mechanics Techniques in Calculating Design Ice Forces on Arctic Structures
- 4422 Modelling Ice Rubble Fields Around Arctic Offshore
- 4423 Ice Rubble Field Stability
- 4424 Interaction of Ice Flows with Columns of a Semi-Submersible
- 4425 Dynamic Response of Moored Semi-Submersibles to Ice-Force Impacts, Irregular Waves and Currents

Wednesday Morning

9:00 to 11:30 a.m.

• Site Surveying

- OTC:
- 4298 Offshore Geotechnical Investigation Using Cone Penetrometer
- 4299 Introduction of a New Offshore Cone Penetrometer (CPT) Device for Gulf of Mexico
- 4300 A 40-Foot Static Cone Penetrometer
- 4301 Soil Properties in Magallanes Basin, Tierra del Fuego
- 4302 Evaluation of Test Methods Designed to Obtain the Undrained Shear Strength of Muds
- 4303 Stability of Near-Surface Sediment on

(continued on page 62)

Maritime Reporter/Engineering News



Engine operating efficiencies on the M/V Peace add up to \$180,000 annual savings.

"General Electric diesel engines on the repowered Motor Vessel Peace provide an impressive set of operating efficiency figures," emphasizes W. N. (Buck) Lay, Vice President of Operations at Dravo-Mechling.

"Through our motive power studies and engine application experience, we've projected that the GE engines will save more than 156,000 gallons of fuel annually. In addition, we expect to stretch the hours between overhaul from 16,000 to 24,000. Together, these benefits add up to approximately \$180,000 per year in savings."

Other important considerations in Dravo-Mechling's selection of GE engines were the reliability earned during more than 50 million hours of proven service, maintenance simplicity, and maximum standardization of parts.

General Electric diesel engines thus help achieve significant operating efficiency as the Peace pushes

strings of barges from Cairo, Illinois, at the junction of the Ohio and Mississippi Rivers, to the port of New Orleans.

Fuel efficiency and time between overhauls will vary from one application to another. To learn more about how GE diesel engines can help you, contact your GE representative or Manager, Diesel Power Products, Building 14-4, General Electric Company, 2901 East Lake Road, Erie, PA 16531 (814) 875-2319.

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Technical Program

Monday Morning

(continued from page 56)

the Mid-Atlantic Upper Continental Slope

• Hawser and Wire Rope Behavior

- OTC
4304 New and Used Strength of Large Marine Hawsers

4305 A Long Term Data Collection Study of The Hawser Mooring Forces on a Single Buoy Mooring Utilized by ULCCs and VLCCs

4306 Application of Internal Friction Damping as a Nondestructive Evaluation Technique for Synthetic Ropes Used as SMP Hawsers in Deepwater Ports

4307 Fatigue of SPM Mooring Hawsers

4308 The Dynamics of Wire Rope Subjected to Shock Axial Loads

4309 On the Dynamic Analysis of the Composite Mooring Lines

• Ice Mechanics

- OTC
4310 Observations on the Mode and Rate

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- of Decay of an Artificial Ice Island in the Alaskan Beaufort Sea
- 4311 Strains and Strain Rates in Indentation Problems
- 4312 On the Prediction of Dynamic Ice-Structure Interactions: A Method for Modelling Strain Rate Effects
- 4313 Ice Ride Up on a Man-Made Island
- 4314 Rational Basis for Design of Floating Ice Roads and Platforms
- 4315 Load Bearing Capacity of Floating Drilling Ice Platform: Probabilistic and Reliability Analysis

• Marine Riser Systems

- OTC
4316 Deepwater Drilling in High Current Environment
- 4317 Longitudinal Resonant Behavior of Very Deep Water Risers
- 4318 The Strouhal Number of Vortex Shedding from Marine Risers in Currents at Supercritical Reynolds Numbers
- 4319 Hydrodynamic Tests on Marine Risers
- 4320 Syntactic Foam Buoyancy for Ultra-deep Riser
- 4321 Flexible Riser for a Floating Production Storage and Offloading System

• Oceanography and Meteorology

- OTC
4322 Strong Currents Measured in Deep Water at the Cognac Site: 1975-1978
- 4323 Test of Wave Hindcast Model Results Against Measurements During Four Different Meteorological Systems
- 4324 Application of a Numerical Wind-Driven Model in Hindcasting Storm — Generated Current Velocity Profiles
- 4325 Long Term Distribution of Hurricane Characteristics
- 4326 On the Shape of the Wind Wave Spectrum of the Norwegian Continental Shelf
- 4327 Development of a Global Ocean Swell Model

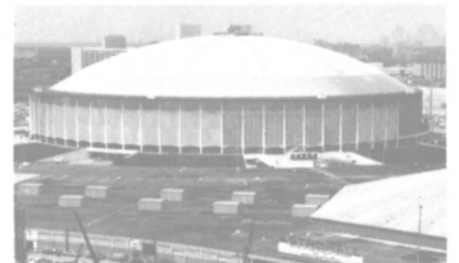
• Internal Corrosion and Control

- OTC
4328 Clad Steel Pipes for Oil, Gas and Water Transportation
- 4329 Corrosion Protection for the Internal Surfaces of the Storage Tanks in a Steel Gravity Platform
- 4330 Stepwise Cracking of Line Pipe Steels in Simulated Oilfield Environments
- 4331 Development of OTCG Resistant to Sour Environment
- 4332 North Sea Downhole Corrosion: Identifying the Problems: Implementing the Solutions

• Environmental Protection for Offshore

- OTC
4414 Investigations of Drilling and Production Effects on Closely Situated Corals, Offshore Philippines

(continued on page 64)



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Technical Program

Wednesday Morning

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- 4415 Effects on and Recovery of Microplankton and Microbenthon to Gulf of Mexico Oil Spill

- 4418 Oil Spill Contingency Plans Do Work
- 4419 Environment Protection in the Beatrice Field Development

Wednesday Afternoon
2:00 to 4:30 p.m.

• Arctic Island Construction

- OTC
4333 Design Aspects of a Mobile Arctic Caisson



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Technical Program

Monday Morning

(continued from page 56)

the Mid-Atlantic Upper Continental Slope

• **Hawser and Wire Rope Behavior**

OTC

4304 New and Used Strength of Large Marine Hawsers

4305 A Long Term Data Collection Study of The Hawser Mooring Forces on a Single Buoy Mooring Utilized by ULCCs and VLCCs

4306 Application of Internal Friction Damping as a Nondestructive Evaluation Technique for Synthetic Ropes Used as SMP Hawsers in Deepwater Ports

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4308 The Dynamics of Wire Rope Subjected to Shock Axial Loads

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 4314 Rational Basis for Design of Floating Ice Roads and Platforms
 4315 Load Bearing Capacity of Floating Drilling Ice Platform: Probabilistic and Reliability Analysis

• **Marine Riser Systems**

OTC

4316 Deepwater Drilling in High Current Environment
 4317 Longitudinal Resonant Behavior of Very Deep Water Risers
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 4319 Hydrodynamic Tests on Marine Risers
 4320 Syntactic Foam Buoyancy for Ultra-deep Riser
 4321 Flexible Riser for a Floating Production Storage and Offloading System

• **Oceanography and Meteorology**

OTC

4322 Strong Currents Measured in Deep Water at the Cognac Site: 1975-1978
 4323 Test of Wave Hindcast Model Results Against Measurements During Four Different Meteorological Systems
 4324 Application of a Numerical Wind-Driven Model in Hindcasting Storm — Generated Current Velocity Profiles
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 4327 Development of a Global Ocean Swell Model

• **Internal Corrosion and Control**

OTC

4328 Clad Steel Pipes for Oil, Gas and Water Transportation
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 4330 Stepwise Cracking of Line Pipe Steels in Simulated Oilfield Environments
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• **Environmental Protection for Offshore**

OTC

4414 Investigations of Drilling and Production Effects on Closely Situated Corals. Offshore Philippines

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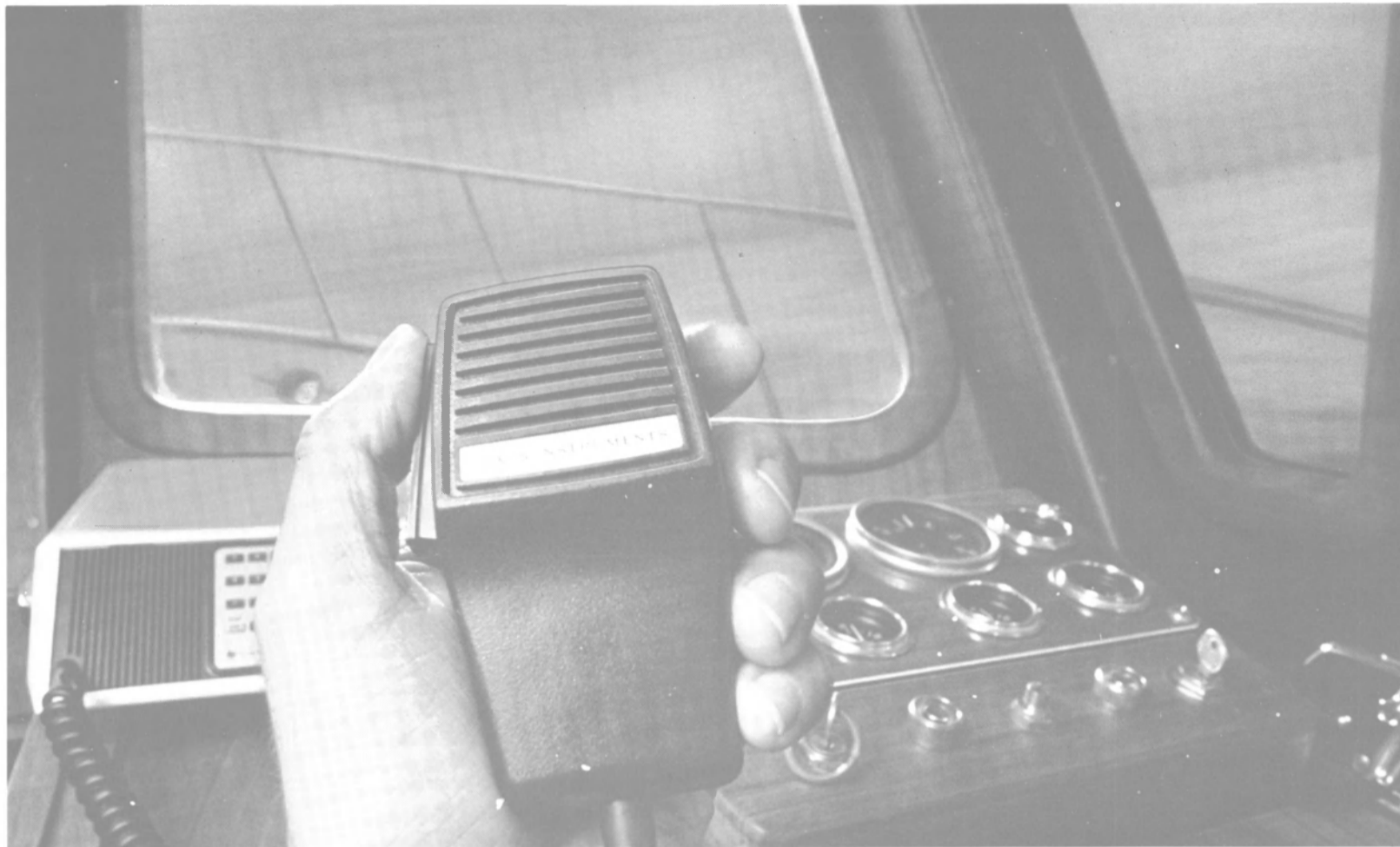
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OTC '82 Technical Program

Wednesday Morning
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- 4416 Installation of a Bell Shaped Structure for Underwater Blow-Out Control
- 4417 Sock Skimmer — Performance and Field Tests

- 4418 Oil Spill Contingency Plans Do Work
- 4419 Environment Protection in the Beatrice Field Development

Wednesday Afternoon
2:00 to 4:30 p.m.

- Arctic Island Construction

OTC

- 4333 Design Aspects of a Mobile Arctic Caisson
- 4334 Selection of Local Design Ice Pressures for Arctic Systems
- 4335 The Construction of Artificial Drilling Islands and Sheetpile Enclosed Drillsites in the Alaskan Beaufort Sea
- 4336 Freezing Front Penetration in Granular Fill Saturated in Seawater
- 4337 Thaw Settlement Prediction of Drill-Built with Frozen Gravels
- 4338 The Feasibility of Winter Hydraulic Dredging for Island Construction in the Alaska Beaufort Sea

- Seafloor Surveying and Mapping

OTC

- 4339 Performance Evaluation of an Advanced Sonar in Hydrographic Surveying and Offshore Operations
- 4340 TOPO-SSS A Phase-Measuring Side-scanning Sonar for Contour Mapping of the Seabed
- 4341 Seismic Reflection Profiling for Near-shore Construction
- 4342 A Seismic Survey Aids Foundation Design and Reduces Cost
- 4343 Computerized Data Base for Offshore Mapping
- 4344 High-Resolution Geohazards Surveys for OCS Oil and Gas Leases

- SPM Design and Analysis

OTC

- 4345 Systematic Evaluation of Rigid Yoke SPM Designs for Mooring Large Offshore Floating Plants
- 4346 Experience in Analysis of SPM Systems
- 4347 A Permanent Mooring for a Deep Water Production System
- 4348 Single Point Mooring System for Open Sea Service
- 4349 Control of the Low-Frequency Motions of Single-Point Moored Vessels
- 4350 Design of a New Concept of Single Point Mooring for Very Deep Waters

- Drilling and Production Technology

OTC

- 4351 The 15,000 PSI BOP System for Floating Drilling
- 4352 A Continuous Flexible 15,000 PSI Kill and Choke Line System from the BOP Stack to Deck—First Experience in the North Sea
- 4353 An Experimental Study of Well Control Procedures for Deep Water Drilling Operations
- 4355 Reliability of Down Hole Safety Valves Used in the North Sea
- 4356 Electric Power Slip Ring Assembly for Marine Riser Systems
- 4357 Odin Field Development

- Underwater Inspection

OTC

- 4358 In-Service Experiences with Eleven Offshore Concrete Structures
- 4359 Increased Efficiency in the Subsea Inspection of Structures in the Ekofisk Area
- 4360 Structural Inspection and Maintenance in a North Sea Environment
- 4361 Underwater Nondestructive Thickness Measurement of Corrosion-Pitted Steel Structures
- 4362 The Ultrasonic Torch—A Novel Device for Monitoring Steel Structures Underwater
- 4363 Underwater Inspection System for the Storm Surge Barrier in the Eastern Scheldt

- External Corrosion and Control

OTC

- 4364 An Electrolytic System for Controlling Marine Growth and Corrosion in Sea Water Service Systems
- 4365 Deep Water Effects on Cathodic Protection
- 4366 Telluric Current Effects on Cathodic Protection Potential Measurements on Subsea Pipelines
- 4367 Advances in Computerized Design and (continued on page 68)



Isolamin

INTERESTED IN LOSING WEIGHT?



Don't have an "overweight" vessel . . . Let Isolamin trim them down.

The economics of vessel operation and construction in today's extremely competitive Marine environment requires careful analysis of loads imposed on deck.

The selection and specification of ISOLAMIN Marine Accommodation Systems will reduce vital deck weight, and afford you the following:

⚓ Highest Sound Reduction — 33db. plus high thermal properties.

⚓ All Steel Construction, completely insulated and ready for erection.

⚓ No bulky framework required: installation by manhours is reduced in excess of 30% in comparison to outmoded systems.

⚓ Approved by 19 International Regulatory Agencies, including the U.S. Coast Guard

⚓ Aesthetically pleasing, with numerous choices of colors and finishes available.

ISOLAMIN panels, at only 4.5 pounds per square foot, will allow you to reduce that costly weight on deck load. If you are interested in "losing weight", ISOLAMIN offers you an alternative . . . Look into the benefits and savings in our accommodation systems, and our belief that . . . "At Sea . . . Second Best Won't Do."

***See us at the Offshore Technology Conference in Booth 9529 (Outside).

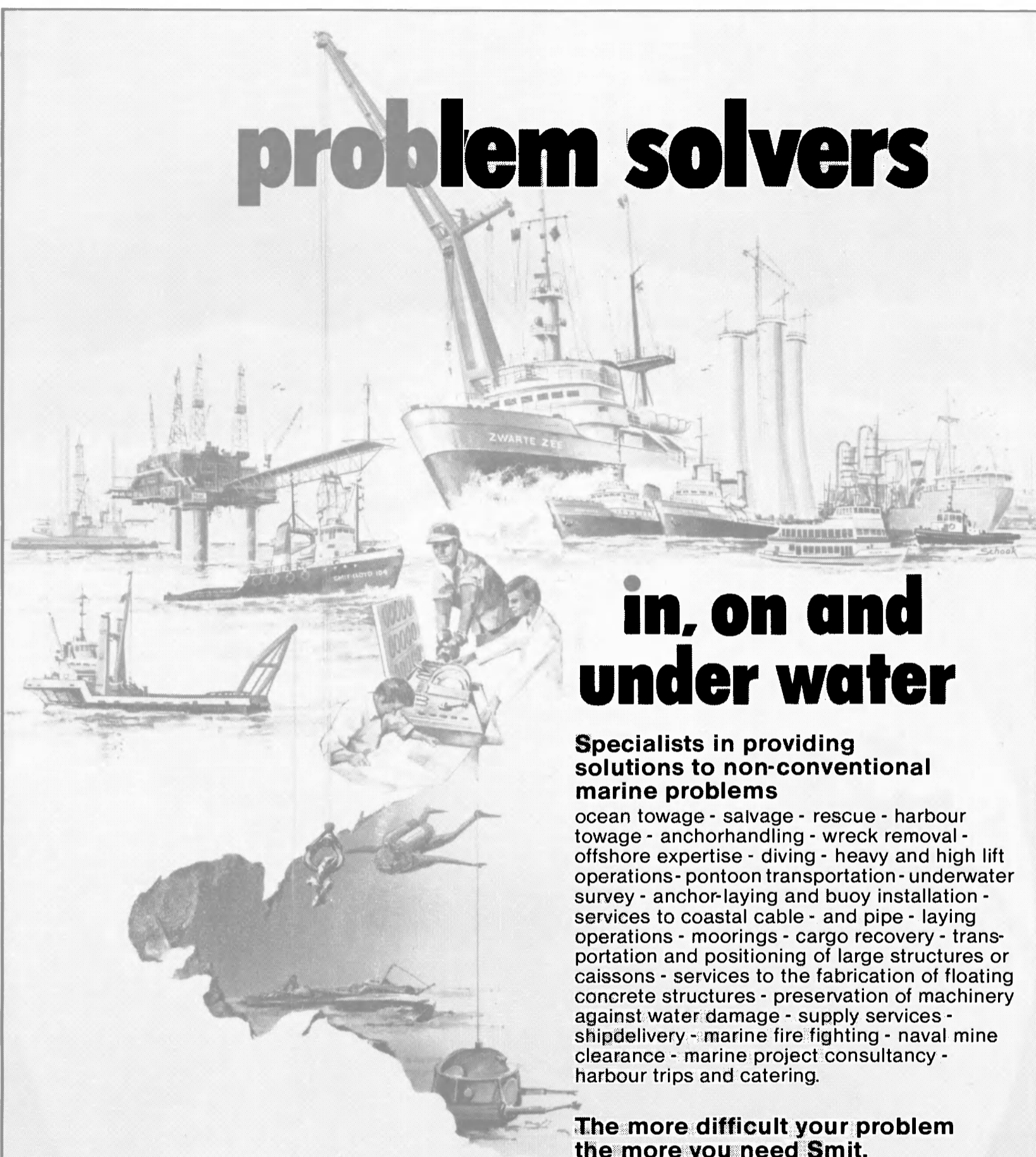


Isolamin Marine Accommodations

"At Sea, Second Best Won't Do"

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the more you need Smit.**



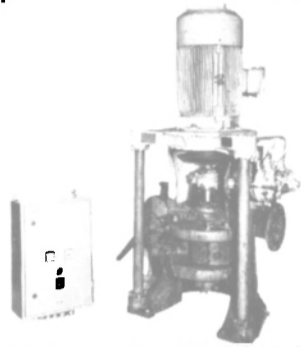
SMIT INTERNATIONAL (AMERICAS) INC.

NEW YORK: Smit International (Americas) Inc., 17, Battery Place, Room 1228, New York, N.Y. 10004.
Phone: 24 hr. (212) 344-7470; Western Union Telex: 128120; RCA235414

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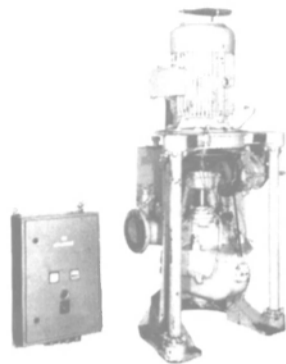
PUMPS

SELF-PRIMING FIRE & GENERAL SERVICE PUMP TYPE 150 VCB-A-NV Complete With Vacuum Pump



Built 1976. 6" x 6" — 397 GPM @ 230' head — 100 PSI — 1750 RPM — 792 GPM @ 115' head — 50 PSI — 1750 RPM or M³/hr — 90/180 @ 70M/35M head. MOTOR: 33 KW — 440 volts 3-phase 60Hz — 1800 RPM. Teikaku Machinery Works, Osaka, Japan. Condition very good. Lloyds or ABS.

SELF-PRIMING EMERGENCY FIRE PUMP TYPE 125-2VCS-A-NV



4" x 4" — 220 GPM @ 231' head (100 PSI) 1750 RPM (50M³/hr. @ 70M total head). Complete with vacuum pump. MOTOR: 25KW — 1800 RPM — 440/3/60Hz. Teikaku Machinery Works, Osaka, Japan.

SEND FOR PLANS. BOTH OF THESE PUMPS REMOVED FROM VERY NEW HANSA VESSEL "RABENFELS"

AUXILIARY FIRE PUMPS

BUILT 1977 BY K.S.B. GERMANY — (RADIAL FLOW)

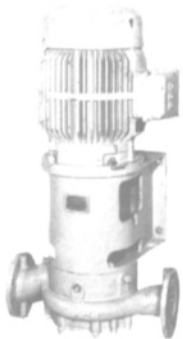
265 GPM — 220' HEAD

4" x 4" — 265 GPM — 220' head (60 M³ @ 70m) — 3520 RPM. MOTOR: 24KW — 440/3/60Hz.



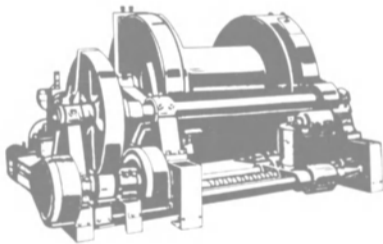
396 GPM — 230' HEAD

396 GPM @ 230' head (90M³ @ 70m)—3550 RPM. MOTOR: 33 KW — 3550 RPM — 440/3/60Hz.



LARGE STEAM TOWING ENGINE

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



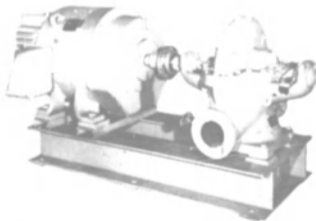
Heavy-duty Clyde with 36" diameter X 51" Face single drum. Flanges 68". CAPACITY: Up to 2800' of 2" wire rope. Normal line pull 40,000 lbs @ 50 FPM. Steam or air pressure required 125 to 250 PSI. Can be adapted to electric drive or increased steam or air pressure to a capacity of 82,000 lbs @ 20 FPM.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

ALSO AVAILABLE

Large towing ring — 36" I.D.

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

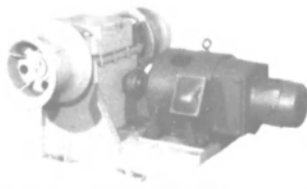
NEW UNUSED



EX U.S.N.

125 PSI (281 Ft.) total head. Suction lift none (flooded) 1750 RPM. With Falk #8F coupling—flexible, all metal, enclosed. MOTOR: Reliance type T—100 HP—1750 RPM —343 amps—230 volts DC—Frame 503AS. Pump has 5" suction—4" discharge. Pump & Motor mounted on base 37 3/4" wide X 6' 2 3/4" long X 3' 0 1/2" high. Total weight 3348 lbs.

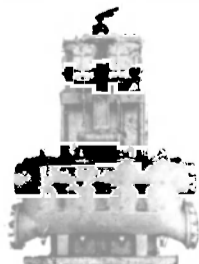
DOUBLE GYPSY BOAT WINCH



mfg. by Lakeshore duty; 2500 LBS @ 125 FPM—15 HP—230 VDC — 1780 RPM

\$2250

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



1400 GPM @ 110 PSI — suction lift 11.5 ft. — steam back pressure 15 lbs. 14" Suction—10" discharge — 2 1/2" steam — 4" exhaust. Overall width 6'8" — overall height 9'1 1/2" — depth 3'9 1/2". Wt. approx. 10,000 lbs.

RECONDITIONED 1980 ABS — READY TO GO

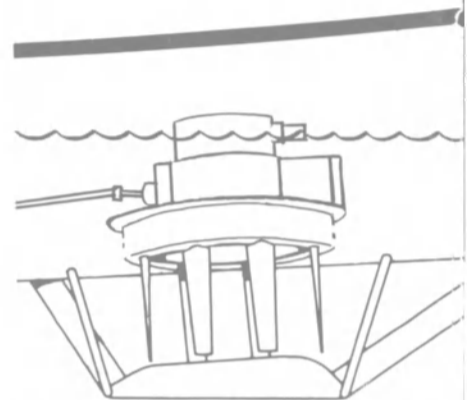
UNUSED ALCO MARINE CONDENSER



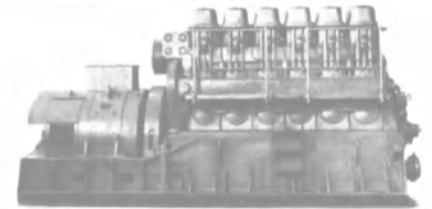
700 Sq. ft. — 2-pass — 3/8" CuNi tubes 0.049 (18BWG) — 108" effective length — 476 tubes — shell & head hydro test 30 PSI. Empty weight 6350 lbs. — 11,000 lbs. filled with water — operating 7550 lbs. — 2-Pass 9 3/8" inlet & outlet — length of condenser 156" — about 78" from exhaust flange to bottom of hot well.

TWO 1,000 HP VOITH--SO CYCLOIDAL COUPLING OMNI-DIRECTION

Can Be Located Side-By-Side
For Fast and Precise Movement
On Axis Turns Make Them Ideal



Serial Nos. NR-1783 and NR-1784. Unit size 24" blade length—2400mm blade orbit diameter. PRE heavy duty motor 800/1000 HP—440/3/60—1770 RPM. Mfg. by Electric Machinery Co. Complete with 120 volts 120 A.C.—line volts 450—amps 941/3/60. HYDRAULIC COUPLING ARRANGEMENT. UNIT BEARING MOTORS FOR BRIDGE CONTROL.

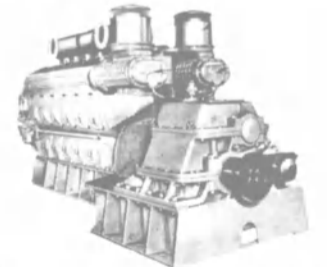


BALDWIN 250 KW DIESEL GENERATOR SET

ENGINE: Model VO — 450 HP at 400 RPM — 6 cylinder — 12 3/4" X 15 1/2" — 4-cycle — heat exchanger cooled — air starting. GENERATOR: 250 KW — Westinghouse — 120/240 volts DC.

MATCHED PAIR 900HP GM 12-567A DIESEL ENGINES

WITH FALK REVERSE AND REDUCTION GEAR



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.



THE BOSTON

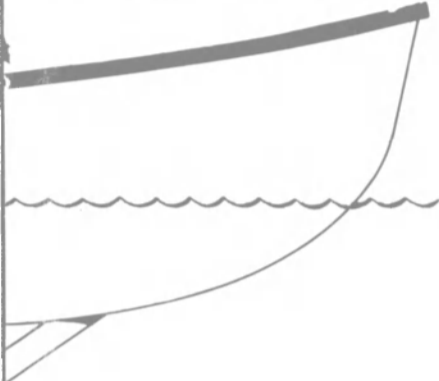
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1000 H.P. SCHNEIDER

CONTRA-ROTATING AXIAL PROPELLERS

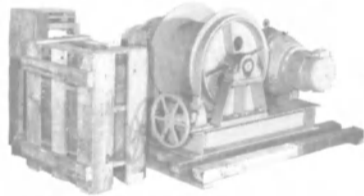
By-Side, Fore and Aft,
Movement Sideways and 360°
Rotation for Tugs, Ferries, Cranes, Etc.



E150. 6 Stainless steel blades each unit—1500mm
CENTRAL DRIVE with Voith AD40 reduction gears and
1750 RPM—squirrel cage—884 amps—frame 23153.
"Cage Controls" & motor controls. Size 8—Control
OR DRIVE DIRECTLY WITH DIESEL ENGINE AND
EQUIPMENT 1970. COMPLETE WITH HYDRAULIC SERVO

GENERAL PURPOSE WINCH 3500 LBS AT 200 FPM

NEW
UNUSED

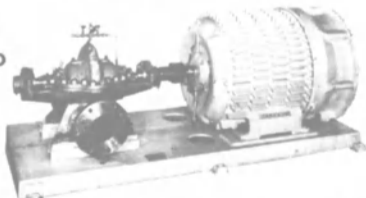


EX
U.S.N.

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

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

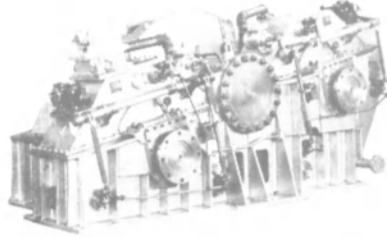
NEW
UNUSED



EX
U.S.N.

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

NEW - 3200 HP Farrell - Birmingham DIESEL REDUCT. GEARS

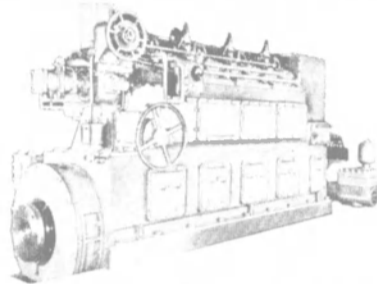


DOUBLE INPUT - SINGLE OUTPUT

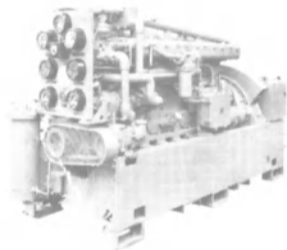
Farrell-Birmingham - 3200 SHP. Reduction gear: 1.81:1
— handles two 1600 HP diesels @ 720 RPM. With hy-
draulic couplings & Fawick clutch. Port and starboard.

\$7950 each

NEW CLARK 500BHP DIESEL 4-CYL. - AIR STARTING



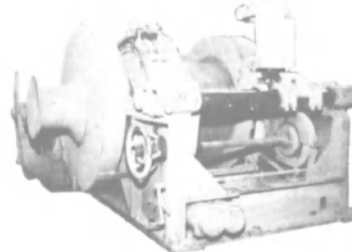
500 BHP @ 400 RPM. 4-Cylinder straight inline type -
12½" X 16" - 2-stroke single acting - liquid cooled
— direct reversible - CW rotation. With standard shaft-
connected starting air compressor. Weight 25,000 lbs.
— 228" long - 98" wide - 132" high. Designed for
heavy duty, rugged use, its extreme simplicity will
result in lower operating and maintenance costs.



GBD-8 DIESEL GENERATORS 100KW AT 240 VDC

120/240 VDC—417 amps—stab shunt—1200 RPM—Delco
generator—Self-excited. ENGINE: Superior GBD-8—8-cyl
—5½"X7—150 HP—30 volt electric starting. Reconditioned
to ABS. Dry wt. 10,000 lbs—DAL 124"—65½" high
—42" wide. Hgt necessary to pull piston 68". Fuel
consumption 0.620 lbs/hr.

100,000 LB. ALMON JOHNSON Constant Tension Mooring Winches



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

NEW U.S. MARAD-TYPE AXIAL FLOW FANS



(3) 10,500 CFM Model AF-100, "Baldor" 5 HP motor -
440/3/60 - 40° - 1750 RPM - 7 amps.

(1) Same as above, but 2-speed 1750/750 RPM -
Frame 184TCZ

(2) 12,880 CFM - Size 15AF - Baldor Motor - 7.5/
1.9 HP - 440/3/60 10/3.5 amps - 1750/880 RPM -
40°C - Frame 215TCZ

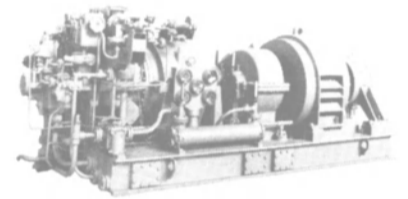
20,000 CFM - 1.9" SP - Size 200AF - 10 HP -
440/3/60 - 1750/880 RPM

(2) 40,665 CFM - size 43AF - 60 HP Baldor Motor -
440/3/60 - 1760 RPM - 75 amps - 50° rise - Frame
364TZ Ins. F

(1) 6000 CFM - AF40 - Baldor Motor - 3 HP -
440/3/60 - 1750 RPM - Ins. F - 40°C - Frame
182TCZ

(3) 2000 CFM - size 20AF - .75 HP - 440/3/60 -
3450 RPM 1.3 amps - Ins. F - 40°C - Frame 560Z.

450 KW A.C. TURBO-GENERATORS



GENERATOR: Westinghouse 450KW 563KVA—450/3/60
721 amps - 80% PF - 1200 RPM - serial nos. 2
S19P405 & 6 S19P405. GEAR: Worthington-Moore -
form 14 x 10 - gear 1200 RPM - pinion 6097 RPM
— ratio 5.08:1. Serial Nos. 7801 & 7802. TURBINE:
Worthington - 250 lbs steam @ 406° - form U356
— exhaust 27.5" vac. - shop order 4161 - serial Nos.
7801 & 7802.

WILL SELL ROTORS SEPARATELY

CROUSE HINDS 1000 WATT FLOODLIGHTS

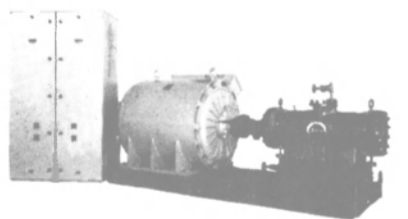
IN STOCK
NEW - UNUSED



HEAVY DUTY CAST ALUMINUM
marine floodlights—series 48116—
ADE 16. U.L. Marine listing 595—
also USCG accepted. Mogul base
—will handle 1000 watt incandes-
cent or clear metal Halide bulb.
Corrosion-resistant—hinged door.

700 G.P.M. @ 150 P.S.I. NEW - UNUSED - EX-U.S.N.

MOTOR DRIVEN ROTARY HORIZONTAL PUMPS WITH 4-SPEED 440/3/60 MOTOR



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

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OTC '82

Technical Program

Wednesday Afternoon

(continued from page 64)

- Analysis of Offshore Cathodic Protection Systems
- 4368 Protection Efficiency of Deepsea Mooring Cables
- 4370 An Evaluation of Bolt Coating Materials Currently Used for Corrosion Protection in Offshore Service

• The Hutton TLP Project

OTC

- 4426 Hutton TLP Design — Technical Management and Control
- 4427 Hutton TLP Vessel Structural Configuration and Design Features
- 4428 Hutton TLP — Mooring Systems
- 4429 Evaluation of Hutton TLP Response to Environmental Loads
- 4430 Assessment of Fracture Toughness Requirements for Deck Structure of Hutton Tension Leg Platform Using Finite Elements and the CTOD Design Curve

Thursday Morning

9:00 to 11:30 a.m.

• Safety and Fire Protection

OTC

- 4371 Fire Resistant Wellhead Equipment for Statfjord B Platform
- 4372 Developments on Fire Resistant Wellhead Equipment
- 4373 Offshore Evacuation — Past and Future
- 4374 Stand-By Rescue Ships — Their Roles and the Factors Involved in Performing Them
- 4375 Survival Suits for Offshore Use

• Arctic Transportation Systems

OTC

- 4376 Conclusions from the First Marine Transit to Point Barrow in Winter 1981 (by USCGC Polar Sea)
- 4377 Marine Transportation in Shallow Ice-Covered Waters
- 4378 Development of Archimedean Screw Tractor
- 4379 Design of an Air Cushion Transporter for Arctic Operations
- 4380 The VTOL Tilt Rotor Aircraft — Offshore Oil Support Capability
- 4381 Development and Field Testing of Beaufort Sea Ice Boom

• Communications Control and Vessel Motion

OTC

- 4382 A Remote Satellite Communication Terminal for the Geophysical Survey and Exploration Industry
- 4383 The Computer Assisted Operations Systems in a Northern North Sea Operation
- 4384 Development of the Telemetry and Telecontrol System for the Upper Zakum Field
- 4385 Controls for Offshore High Pressure Corrosive Gas Wells
- 4386 An Integrated Positioning Thruster Control System
- 4388 Real Time Prediction of Marine Vessel Motion, Using Kalman Filtering Techniques
- 4389 At Sea Motion Measurements Analysis Towards Parameter Identification of Stability

• TLP Design and Analysis

OTC

- 4390 Motion Instabilities in Tension Leg Platforms
- 4391 The Response of TLP in Short-Crested Waves
- 4392 Nonlinear Analysis of Tethered Buoyant Structures
- 4393 Response Characteristics of Tension Leg Platform with Mechanical Damping System in Waves
- 4394 Computation of Nonlinear Wave-Induced Motions and Loads of Tension Leg Platforms
- 4395 Structural Analysis of Tension Leg Platforms

• Marine Terminals and Systems

OTC

- 4396 The Hadera Offshore Coal Unloading Terminal: A New Approach to Unloading of Bulk in the Open Sea
- 4397 Design and Functional Requirements for the Floating Container Terminal at Valdez, Alaska
- 4398 Improvements in the Handling, Storage and Inspection of SPM Hoses at the Ju'Aymah Terminal, Saudi Arabia
- 4399 Variable-Orientation Berth for Large Carriers
- 4400 Evaluation of Internal Tank Corrosion and Corrosion Control Alternatives
- 4401 The Cold-Box Shuttle — A System for the Recovery of Offshore Gas — Applied to Sweden

• Fatigue Design and Testing for Offshore Structures

OTC

- 4402 Measurement of Fatigue Performance of Forties Bravo
- 4403 Fatigue Design Rules for Steel Welded Joints in Offshore Structures
- 4404 Fatigue Fracture Mechanics Analysis of T and Y Joints
- 4405 Fatigue Tests on Large Post Weld Heat Treated and As Welded Tubular T-Joints
- 4406 Combined Hot-Spot Stress at Tubular Joints
- 4407 An Analytical Study of Stress Concentration Effects in Multibrace Joints Under Combined Loading

• Foundation and Site Case Histories

OTC

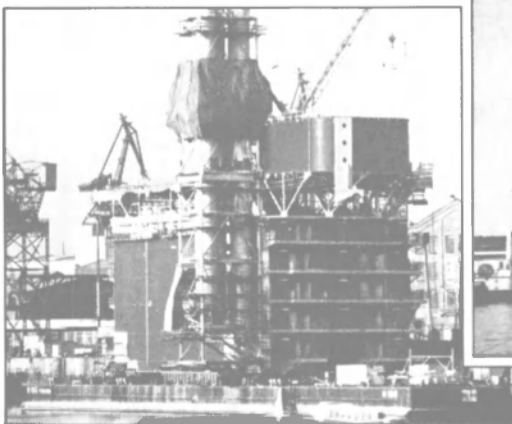
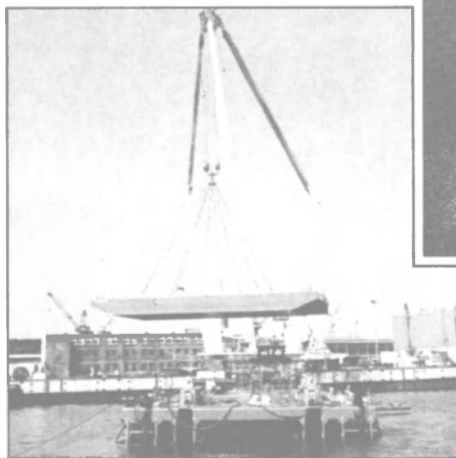
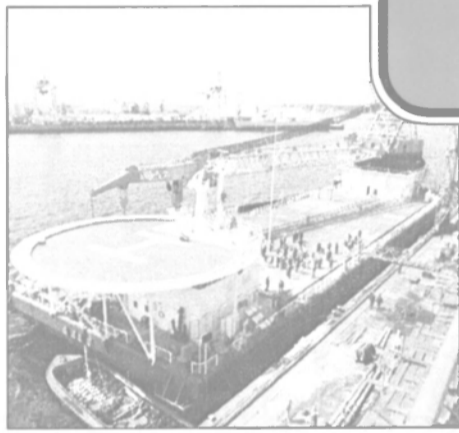
- 4408 Rig Jacking of Soft Soil Foundations: Improvements in Safety and Speed by Monitoring Leg Loads
- 4409 Jackup Rig Foundation Stability in Stratified Soil Profiles
- 4410 Experiences with Scour Repair Methods in the Southern North Sea
- 4411 Design of Pipelines in Mudslide Areas
- 4412 Geotechnical Properties of Alaska OCS Marine Silts
- 4413 Soil Structure Interaction of Gravity Structures on Multiple Footings

(continued on page 71)

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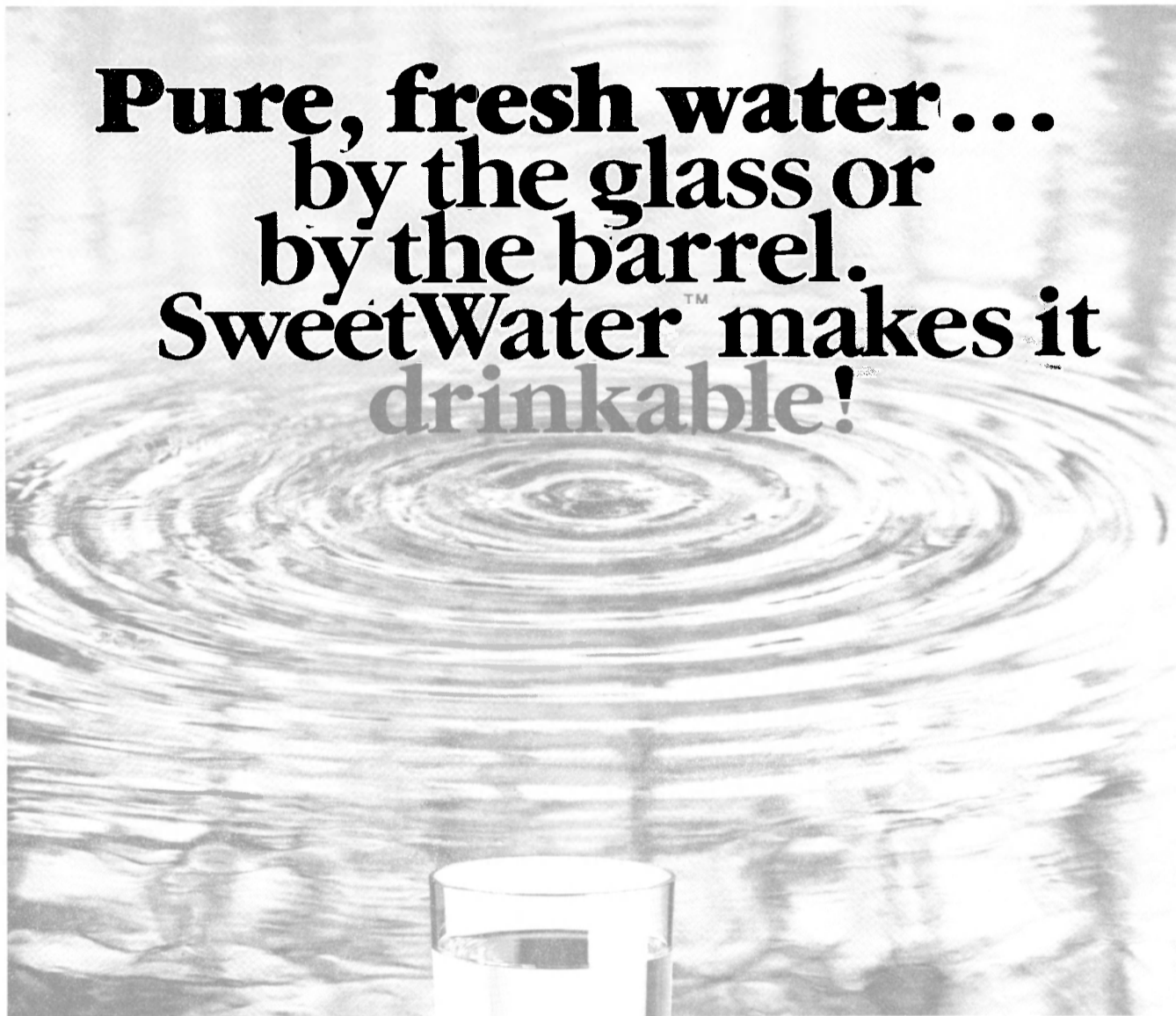
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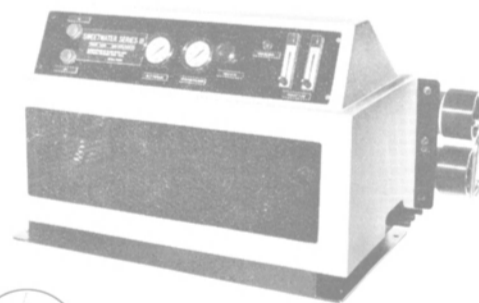
Pure, fresh water... by the glass or by the barrel. SweetWater™ makes it drinkable!



By reversing one of nature's oldest phenomena, "osmosis," the SweetWater reverse osmosis water maker makes fresh, good tasting drinking water from virtually any available water source. From polluted ponds, bore holes, brackish wells, sea water, even waters tainted with foul taste and odor.

You can use SweetWater in hundreds of places—commercial marine, pleasure boating, offshore oil rigs, hospitals and medical centers, remote resorts, industrial plants and factories, disaster relief—to name a few.

The SweetWater water maker features a light-weight, compact and self-contained fiberglass enclosure with corrosion resistant gauges. It is easy to install and is *much more economical* to operate than distillation methods. Choose from six basic models, with capacities ranging from 100 to 4,000 gpd (378.5 to 15,140 lpd). Ask for our brochure; it gives all of the specifics.



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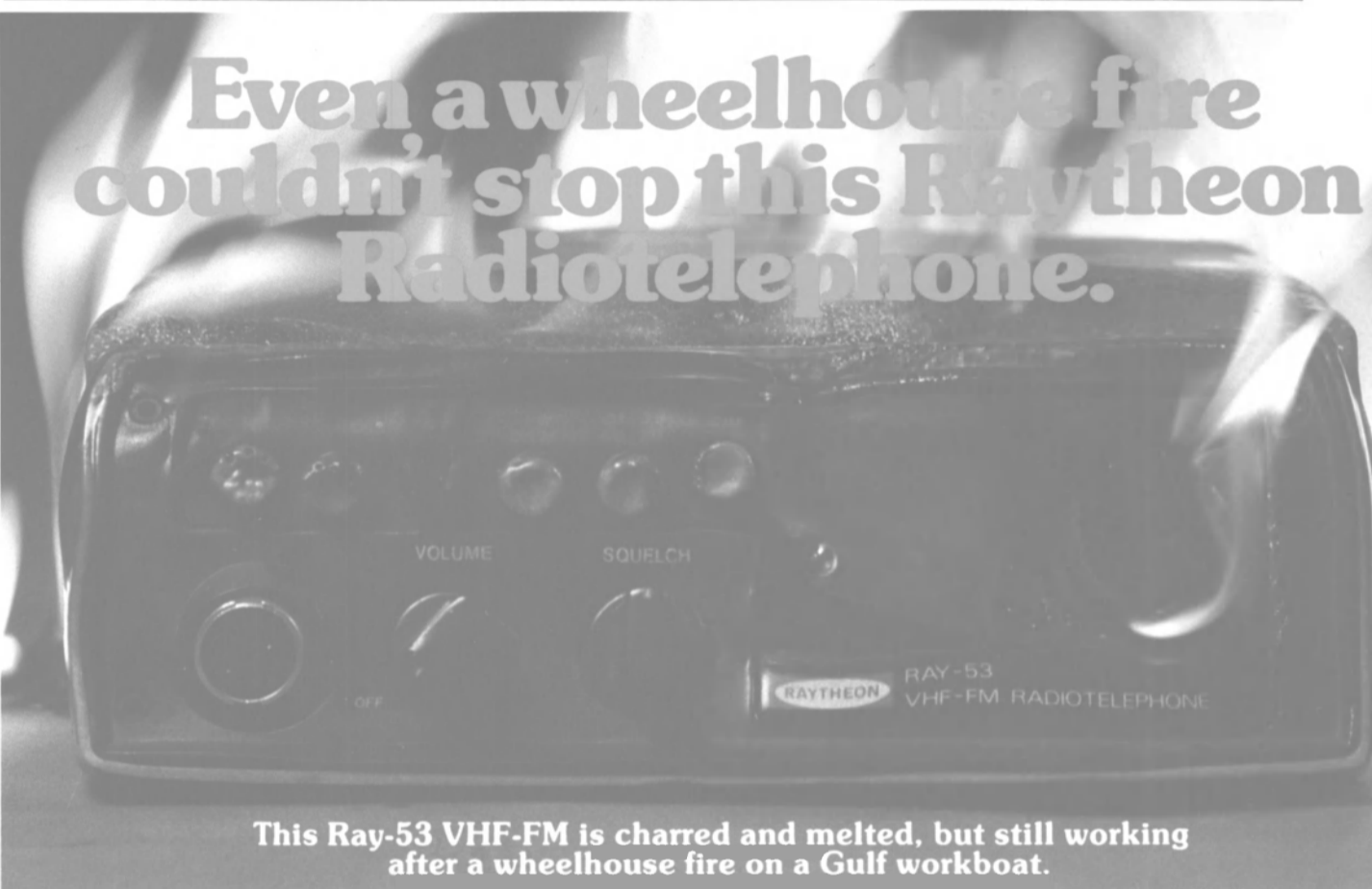
OTC '82

List Of Exhibitors

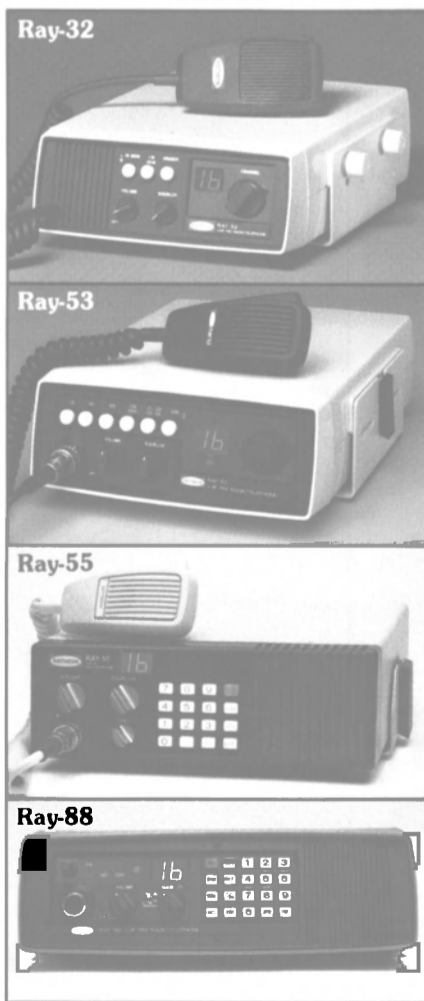
Exhibitor	Booth	Exhibitor	Booth
Aalborg Vaerft A/S	1381	Black, Sivalls & Bryson	6551
Aberdeen Service Co. (North Sea) Ltd.	3347, 3351	Blackburn Marine Supply Company	3684
Abex/Denison	9322	Blohm & Voss AG	1755, 1773
ABM/McDaniel Controls, Inc.	6212	Blue Water Marine Supply, Inc.	2749
ACMI-Industrial Division	7329	Boeing Vertol Company	4515
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Aeg-Telefunken	1755, 1773		
Aeroquip Corporation Industrial Division	6321		
Aga Navigation Aids	1375, 9515		
AGIP (ENI Group)	7125		
Airco Cryogenics Div. of Airco, Inc.	6224		
Aker Engineering A/S	2433, 2449		
Aker Trondelag A/S	2433, 2449		
Al George, Inc.	3233		
Albany International	2299		
Alco Power Inc.	4727		
Alexander Industries Inc.	4218		
Alfa-Laval, Inc.	3617		
Allen-Bradley	2387		
Allied Marine Crane, Inc.	4312		
Alpha Inc.	3271		
Alsthom Atlantique	2133, 2233		
Amarillo Gear Company	6512		
Amhoist American Hoist & Derrick Company	4933		
American International Tool Company	9344		
American Smaco, Incorporated	1755, 1773		
Ameron Protective Coatings Division	1156		
Ametek, Inc. Straza Division	4418		
AMF Scientific Drilling International	2295		
AMF Tuboscope, Inc.	1431		
Anchor Drilling Fluids A/S	2433, 2449		
Anchor Pipe	4150		
Anchor Systems	2133, 2233		
Anchoring International, Inc.	2589		
Andrews Bearing Corporation, Subsidiary of MPB Corporation	6128		
Anixter Bros., Inc.	2692		
The Ansul Company	6415		
Anvil Industries Inc.	6516		
Appleton Marine, Division of Appleton Machine Co.	2689		
Applied Drilling Technology Inc.	3531		
Aqua-Chem	2005		
Aqua-Dyne Inc.	4058		
Aquila Favco Cranes Ltd.	9744		
Arcticon	1381		
Arrowhead Continental	6817		
Arsenale Triestino San Marco (Fincantieri Group)	7143		
Asea	2275		
Asteo	2133, 2233		
WS Atkins Group	6548		
A/S Atlas	1381		
Atlas Copco	1375, 9515		
Dresser Atlas Div. of Dresser Industries, Inc.	2503, 9201		
Atlas Machine Products, Inc. and Atlas Fluid Controls Corporation	6601		
Atlas Mud Co.	4729		
Autocon, Inc. A Division of Camco	3639		
Automatic Power, Inc.	2713		
Automatic Terminal Information Systems	9034		
Avco Corporation	3275		
Axelson, Inc., Subsidiary of U.S. Industries, Inc.	4947		
Aztec Corp.	4729		
B & V Oil Tools	9046		
B & W Division	4627		
Bakelittfabrikken A/S	2433, 2449		
Baker Oil Tools Company	3307, 9412		
Baker Production Services	3307, 9412		
Baldt Incorporated	2698		
Bass Oil Ltd.	4013		
Baylor Company	4378		
B.C. Manufacturing Co., Inc.	9805		
GH-Bear	2335, 9625		
Beebe Bros., Inc.	2734		
Behring International, Inc.	6928		
Bekaert Steel Wire Corporation	3547		
Belzona Molecular	6870		
Benthos, Inc.	1255		
Isaac Bentley and Co. Ltd.	3347, 3351		
A.S. Bergens Mekaniske Verksteder	2433, 2449		
D. M. Best Co. Inc.	2475		
Best Industries, Inc.	3692		
Best-Hughes, Inc.	9103		
Bestolife Corporation An RSR Corporation	7229		
Bethlehem Steel Corporation	2001		
GH-Bettis	2335, 9625		
BF Goodrich Company	4214		
BG Products Inc.	9445		
The BI-M Instrument Co., Inc.	3596, 9040		
The Bimac Corp.	6332		
Birdwell Division, Seismograph Service Corp.	3584		
BIW Cable Systems, Inc.	2740		
BJ-Hughes Machinery Division	1333, 3501		
BJ-Hughes Services Division	4507		
Black Gold Rubber Products, Inc.	1637		



Even a wheelhouse fire couldn't stop this Raytheon Radiotelephone.



This Ray-53 VHF-FM is charred and melted, but still working after a wheelhouse fire on a Gulf workboat.



Because they're built tough, all Raytheon radiotelephones have earned a reputation for "not quitting." And while we can't guarantee that your radiotelephone will survive the devastation of a ship-board fire, all Raytheon radiotelephones are designed and tested to withstand shock, vibration, corrosive salt air and severe temperature extremes.

Radiotelephones for Every Kind of Boat.

Raytheon offers four different VHF-FM radiotelephones to meet the needs of virtually all sizes and types of commercial and recreational vessels. All have these outstanding features:

- Fully synthesized, all solid-state.
- Quick-select CH 16.
- Push-button selection of 25 or 1-watt transmission.
- Four U.S. and Canadian weather channels.
- LED readout of channel in use.
- Full set of transmit and status indicators
- Protection against shorted antennas and overloads.
- High-level audio speakers.
- Special "squelch" for superior reception in noisy areas.
- Adjustable panel illumination.
- Universal mounting.
- Meet or exceed U.S. FCC and Canadian DOC requirements.

Ray-32 VHF-FM Radiotelephone

High-performance at the lowest possible cost. Rotary selection for 28 of the most popular U.S. channels...with LED readout of active channel and outstanding Raytheon performance features.

Ray-53 VHF-FM Radiotelephone

One of today's biggest sellers with superb performance at a moderate cost. Rotary selection of all U.S. channels (54 transmit and 61 receive)...with LED readout and positive indicators of operating mode.

Ray-55 VHF-FM Radiotelephone

Raytheon's original "tough-guts" unit. Keyboard operation and selection of all U.S. and international channels (55 transmit and 72 receive). Combines microcomputer technology with proven VHF-FM circuitry.

Ray-88 VHF-FM Radiotelephone

Worldwide VHF-FM (54 transmit and 78 receive) features programable 6-channel "sea-watch" scanning with selectable priority (CH 16 or other). Especially designed for commercial mariners, its full-function remote meets lock-out requirements of Bridge-to-Bridge Radiotelephone Act.

Unmatched Two-year Warranty

All Raytheon Radiotelephones have a two-year limited parts warranty with one-year free service by U.S. Dealers and worldwide service network in major ports everywhere.



RAYTHEON MARINE COMPANY
676 Island Pond Road
Manchester, N.H. 03103
(603) 668-1600





Exhibitor	Booth	Exhibitor	Booth
Columbian Bronze Corp.	4030	Consafe	1375, 9515
Columbian Division	4627	Construcciones Y Equipos Latino Americanos S.A.	2901
Combination Pump Valve Company	4305	Constructora Protexa S.A. De CV	2901
Comex Group Companies	3573	Continental Emsco, An LTV Company	4229
Communications Systems Limited	6605	Control Flow, Inc.	4016
Compression Coat, Inc.	2638	Controlled Pressure Systems, Incorporated	2799
Compressor Engineering Corporation	1181	Cooper Manufacturing Corporation	9735
Comsat	4241	Corr Tech, Inc.	2684
Conat Arbeitsgemeinschaft	1755, 1773	Corrick International	4060
Concrete Technology Corporation/Abam Engineers, Inc.	2840	Corrintec Scandinavia	1231
Condux S.A. De CV	2901		
Conmaco, Inc.	2659		

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Exhibitor	Booth
Boele's Shipyards & Engineering Co. Ltd.	1457, 1473
Bolt and Nut Division Daniel Industries, Inc.	4625
Borsig GmbH	1755, 1773
Bos Kalis Westminster Ltd.	3347, 3351
Bowen Tools, Inc., A Big Three Industry	4307
Braden Winch Co./Div. of Paccar Inc.	4051
Brahmex, S.A. De C.V.	3593
Brand-Rex Company	2691
The Brandt Company	4144
Branham Industries, Inc.	3593
Brdr. Christensens Haner A/S	1381
Breda Fucine	7143
Brinadd Company	4351
Brinkerhoff Signal, Inc.	3319
Brisam Limited (U.K.)	4313
Brisam, Inc.	4313
Brissonneau Et Lotz	9417
Brissonneau Et Lotz Marine	2133, 2233
Brister Incorporated	7313
British Hovercraft Corporation	3347, 3351
British Ropes Ltd.	3347, 3351
British Shipbuilders	3347, 3351
British Steel Corporation	3347, 3351
Brown & Root, Inc.	3401
R. J. Brown and Associates	7235
Brown Oil Tools Division Hughes Tool Company	3813
Browne-Davies/Femco Division of Gulton Industries, Inc.	2646
Bruce Anchor Ltd.	3347, 3351
Burgess & Associates Mfg. Inc.	9308
C-E Natco	2351
C-E Vetco Services, Inc.	4429
C. E. Miller Corporation	9712
Cabot Corporation	6800
Cam-Lok Division, Empire Products, Inc.	3796
Camco, Inc.	3639
Cameron Iron Works, Inc.	2401, 9402
Cammann Mfg. Co., Inc.	2739
Campbell's Ships Supplies	6605
Canocean Resources Ltd.	4035
Cantieri Navale Breda (Fincantieri Group)	7143
Cantieri Navale Luigi Orlando (Fincantieri Group)	7143
Cantieri Navale Muggiano (Fincantieri Group)	7143
Cantieri Navali Riuniti (Fincantieri Group)	7143
Carboline Company	3245
The Carborundum Company, Alpha Silicon Carbide Div.	6934
Cardwell-International Petroleum Services, Inc.	9843
Cat Pumps Corporation	6134
Caterpillar Engine Division	2505
CBI Industries Inc.	2711
Ceag Licht-Uud Strom-versorgungstechnik GHBH	1755, 1773
Centerline	2884
Centrico, Inc.	6665
Centrilift-Hughes Division	3813
Cetena (Fincantieri Group)	7143
C.F.E.M. (Compagnie Francaise D'Entreprises Metalliques)	2133, 2233
Challenger Rig & Manufacturing Inc.	9735
Chance Collar Company	9106
Chantiers France Dunkerque	2133, 2233
Chartres, Corp.	4254
Chauvin Engineering Co.	6901
Chemetics Systems, Inc.	6600
Chemgrate Corporation	1173
Chicago Bridge & Iron Company	2711
Christensen	1531, 1538
Chromalloy Petroleum Services Group	4138
Chromium Corporation	7023
Cie Deutsch	2133, 2233
Cita Industries Div. Unex Corporation	3680
Dresser Clark	2503, 9201
H Clarkson & Co. Ltd.	3347, 3351
Cleveland City Forge	6516
CNOMV (Fincantieri Group)	7143
Cofflexip	2133, 2233
Colt Industries, Quincy Compressor Division	6106

THE RUST-PROOF PROOF:

A current ABSTECH report proves Fluid Film® stands up to 9½ years of continuous ballasting without rust damage or re-coating.

Now there's solid evidence that Fluid Film® stops rust for years under the most corrosive conditions.

9½ years ago the ballast tanks of the *SS Marine Eagle*, an ammonia tank carrier, undergoing modification by Newport News Shipbuilding, were sprayed with Fluid Film Gel (B) White. They have never subsequently been touched up or re-coated (although continuously ballasted at 17-day intervals).

The results of ABSTECH Inspection Report #78-269 NN, dated 27 November 1978, are amazing: ultrasonic readings show the steel to

be in excellent condition throughout, with many of the original painted construction marks preserved.

This is important news to every ship owner and owner of offshore structures, because Fluid Film conclusively out-performs and out-saves all other coatings (including exotic coatings) under the most corrosive environments. In addition:

Fluid Film is easier to apply.

Fluid Film does not require sand-blasting or a clean, dry surface preparation; it goes right through existing rust to base metal, providing a continual non-drying protective barrier. It is applied in a single coat under any weather conditions, does not blister, peel, emulsify, crack or dry out, and it can be easily touched up if needed.

Fluid Film has a three-year, rust-proof guarantee.

Fluid Film is so effective that we guarantee it for 3 years when used in your ships' tanks. Even on in-service vessels. If in three years from date of application, Fluid Film fails to provide corrosion control under normal operating conditions, we will supply replacement material to you absolutely free*.

Fluid Film stops metal replacement costs.

Look at the chart and you'll see why Fluid Film is a tremendous cost saver.

The *SS Marine Eagle* is only one of hundreds of reports that prove the important time, money and labor saving value of Fluid Film. If you are interested in more information on our entire line of Fluid Film products, call collect or write to: Eureka Chemical Company, 234 Lawrence Avenue, (P.O. Box 2205), South San Francisco, CA 94080, (415) 761-3536.

Exhibitor	Booth	Exhibitor	Booth	Exhibitor	Booth	Exhibitor	Booth
Corrintec/Cathodic Protection Services, Inc.	1231	Crouse-Hinds Electro	1634	Daniel Industries, Inc.	4625	De Hoop Groenpol B.V.	1457, 1473
Cosasco	4457	Crutcher Resources Corporation	2349	Danish Hydraulic Institute	1381	Deansteel Manufacturing Company	7311
Crawford Fitting Company	2742	Cryostar A.G.	6224	Darr Equipment Co.	9133	Dearman International, Inc.	2793
The Crispin Company	7135	Cubic Western Data	3567	Daspit Bros. Marine Divers, Inc.	2849	Deep Sea International	2369
Cromemco, Inc.	7457	Culligan International	6309	Data Log, Inc.	7239	Delcan	6605
Crosbie Bowring Bases Ltd.	6605	Cummins Sales & Service	4475	David Taylor Naval Ship R & D Center	2399	Delft Hydraulics Laboratory	1457, 1473
Crosbie Offshore Services Ltd.	6605	Curtis Hoover Industries	3776	Davie Shipbuilding Ltd.	6841	Delmag-Pileco Inc.	4857
Crosbie OSA Ltd.	6605	Custom Cable Company	2851	John Davis and Son (Derby) Ltd.	3347, 3351	Delta Steel, Inc.	1755, 1773
Crosby/Geosource	4964, 9711	D & W International, Inc.	9638	Davis-Lynch, Inc.	9632	Demco, A Division of Cooper Industries, Inc.	3619
Cross-Line Mfg., Inc.	4410	Dailey Oil Tools, Inc.	2862	De Groot International Contractors B.V.	1457, 1473	Derrick Equipment Company, Div. of Derrick Manufacturing	6727
Crossfield Products Corp.	6133	Dalmine	4150			Derrick Service International	4378
Crouse-Hinds Company	3759	Damco-Offshore	1457, 1473			Design Space International	9130
		Dampa A/S	1381			Detector Electronics Corporation	1177

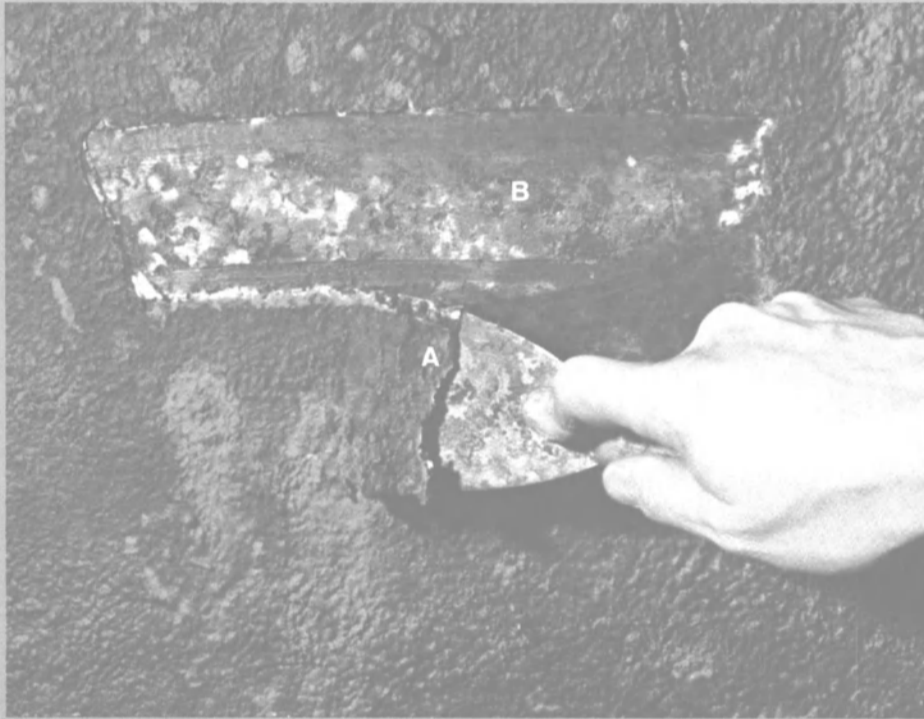


Photo from ABSTECH report shows no rust damage after 9½ years. When Fluid Film (A) was scraped away from ballast tanks, no oxidation was found on base metal (B).

Fluid Film Gel B	Exotic Coatings
None to minimum surface preparation	Sandblasting required
Can be applied to damp surface	Dry surface required
Needs only one coat.	Two to three coats required
No curing time needed	48 hours curing time necessary
Over 400°F flash point during application.	110°F flash point during application
Three-year no-rust guarantee.	No other guarantees known
Chart comparison based on in-service ballast tank applications	

*This guarantee does not cover applications where our specifications were not followed or to in-service vessels where Fluid Film may have been applied over loose, non-adhering rust/scale. It also does not cover any area where the material was removed.

FLUID FILM IS AVAILABLE WORLD-WIDE

EUREKA CHEMICAL COMPANY

World Headquarters 234 Lawrence Avenue, South San Francisco, CA 94080. Tel: (415) 761-3536. Telex 349465

Gulf Coast Division 9630 Clarewood Drive, Suite C-5, Houston, Texas 77036. Tel: (713) 772-3772

East Coast Division 6060 Jefferson Avenue, Suite 4000, Newport News, Virginia 23605. Tel: (804) 380-8220

WORLD-WIDE STOCKIST AND SERVICE CENTERS

Singapore/Brunei Lindeteves-Jacoberg (Far East) Pte., Ltd., Maxwell Road, P.O. Box 1058, Singapore 9021, Tel: 647191, Telex 21421 • Mr. C.H. Tan

Kuala Lumpur Lindeteves-Jacoberg (M) Sdn. Bhd., P.O. Box 369, Kuala Lumpur, Malaysia 01-02, Tel: 03-575511, Telex 37579 • Mr. J.G. Bouma

Japan Nichimen Company, Ltd., 1-9 Dojimahama 2-Chrome, Kita-ku, Osaka 530, Japan, Tel: (06) 345-2111, Telex 63221 • Mr. H. Ishikawa

Taiwan Tai I Trading Co., Ltd., Room 705, 7th Floor Worldwide House, No. 685 Ming-Sheng E. Rd., Taipei Taiwan R.O.C., Tel: (02) 772-6226, Telex 22328 • Rear Adm. Alfred C. Tai (Ret.)

United Kingdom Highgate & Job Ltd., 60 Murray Street, Paisley, Scotland PA3 1QH, Tel: 041-889-3207, Telex 77189 • Mr. Charles Exeter

Highgate & Job Ltd., 14 Great St. Thomas Apostle, London, England EC4 2BB, Tel: 01-248 6602, Telex 884716 • Mr. I. Hardy

Finland Bonsommer Hertell KY, Merikatu 9, SF-00140 Helsinki 13, Finland, Tel: 358-0-625 937, Telex 121439 • Mr. John Hertell

Norway and Denmark A/S B. Bergstrom & Co., Gravdalsveien 14, Oslo 7, Norway, Tel: 246209, Telex 11772 • Mr. Arild Honne

Rust is the cancer. Fluid Film is the answer.



EUREKA CHEMICAL COMPANY

Derrick Equipment Company, Div. of Derrick Manufacturing	6727	Derrick Service International	4378
Design Space International	9130	Detector Electronics Corporation	1177
Develco, Inc.	2899	Di-Chem. Magcobar Operation, Div. of Dresser Industries, Inc.	2503, 9201
The Dia-Log Company	2640	Diamant Boart S.A.	4039
Digicourse, Inc.	3779	Digital Systems/Geosource	4964, 9711
Digitran, Inc.	3589	Direction Technique Des Constructions Navales	6705
DIA GmbH	1755, 1773	Dock-Express Shipping B.V.	1457, 1473
DOG-Deutsche Offshore Gesellschaft MBH	1755, 1773	Dorbyl Marine (Pty.) Ltd.	2797
Dorman Long Swan Hunter (Pty.) Ltd.	2797	Dotco Fishing Tools	4025
Dover Corporation/Norris Division	4661	Dow Corning Corp.	7335
Dowell Division of Dow Chemical U.S.A.	2107	Dowell Schlumberger Corporation	9503
Draco Spring Mfg.	4050	Draegerwerk AG	1755, 1773
Dreco	6859, 9001	Dresser Industries, Inc.	2503, 9201
Dretsch - A Dreco Company	6859, 9001	Dreyfus Supply & Machinery Corporation	2698
Drilco	2405	Drilco, Division of Smith Int'l. Inc.	9511
Drilling and Service International Ltd.	3347, 3351	Drilling Tools, Inc.	3319
Drilltec GmbH	1755, 1773	D.T.C.N. - Center of Underwater Research and Development	6705
D.T.C.N. - Paris Ship Model Basin and Research Center	6705	Dukane Corporation	2794
Dunlop Ltd.	3347, 3351	Dyna-Drill	2405
E C A	6705	E-A-R Division	6800
Eagle Mud Service, Inc.	4729	E. H. O'Neill Co., Inc.	6133
Eagle Mud Service, Inc.	4729	Eagle Mud Service, Inc.	4729
Earl & Wright	1401	Easi File Corporation	3788
Eastern Chemicals Limited	6605	Eastern Investment Limited	6605
Eastern Investment Limited	6605	Eastman Whipstock, Inc.	3319
Eaton Corporation, Engineered Polymer Products Division	2764	EB Communications	2433, 2449
Eckel Manufacturing Company, Inc.	3763	Economy Gauge & Instrument Supply, Inc.	6206
Edo Corporation/Western Division	1549	Eisenman Chemical Company	4729
Elder	9539, 9542	Electro-Flow Controls, Inc.	6845
Electro-Motive Division, General Motors Corporation	6324	Electronic Systems/Geosource	4964, 9711
Eltron (London) Ltd.	3347, 3351	Emco Wheaton International Limited	3139
Emergency Products, Inc.	7342	Emerson & Cuming/W.R. Grace & Co.	4217
Endeco (Environmental Devices Corp.)	3738	TRW Energy Products Group	1811
Energy Services International	4545	Enerpac	6201
Engelhard Industries	2585	Engine Equipment Mfg. Co., Inc.	9123
Engineered Steel, Inc., Marine Crane Division	7305	Engineering Specialties, Inc.	7129
ENI (Ente Nazionale Idrocarburi) and Companies of ENI Group	7125	Environmental Container Systems, Inc.	6929
Environmental Elements Corp. (Sub. Koppers Co., Inc.)	1632	Esgard, Inc.	3773
Esse International Inc.	9431	The Essex Companies	4313
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Eureka Chemical Company	2858	Euromare (Antonini Group)	7143
Evergreen Helicopters, Inc.	3688	Everpure, Inc.	2780
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TRW Ferranti Subsea Limited	1811	Fishing Tools, Inc.	3319
Fibergrate Corporation	2365	Flakt Ltd.	3347, 3351
Fincantieri	7143	Flimon Industrie S.A.	1740
Fine Tubes Ltd.	3347, 3351	Flo Trend Systems, Inc.	9736

Exhibitor	Booth
Flocon Products, Inc.	4016
Flopetro Schlumberger	9519
Flottweg-Werk	1755, 1773
Flow Products Division, Daniel Industries, Inc.	4625
Flowseal	2884
Fluid King	3735
Fluor Corporation	3607
FMC Corporation	1403
Foley Pressure Control, Inc.	7465
GH-Foster	2335, 9625
Foster Marine Division, Foster Refrigerator Corp.	6318

Exhibitor	Booth
Franklin Electric	3737
Futurecraft Corporation	2699
GAF Corporation	6549
GAI-Tronics Corporation	3782
Galax	2433, 2449
The Galigher Co., Div. of Baker International Corp.	2847
Gall Thomson Maritime Ltd.	3347, 3351
Galveston-Houston Company	2335, 9625
Gander Development Corporation	6605
Gardner-Denver Cooper Industries	1209
The Garrett Corporation	3756
Gasco Pumps, Inc.	6700
Gates Rubber Company	1149
Gator Hawk, Inc.	4404
L. F. Gaubert & Co., Inc.	3137
G. E. Quick Rental Instruments	6114
Gearhart Industries	3247
Gearheart Geodata Services	3347, 3351
Gem Hersent	2133, 2233
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General Electric Co. Ltd.	3347, 3351
General Electric Company	1263
General Equipment & Mfg. Co., Inc.	6770
Geo International Corp.	9436
Geograph/Pioneer	4964, 9711
Geophysical Research Corporation	3644
Geophysical Systems/Geosource	4964, 9711
Geoservices Inc.	7134
Geosource Inc.	4964, 9711
Geostructures/Geosource	4964, 9711
Geosupport/Geosource	4964, 9711
Gep	2133, 2233
Gerber's International Supply Company	7105
Geveke Motoren En Grondverzet B.V.	1457, 1473
Girard Polly-Pig, Inc.	2850
Glidden	6919
Global Marine Inc.	3531
Goodall Rubber Company	4246
The Gorman-Rupp Co.	2264
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Grandmet International Site Services	3347, 3351
Grant Geophysical Corporation	3319
Grant Oil Tool Company	4457
Gray Tool Company	4939, 4944
Green Country Castings Corporation	6925
Greer Hydraulics	2642, 9628
Griffith-Woodhouse	3271
Griffith Oil Tool - A Dreco Company	6859, 9001
Grootcon (UK) Ltd.	3347, 3351
Guiberson, Div. of Dresser Industries, Inc.	2503, 9201
Gulf-Electroquip, Inc.	9605
Gulf Radiotelephone & Electronics, Inc.	3655
Gulfco Industries, Inc.	6409
Gulfport Shipbuilding Company	1709
Hacker-Pyramid Company	4258
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Halter Marine, Inc.	6401
Hamanaka International, Inc.	6920
Harco Corporation	2688
Hardigg Industries, Inc.	6107
Harding A/S	2433, 2449
Harris Corporation, RF Communications Division	3689
Harrisburg, Inc.	4475
The Harshaw Chemical Company	4008
Harvey-Lynch, Inc.	1745
Harvey Offshore Services	6605
Haugesund - De Groot Offshore A/S & Co.	2433, 2449
Hawkins & Tipson Ropemakers	3347, 3351
HBL-Industries	1137
H.C.G. B.V. Offshore Division	1457, 1473
Heerema Engineering Service	1457, 1473
Heliflight Systems, Inc.	9339
Helle Engineering Inc.	3647
Helly-Hansen A/S	2433, 2449
Hempel's Marine Paints, Inc.	4447
Hendrik Veder B.V.	1457, 1473
GH-Hensley	2335, 9625
Herbert S. Hiller Corp.	4254
Hewitt Hose	3347, 3351
Hewlett-Packard	4145
Hill Hayes Companies	4761
Hiller International Corp.	4254
Hilman, Inc.	2591
Hiscock Rental & Sales	6605
Hispano-Suiza	3695
Hitachi Zosen	1573, 1673
Doug Hogan Associates Ltd.	6605
Holland Repair & Services B.V.	1457, 1473
Homco International Inc.	3747
Honeywell	2333
Horizons Research Incorporated	6951
Hotsy Incorporated	3698
Houston Oil Equipment, Inc.	9421
Houston Systems Manufacturing Company	2669
Houston Well Screen Company	3792

**25 years
of experience
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Working in the North Sea, the world biggest semi-submersible - DYVI DELTA, an Ocean Ranger type rig, is holding 4 SACM main engines and 1 SACM auxiliary unit in its power plant. The world largest production platform - STATFJORD "B", and STATFJORD "C" are using respectively 7 and 6 SACM engines. A long range of dynamic positioned drillsips - LE PELERIN, LE PELICAN, PETREL, HAVDRILL, BEN OCEAN LANCER are equipped with SACM diesel motive power units used for drilling and propulsion.

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JOSEPH LOUPE

Owned by Joe Towing Company, Maurepa, LA, this 27.4 m (90 ft) twin screw tow boat is powered by twin Stork-Werkspoor 8FBHD-240 diesels rated 887 kW (1190 hp) @ 900 r/min driving through twin MGN-650BZ Marine Transmissions with 3.06:1 ratio.

ATLANTIS II

Was converted from steam to diesel, utilizing two EMD-567-AC's and driving through two Twin Disc MGN-1000AZ Marine Transmissions. The engines are rated at 746 kW (1000 hp) @ 725 r/min and the Twin Disc units have 4:00:1 ratios. The 64 m (210 ft) Atlantis II is owned by Woods Hole Oceanographic Institution, Woods Hole, MA.



PATTI J. RAINES

Owned by Arrow Transportation Company, Sheffield, AL. Built in 1974, she is powered by two Stork-Werkspoor 8FBHD-240 diesels rated 887 kW (1190 hp) @ 900 r/min through Twin Disc MGN-650BZ Marine Transmissions with 3.06:1 ratio.

VIRGINIA COLE

Owned by Energy Transport Services, Inc., New Orleans, LA, is powered by twin EMD8-567CR's. Rated at 671 kW (900 hp) @ 900 r/min, these diesels drive through MGN-1000AZ Marine Transmissions with 4.00:1 ratios.



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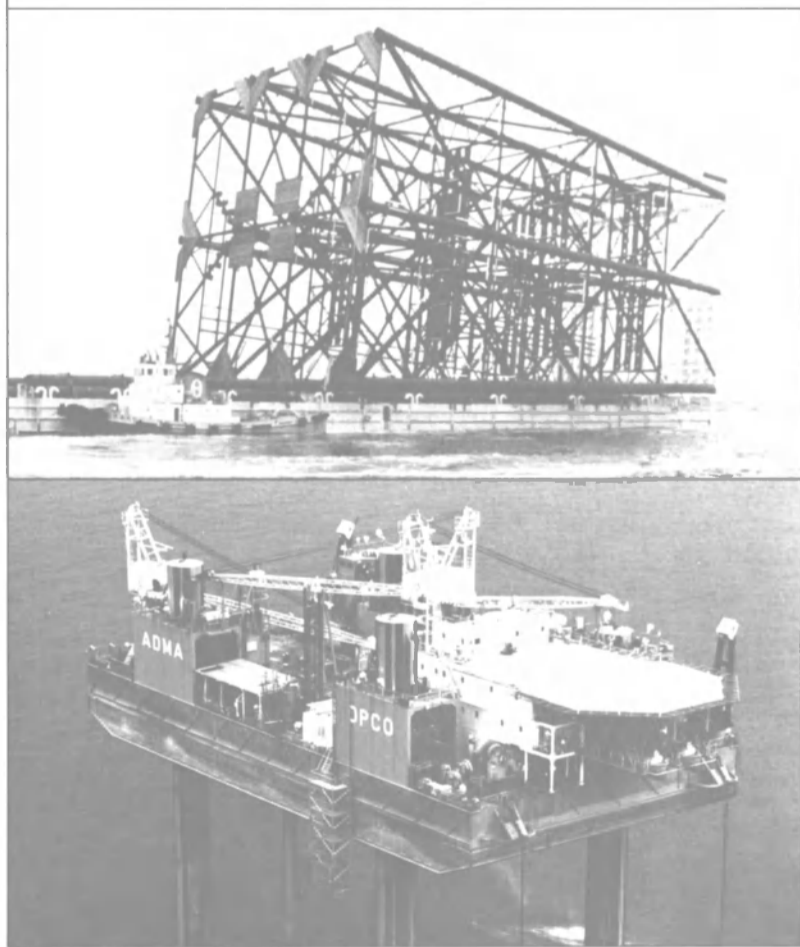
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Better fuel economy is the result of better engineering. Cummins designed the 16-cylinder KTA-3067-M with an exclusive PT™ fuel system and a unique fuel injector. Together with a high efficiency four-stroke cycle, aftercooling, and turbocharging, this 3067-cu. in. engine can deliver substantial savings.

"I think we'll save 20%, maybe more!"

The KTA-3067-M is built tough.

Heavy-duty features like tri-metal bearings, regrindable crankshaft, high-strength connecting rods, and precision pistons, mean longer engine life and genuine reliability. This Cummins engine can save something more valuable than fuel, it can save wasted time on expensive repairs.

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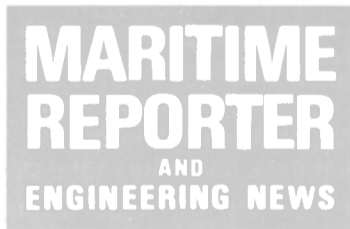
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CUMMINS TALKS WITH WORKBOAT FLEET OWNERS ABOUT THE NEW FUEL EFFICIENT KTA-3067-M ENGINE

"Cummins has always been ready to help..."

John H. Wronowski of New London, Connecticut, started the Cummins tradition back in 1957. Today, he and his son, John P., work side-by-side. They agree that Cummins is the way to go in the '80s, and that the new KTA-3067-M is the Cummins engine to go with.

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Better fuel economy is the result of better engineering. Cummins designed the 16-cylinder KTA-3067-M with an exclusive PT™ fuel system and a unique fuel injector. Together with a high efficiency four-stroke cycle, aftercooling, and turbocharging, this 3067-cu. in. engine can deliver substantial savings.

"I think we'll save 20%, maybe more!"

The KTA-3067-M is built tough.

Heavy-duty features like tri-metal bearings, regrindable crankshaft, high-strength connecting rods, and precision pistons, mean longer engine life and genuine reliability. This Cummins engine can save something more valuable than fuel, it can save wasted time on expensive repairs.

"The 3067s will pay for themselves..."

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"Cummins service is important... they have a feeling for the customer."

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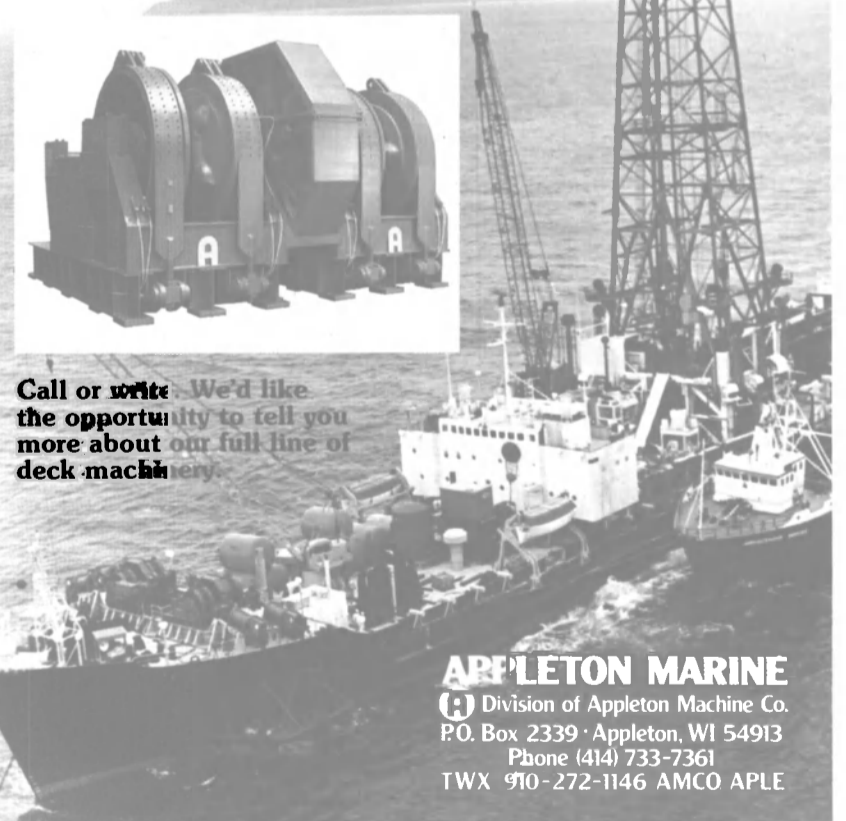
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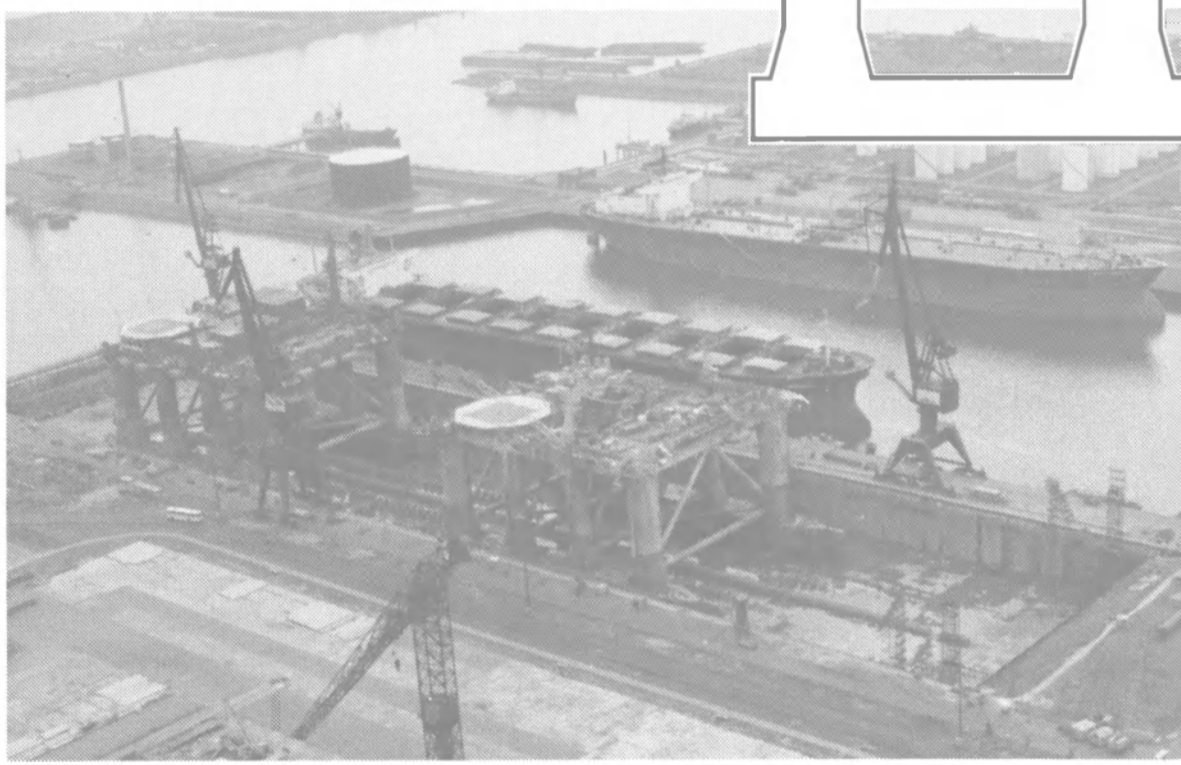
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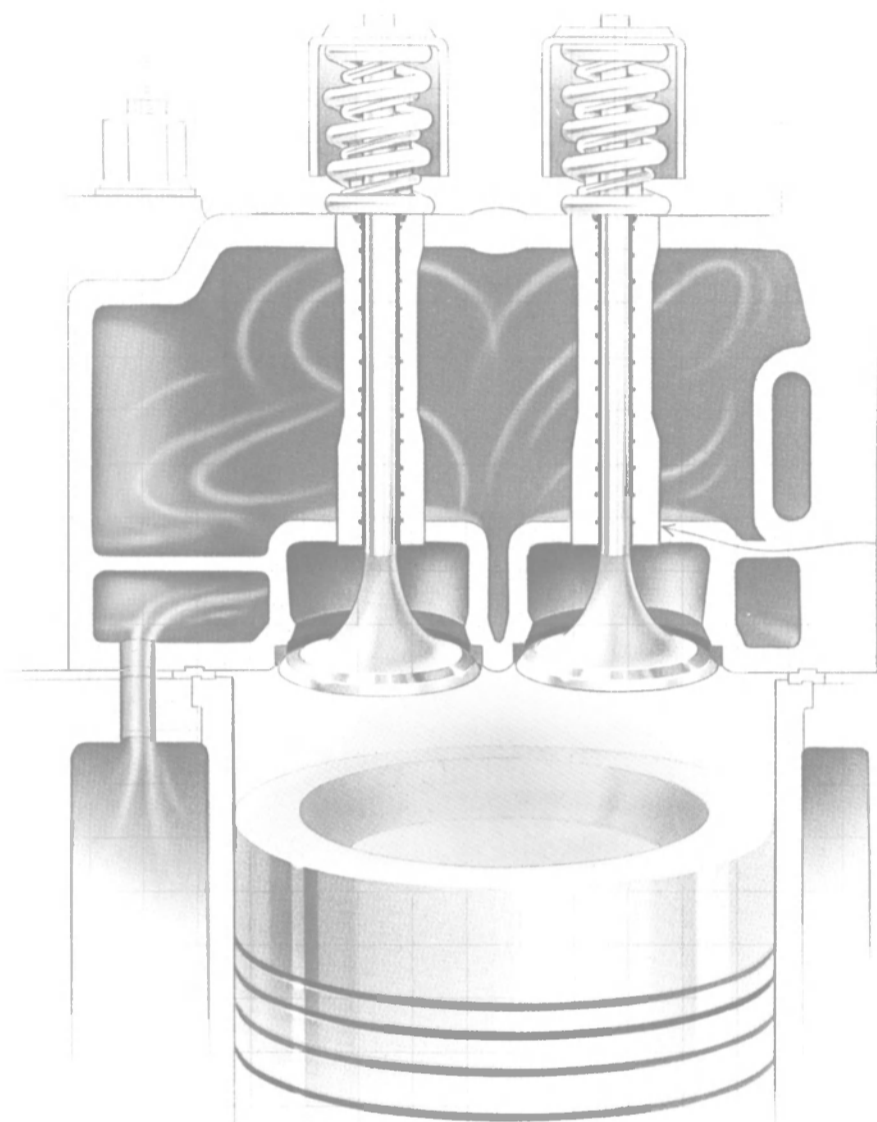
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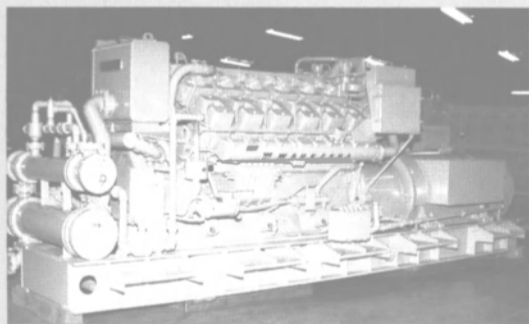
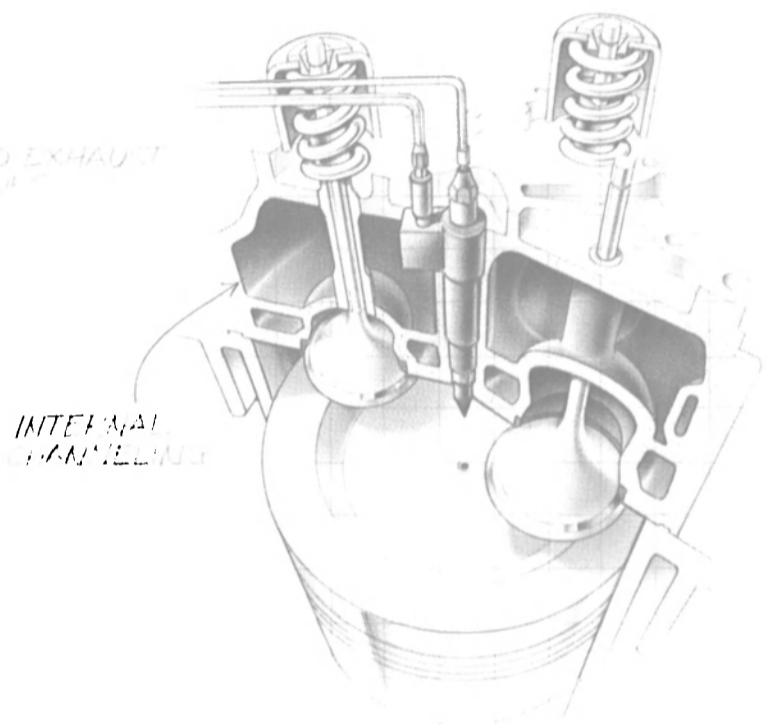
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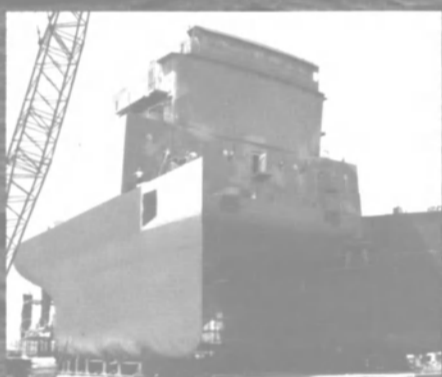
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Telex—58-4200,
Cable HALMAR.



The Total Shipbuilding Group

Jay Glick Named Sales Administration Manager At Cameron Oil Tool

Cameron Iron Works, Inc., Houston, Texas, announced the promotion of J.F. (Jay) Glick II to sales administration manager, Oil Tool Division. Mr. Glick was most recently with the Eastern Hemisphere Marketing Group in London.

Mr. Glick joined the Oil Tool Division in 1974, holding various sales and administrative posts prior to his recent position.

Cameron Iron Works, Inc., organized in 1920 as a Texas corporation, is a vertically integrated company engaged in the design, manufacture, and marketing of a broad range of oil tools, ball valves, and forged products.

Title XI Approved For Barges, Towboat Costing \$2.4 Million

The Maritime Administration has approved in principle an application by Tenn-Tom Towing, Inc., Fairhope, Ala., for a Title XI guarantee to aid in financing the construction of a towboat and two tank barges.

Nashville Bridge Co., Nashville, Tenn., delivered the barges in March 1981, and Rayco Shipbuilders & Repairs, Inc., Bourg, La., delivered the towboat last August. The vessels will be used in the transshipment of petroleum and petroleum by-products on the Gulf Intracoastal Waterway and adjacent river systems.

The Title XI guarantee covers \$1,813,000 or 75 percent of the estimated depreciated actual cost of \$2,418,575.

New England Coal Trade Discussed At SNAME New England Section

A recent meeting of the New England section of The Society of Naval Architects and Marine Engineers was held at the M.I.T. Faculty Club, in Cambridge, Mass. at which the speaker was Comdr. Edward A. Chazal Jr., USCG. He presented a paper "Maritime Opportunities for the New England Utility Coal Trade." Commander Chazal, a graduate of the U.S. Coast Guard Academy, also holds graduate degrees from the University of Michigan and M.I.T. He is currently serving on the staff of the Chief of Operations, U.S. Coast Guard Headquarters, with responsibilities for the planning for all U.S. Coast Guard surface units.

Commander Chazal's presentation focused on the strategic implications or opportunities for the coastwise utility coal trade to New England. On the basis of data collected between September 1980 through April 1981, the author applied current strategic

analysis techniques to service industries.

The relevance of this study is that the New England utilities are faced with a major policy decision concerning the substitution of Appalachian coal for imported residual oil. This conversion would require significant changes in the region's bulk transportation industry. Thus, coastwise shipment of coal is a proven mode for delivery.

New Nonasbestos Cloth From Southern Textile —Free Brochure

Southern Textile Corp., Charlotte, N.C., has published an eight-page full color brochure detailing the characteristics of its line of Guardian nonasbestos industrial textiles.

The product line offers properties for applications involving heat and protection. All guardian

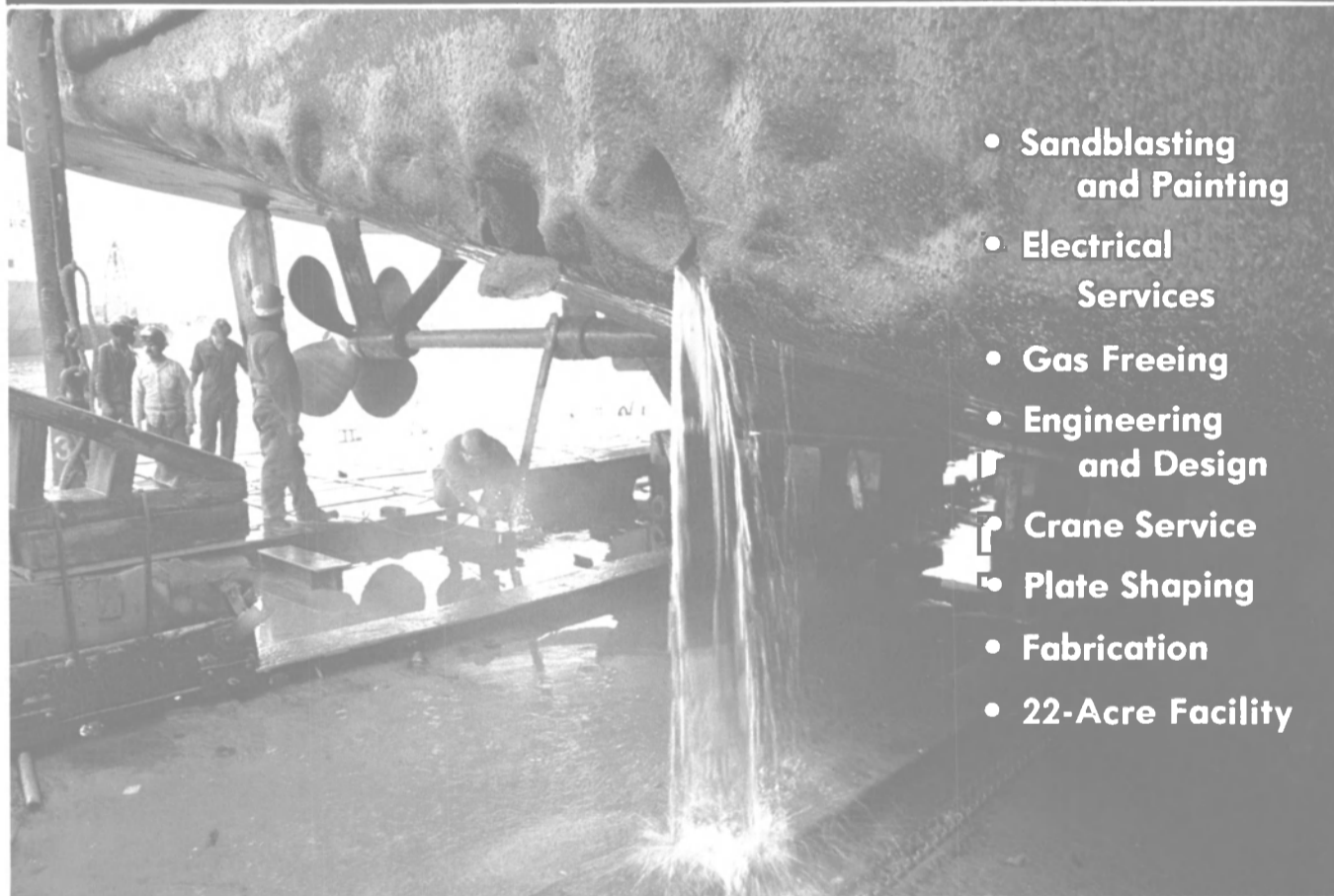
glass products, such as Inslgard glass felt insulation, glass tapes, yarn, rope, tubings, and beltings, are incombustible. They will not burn or smolder and working temperatures go up to 1,000 degrees F and up to 3,000 degrees F for a short duration.

For a free copy of the Southern Textile brochure, which includes an industrial glass cloth comparison chart,

Write 32 on Reader Service Card

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Time and profit. Make no mistake they're directly related. Newpark is a complete service yard for all your repair needs.



- Sandblasting and Painting
- Electrical Services
- Gas Freeing
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- Crane Service
- Plate Shaping
- Fabrication
- 22-Acre Facility

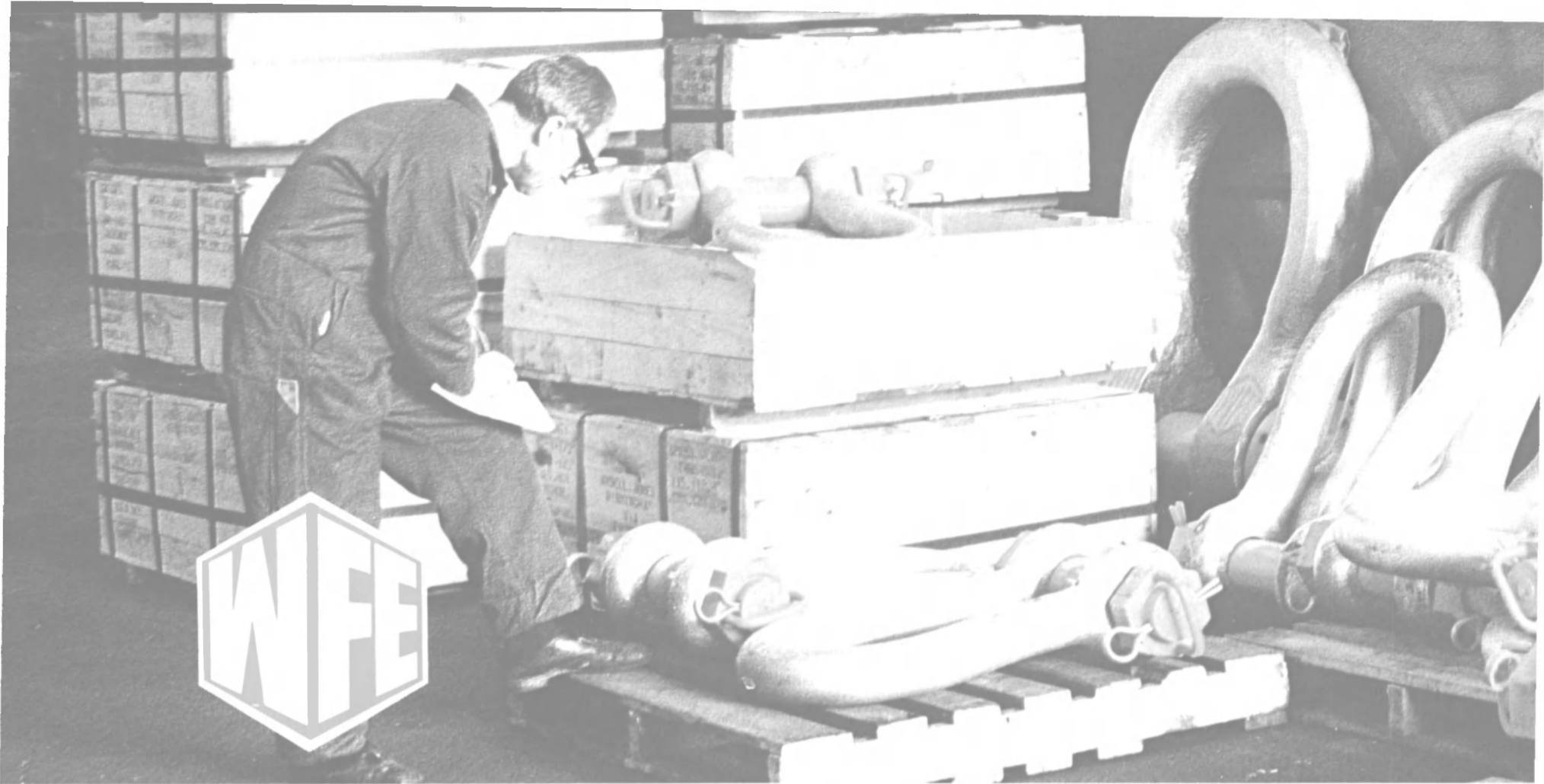
With five haul out facilities in operation and a 3,000 ton dry dock under construction, Newpark is the largest shipyard in Houston.

When your vessels are tied up in dry dock they're not earning a dime. Key management personnel and over four hundred skilled employees provide top quality fast turn around repairs to your marine equipment.

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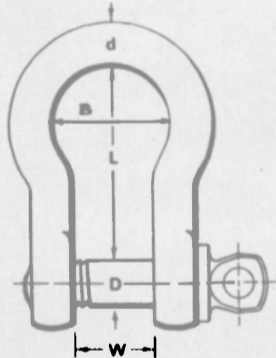
8502 Cypress Street P.O. Box 5426 Houston, Texas 77012 (713) 928-5051



FORGED STEEL

"HIGH LOAD" SHACKLES

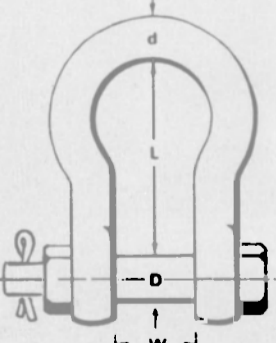
Safe Working Load U.S. tons	Body Dia. d	Pin Dia. D	Inside Length L (Min.)	Inside Width at Pin W	Inside Width at Bow B	Outside of eye Dia. (Max.)	Approx. Wt. per 100 in lbs.	Ordering Code Galvanized
1/2	3/16	3/8	3/4	3/4	3/4	1 1/8	5	UBG 1 1/2
3/4	1/4	1/2	1 1/4	1 1/4	1 1/4	1 7/8	12	UBG 2
1	5/16	5/8	1 3/4	1 3/4	1 3/4	2 1/8	18	UBG 2 1/2
1 1/2	3/8	3/4	2 1/4	2 1/4	2 1/4	2 7/8	30	UBG 3
2	1/2	1	3 1/4	3 1/4	3 1/4	3 7/8	49	UBG 3 1/2
3	5/8	1 1/4	4 1/2	4 1/2	4 1/2	4 7/8	78	UBG 4
3 1/2	3/4	1 1/2	5 1/4	5 1/4	5 1/4	5 7/8	149	UBG 5
4	7/8	1 3/4	6 1/4	6 1/4	6 1/4	6 7/8	222	UBG 6
4 1/2	1	2	7 1/4	7 1/4	7 1/4	7 7/8	343	UBG 7
6	1 1/8	2 1/4	9 1/4	9 1/4	9 1/4	9 7/8	534	UBG 8
6 1/2	1 1/4	2 3/4	10 1/4	10 1/4	10 1/4	10 7/8	746	UBG 9
8	1 1/2	3	11 1/4	11 1/4	11 1/4	11 7/8	986	UBG10
12	2	4	15 1/4	15 1/4	15 1/4	15 7/8	1,267	UBG11
13 1/2	2 1/4	4 1/4	16 1/4	16 1/4	16 1/4	16 7/8	1,749	UBG12
17	2 1/2	4 1/2	17 1/4	17 1/4	17 1/4	17 7/8	2,802	UBG14
25	3	5 1/4	21 1/4	21 1/4	21 1/4	21 7/8	4,134	UBG16
35	4	7 1/4	27 1/4	27 1/4	27 1/4	27 7/8	5,940	UBG18
45	4 1/2	8 1/4	31 1/4	31 1/4	31 1/4	31 7/8	8,412	UBG20
55	5	9 1/4	35 1/4	35 1/4	35 1/4	35 7/8	10,850	UBG22
70	5 1/2	10 1/4	41 1/4	41 1/4	41 1/4	41 7/8	11,948	UBG24
85	6	11 1/4	47 1/4	47 1/4	47 1/4	47 7/8	21,000	UBG28



SCREW PIN ANCHOR

DIMENSIONS SHOWN ARE NOMINAL

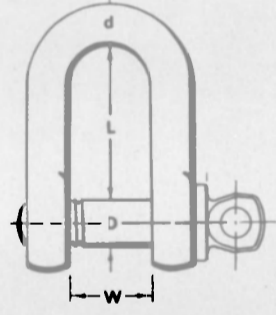
Safe Working Load U.S. tons	Body Dia. d	Pin Dia. D	Inside Length L (Min.)	Inside Width at Pin W	Approx. Wt. per 100 in lbs.	Ordering Code Galvanized
2	1/2	3/4	1 1/4	1 1/4	85	USBG 4
3 1/2	3/4	1	2 1/4	2 1/4	182	USBG 5
4 1/2	7/8	1 1/4	2 3/4	2 3/4	267	USBG 6
6 1/2	1	1 1/2	3 1/4	3 1/4	402	USBG 7
8 1/2	1 1/8	1 3/4	4 1/4	4 1/4	571	USBG 8
9 1/2	1 1/4	2	5 1/4	5 1/4	795	USBG 9
12	1 1/2	2 1/4	6 1/4	6 1/4	1,129	USBG10
13 1/2	1 3/4	2 3/4	7 1/4	7 1/4	1,538	USBG11
17	2	3 1/4	8 1/4	8 1/4	1,968	USBG12
25	2 1/2	4 1/4	10 1/4	10 1/4	3,140	USBG14
35	3	5 1/4	12 1/4	12 1/4	4,845	USBG16
45	3 1/2	6 1/4	14 1/4	14 1/4	6,750	USBG18
55	4	7 1/4	16 1/4	16 1/4	9,420	USBG20
70	4 1/2	8 1/4	18 1/4	18 1/4	12,000	USBG22
85	5	9 1/4	21 1/4	21 1/4	14,530	USBG24
120	6	11 1/4	27 1/4	27 1/4	25,080	USBG28
150	7	13 1/4	33 1/4	33 1/4	35,900	USBG32



SAFETY ANCHOR

DIMENSIONS SHOWN ARE NOMINAL

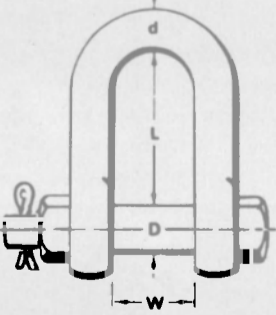
Safe Working Load U.S. tons	Body Dia. d	Pin Dia. D	Inside Length L (Min.)	Inside Width at Pin W	Outside of eye Dia. (Max.)	Approx. Wt. per 100 in lbs.	Ordering Code Galvanized
1/2	3/16	3/8	3/4	3/4	1 1/8	5	UBG 1 1/2
3/4	1/4	1/2	1 1/4	1 1/4	1 7/8	12	UBG 2
1	5/16	5/8	1 3/4	1 3/4	2 1/8	18	UBG 2 1/2
1 1/2	3/8	3/4	2 1/4	2 1/4	2 7/8	30	UBG 3
2	1/2	1	3 1/4	3 1/4	3 7/8	49	UBG 3 1/2
3	5/8	1 1/4	4 1/2	4 1/2	4 7/8	78	UBG 4
3 1/2	3/4	1 1/2	5 1/4	5 1/4	5 7/8	149	UBG 5
4	7/8	1 3/4	6 1/4	6 1/4	6 7/8	222	UBG 6
4 1/2	1	2	7 1/4	7 1/4	7 7/8	343	UBG 7
6	1 1/8	2 1/4	9 1/4	9 1/4	9 7/8	534	UBG 8
6 1/2	1 1/4	2 3/4	10 1/4	10 1/4	10 7/8	746	UBG 9
8	1 1/2	3	11 1/4	11 1/4	11 7/8	986	UBG10
12	2	4	15 1/4	15 1/4	15 7/8	1,267	UBG11
13 1/2	2 1/4	4 1/4	16 1/4	16 1/4	16 7/8	1,749	UBG12
17	2 1/2	4 1/2	17 1/4	17 1/4	17 7/8	2,802	UBG14
25	3	5 1/4	21 1/4	21 1/4	21 7/8	4,134	UBG16
35	4	7 1/4	27 1/4	27 1/4	27 7/8	5,940	UBG18
45	4 1/2	8 1/4	31 1/4	31 1/4	31 7/8	8,412	UBG20
55	5	9 1/4	35 1/4	35 1/4	35 7/8	10,850	UBG22
70	5 1/2	10 1/4	41 1/4	41 1/4	41 7/8	11,948	UBG24
85	6	11 1/4	47 1/4	47 1/4	47 7/8	21,000	UBG28



SCREW PIN CHAIN

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 1/4	1 1/4	1 7/8	78	USDG 4
3 1/2	3/4	1	2 1/4	2 1/4	2 3/8	180	USDG 5
4 1/2	7/8	1 1/4	2 3/4	2 3/4	2 7/8	269	USDG 6
6 1/2	1	1 1/2	3 1/4	3 1/4	3 3/8	372	USDG 7
8 1/2	1 1/8	1 3/4	4 1/4	4 1/4	4 3/8	544	USDG 8
9 1/2	1 1/4	2	5 1/4	5 1/4	5 3/8	738	USDG 9
12	1 1/2	2 1/4	6 1/4	6 1/4	6 3/8	1,038	USDG10
13 1/2	1 3/4	2 3/4	7 1/4	7 1/4	7 3/8	1,349	USDG11
17	2	3 1/4	8 1/4	8 1/4	8 3/8	1,855	USDG12
25	2 1/2	4 1/4	10 1/4	10 1/4	10 3/8	2,865	USDG14
35	3	5 1/4	12 1/4	12 1/4	12 3/8	4,128	USDG16
45	3 1/2	6 1/4	14 1/4	14 1/4	14 3/8	6,340	USDG18
55	4	7 1/4	16 1/4	16 1/4	16 3/8	8,465	USDG20
70	4 1/2	8 1/4	18 1/4	18 1/4	18 3/8	10,800	USDG22
85	5	9 1/4	21 1/4	21 1/4	21 3/8	12,380	USDG24
120	6	11 1/4	27 1/4	27 1/4	27 3/8	21,860	USDG28
150	7	13 1/4	33 1/4	33 1/4	33 3/8	31,100	USDG32



SAFETY CHAIN

DIMENSIONS SHOWN ARE NOMINAL

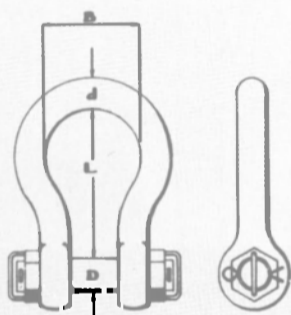


L SHACKLES

"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	Body Dia. B (Min.)	Ordering Code	Approx. Weight Each Kgs (lbs.)
50	50 (2)	55 (2 1/4)	250 (9 7/8)	85 (3 3/4)	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 65	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 3/8)	95 (3 3/4)	435 (17 1/8)	150 (5 7/8)	280 (11)	HCA 90	115 (260)
175	105 (4)	110 (4 3/8)	480 (18 7/8)	165 (6 1/2)	300 (11 3/4)	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 1/8)	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 3/8)	155 (6 1/8)	710 (28)	225 (8 7/8)	450 (17 3/4)	HCA145	520 (1140)
500	155 (6 1/8)	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 3/4)	255 (10)	990 (39)	395 (15 5/8)	740 (29 1/4)	HCA245	2350 (5150)

DIMENSIONS SHOWN ARE NOMINAL



SAFETY ANCHOR

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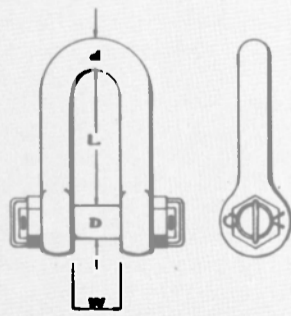


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DIMENSIONS IN MM (AND INCHES)						
Safe Working Load U.S. tons	Body Dia. d	Pin Dia. D	Inside Length L (Min.)	Inside Width at Pin W	Ordering Code	Approx. Weight Each Kgs (lbs.)
50	50 (2)	55 (2 1/4)	200 (8)	85 (3 3/4)	HCC 50	20 (46)
80	65 (2 1/2)	70 (2 3/4)	250 (10)	110 (4 3/8)	HCC 65	40 (90)
120	80 (3)	82.5 (3 1/4)	300 (11 3/8)	130 (5 1/8)	HCC 80	70 (160)
150	90 (3 3/8)	95 (3 3/4)	350 (13 3/8)	150 (5 7/8)	HCC 90	115 (250)
175	105 (4)	110 (4 3/8)	400 (15 3/4)	165 (6 1/2)	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 1/8)	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 3/8)	155 (6 1/8)	600 (23 3/8)	225 (8 7/8)	HCC145	500 (1100)
500	155 (6 1/8)	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 3/4)	255 (10)	850 (33 1/2)	395 (15 5/8)	HCC245	2260 (4970)

DIMENSIONS SHOWN ARE NOMINAL



SAFETY CHAIN

LTV Names W.J. Amoss Group Vice President

W. James Amoss Jr., president and chief executive officer of Lykes Bros. Steamship Co., Inc., New Orleans, La., has been elected to the additional post of group vice president of The LTV Corporation, Dallas, Texas. Lykes Bros. Steamship is an LTV subsidiary.

Mr. Amoss, who has been an

LTV vice president, succeeds Joseph T. Lykes Jr., who retired as chief executive officer of Lykes Bros. Steamship at year-end 1981. Mr. Lykes continues as a director of The LTV Corporation.

Mr. Amoss began his career with Lykes in 1947 serving in various international operations posts. In 1963, he was named a vice president at Lykes, and in 1973 was elected president and chief operating officer.

Peterson Builders Awarded \$70-Million Contract For Two ARS-50 Vessels

Ellsworth L. Peterson, president of Peterson Builders, Inc. (PBI) of Sturgeon Bay, Wis., recently reported two more ARS-class, heavy-duty rescue/salvage vessel contracts valued at \$70 million have been awarded to PBI by the U.S. Navy.

This brings the total to three of the 255-foot steel ships PBI is designing and building for the Navy, with options for a fourth and fifth vessel in this series. (See Oct. 1, 1981 MR/EN for profile & specs of ARS-50)

In addition to the increased backlog the second and third contracted ARS vessels have given PBI, the company is completing work on several complex projects scheduled for summer '82 delivery. These include four 190-foot high-speed aluminum PGG gunboats for the Navy and two steel 225-foot, 1,200-ton-capacity tuna superseiners for the commercial fishing industry.

Also underway is a design-review contract with the Naval Sea Systems Command to assist in the development of a new class of large, wooden mine countermeasure vessels. PBI claims to be the only U.S. shipyard capable of building nonmagnetic wooden minesweepers, having built more than 40 of them in the past.

Name Capt. Patterson To Kings Point Post

The appointment of Capt. Thomas J. Patterson Jr., as deputy superintendent of the U.S. Merchant Marine Academy, Kings Point, N.Y., has been announced by Adm. Harold E. Shear, (USN-ret.), Maritime Administrator. Mr. Patterson is a graduate of the academy.



Thomas Patterson Jr.

In his new position, he will hold the rank of Commodore, U.S. Maritime Service (USMS), and report to the superintendent, Rear Adm. Thomas A. King, USMS. He replaces Commodore Howard F. Casey, who retired at the end of February.

Since 1970, Mr. Patterson has been MarAd's Western region director. Operating from regional headquarters in San Francisco, he has been responsible for MarAd programs in 15 western states, including Alaska and Hawaii.

Mr. Patterson joined MarAd in 1962, and held posts involving ship operations before his appointment to head the agency's regional office.

A deck officer with Keystone Shipping during and after World War II, Mr. Patterson holds a ship master's license. He was commissioned as ensign in the U.S. Navy in 1944. He served on active duty with the Navy from 1950-1957, including command at sea.

◀ Write 128 on Reader Service Card

COOL UNDER FIRE.

With increasing pressure on marine service vessels, no one stands the heat better than Gulf Fleet Marine.

A quarter century of intensive marine experience enables us to anticipate changing needs. And as our fleet has expanded to over 110, we've used our foresight to build vessels that set new standards in design and innovation.

Case in point: our eight new supply boats with enhanced fire-fighting capabilities.

Each produces unmatched water spray output. Over 10,000 gallons per minute can be sprayed at a distance of 400 feet to a height of 110 feet.

And because each boat's four six-inch nozzles are stern-mounted, these fireboats can back into a fire, ready to move off at a moment's notice.

Our enhanced fire-fighting capabilities further demonstrate how Gulf Fleet is sailing confidently into the future, blazing new trails for the entire industry to follow.

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AN HNG COMPANY



Appoint Schwartz Manager At Raytheon's VTS And Harbor Radar Group



Robert A. Schwartz

In a recent announcement from Stanley L. Clark, vice president marine marketing operations for Raytheon Marine Company, it was learned that Robert A. Schwartz has been appointed manager, vessel traffic and harbor radar systems group. In his new post, Mr. Schwartz will coordinate and further strengthen the company's efforts in this field.

Mr. Schwartz was previously responsible for international sales. He joined Raytheon in 1980 as a systems engineer, government marketing, following 24 years in service with the Coast Guard during which time he accumulated a great deal of experience and expertise in harbor radar and vessel traffic control.

Mr. Schwartz will be located in Raytheon's marine headquarters in Manchester, N.H.

Petrocon Starts Global Marine Fuel Oil Analysis Service — Offer Brochure

Petrocon Marine and Industrial Chemical Corp. has announced the initiation of a complete fuel oil laboratory analysis service. The service is available through the company's offices and laboratories in Brooklyn, N.Y. and Piraeus, Greece.

During the past 14 months, both laboratories have undergone extensive expansion programs acquiring atomic spectrophotometers, sulfur determinators, and a host of related equipment. The expanded facilities offer complete analysis of virtually all types of fuel and lube oils in addition to their water analysis services. All test results are usually forwarded to clients within 24 hours of receiving samples at either facility.

Pick-up service of samples is arranged through the company's agents at ports on the U.S. Atlantic, Gulf and West Coasts, Europe, and the Mediterranean. Petrocon also supplies pre-addressed sample mailer kits to each vessel under service contract for use at ports where pick-up service may not be available.

Based upon analysis results, Petrocon can offer recommendations to eliminate or reduce the

adverse effects of vanadium, sulfur, water, or other contaminants found in fuel oils. Vessels under this new service are supplied with a dosage chart detailing what, if any, measures need be taken, depending upon what level of contaminants their fuel oil may contain.

For further information on the Petrocon fuel oil analysis service,
Write 30 on Reader Service Card

AMPS Named U.S. Gulf Rep For Deutz Diesels

Anatoly Sverdlin, president, recently announced that AMPS, Inc., of La Porte, Texas, signed a contract with Deutz, the world's oldest diesel engine manufacturer. Under terms of the contract, AMPS is the authorized sales and service representative for the Gulf Coast.

The company plans to maintain a stock of Deutz Marine Diesel engine parts, attachments and accessories, and to market Deutz watercooled marine diesel engines up to 10,000 hp.

In addition to the Deutz appointment, AMPS also represents Norcontrol for service in the U.S. and Canada. Norcontrol automation systems are manufactured in Norway.

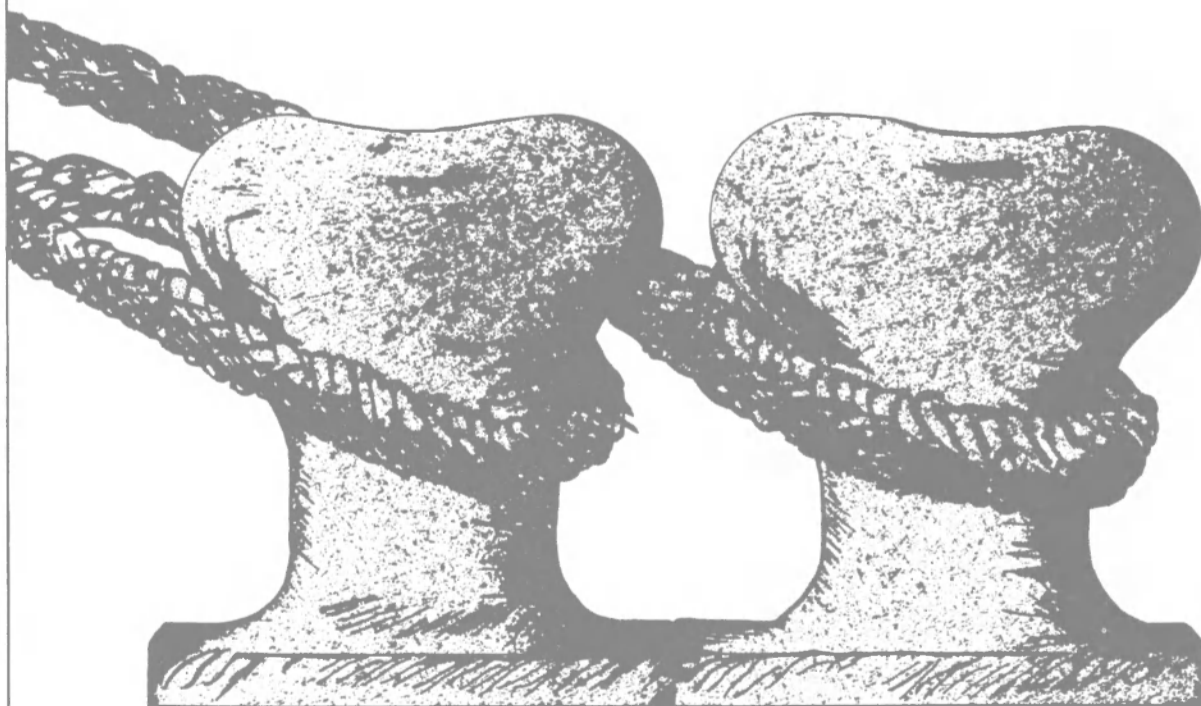
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Conoco/ABS TLP Test
(continued from page 90)

...to support the structure

drilling units (semisubmersibles), but differ in that TLPs are supported by tension cables, or ten-

platforms steady, fighting as it were the natural buoyancy of the structure, permitting a sta-



**J.J. McMullen Assoc. Restructures
New York Technical Division**

George R. Knight Jr., senior vice president of John J. McMullen Associates, Inc. (JJMA), naval architects, marine engineers, and transportation consultants, and general manager of the firm's New York Technical Division, announced a restructuring of the

technical management functions within that division to reflect the establishment of three design groups: basic design and naval architecture, hull design, and marine engineering.

Maurice DeLeon, formerly director of the hull division, has

been promoted to the newly established position of technical director. Mr. DeLeon will be responsible for the overall technical standard of the work product of the New York Technical Division and for the development and application of state-of-the-art design procedures.

Mr. DeLeon, who will also serve as director of the basic design and naval architecture department, has more than 36 years



Maurice DeLeon

of hands-on and supervisory experience in directing maritime technical activities.



Ivan Mertl

Ivan Mertl has been appointed director of the hull department. Mr. Mertl is formerly head of the structural design section of JJMA.



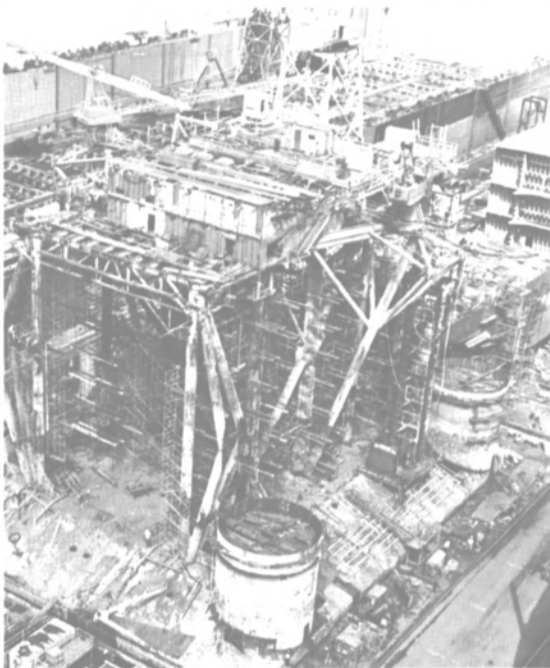
John Halfmann

The marine engineering department will remain under the direction of **John C. Halfmann**. Mr. Halfmann, who has filled this responsibility at JJMA for five years, will have overall management responsibility for all activities relating to marine and mechanical engineering; electrical and electronic engineering; and heating, ventilating, and air-conditioning engineering.

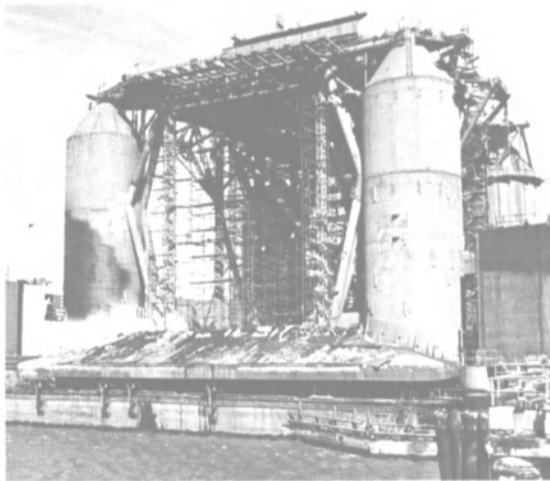
Mr. Knight stated that the three employees comprising the management of the New York Technical Division have, during their terms of employment with the company, provided technical innovation and leadership of a very high standard, and that these new responsibilities constitute the company's recognition of their efforts and achievements.

**Maritime College
Receives Grant
From Gulf Foundation**

The State University of New York Maritime College at Fort Schuyler Foundation, Inc. recently received a \$300,000 Gulf Oil



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Rear Adm. Sheldon H. Kinney, president of the Foundation, by Alf Lootz, director, fleet support of Gulf Oil's Marine Department. "Gulf Oil Corporation is happy to support the outstanding academic programs offered by the maritime college," Mr. Lootz said.

The Gulf Oil Foundation grants are made to further special projects proposed by specific departments in colleges and universities. Other phases of Gulf's Aid to Education Program include undergraduate scholarships, graduate fellowships, employee matching gifts, capital grants, and various special grants.

Dennis Jahde Elected VP At SubSea International

Dennis A. Jahde has been elected a vice-president of SubSea International, Inc., of New Orleans, La., underwater contracting firm. H.G. Newbury, SubSea president, said that Mr. Jahde will be headquartered in New Orleans and will be responsible for all phases of SubSea's offshore activities in North and South America.

Mr. Jahde joined SubSea in 1970 as a professional diver. He has been successively manager of various company departments, including safety, systems fabrication, and operations.

Lake Shore Appoints West As Program Manager In Marine Engineering



David A. West

Eugene F. Coughlin, vice president, marine of Lake Shore, Inc., Iron Mountain-Kingsford, Mich., has announced the appointment of David A. West as a program manager in the company's marine/nuclear engineering group.

Mr. West served 25 years in the U.S. Air Force, retiring as a colonel. He has a distinguished background, noted Mr. Coughlin, and has earned an excellent reputation in both engineering and management. As Lake Shore develops new products and expands into other markets, Mr. West's abilities will be put to excellent use.

Lake Shore, Inc. is a manufacturer of marine, nuclear, mining, and industrial products, and a nationwide distributor of heavy equipment and supplies.

Write 165 on Reader Service Card ▶

Appoint Christoffersen VP, General Manager Of Maritime Protection - U.S.

Maritime Protection A/S, Norwegian-based suppliers of inert gas systems and service, has announced the appointment of Johannes Christoffersen as vice president and general manager of Maritime Protection Inc., its newly formed U.S. subsidiary based in New York City.

Mr. Christoffersen has been with the Carsten Corporation for three years, serving as vice president and general manager. Carsten Corporation formerly represented Maritime Protection in the U.S.

Inert gas systems for all tankers, including system engineering, retrofit installations, and upgrading existing systems are among the products and services offered by Maritime Protection's

new U.S. office. Based in Kristiansand S., Norway, Maritime Protection A/S claims to hold an estimated 20 percent of the world market for tanker safety systems.

Maritime Protection A/S recently extended its Far East services by opening a factory in Singapore that is equipped for the prefabrication, assembly, and service of inert gas systems. Conoco Inc. holds a 30 percent share in Maritime Protection A/S.

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DuPont Marine Finishes also include tank lining coating, bottom primers and anti-fouling paints, boot-topping paints, aluminum paints, thinners and other additives.

For further information and a color card, write on your letterhead to DuPont Company Marine Finishes, Room X38616, Wilmington, DE 19898.



LOOP Fits Three Vessels With Oil Spill Recovery Units By Offshore Devices

LOOP, the Louisiana Offshore Oil Port, is outfitting three workboats to accommodate oil pollution collection equipment.

Offshore Devices, Inc., of Peabody, Mass., the spill equipment manufacturer, has adapted its

U.S. Coast Guard open water skimming barrier for use aboard a single fishing or supply-type boat. A portable aluminum outrigger holds a 65-foot section of external tension line skimming barrier off the vessel side.

Lightweight pumps and an oil-water separator complete the system and give a recovery rate capability of over 500-gpm, in 3 to

4-foot waves. Use of the separator allows storage of high percentages of oil even when used for skimming thin slicks. Total package weight is approximately 5,300 pounds.

Acquisition of the system follows the permanent installation by LOOP of two similar systems — one for each side — aboard a 70-foot modified shrimp boat.

McDermott Board Elects Ellis Vice President Of Government Operations

James E. Cunningham, chairman of the board and chief executive officer of McDermott Incorporated, New Orleans, La., announced the board of directors has elected **George F. Ellis Jr.** vice president of government operations.

A former rear admiral with 32 years of Navy service, Mr. Ellis joined the Babcock & Wilcox Company in 1976. He headed B&W's Washington office from 1978 until he was named director of government operations for McDermott in 1979.

McDermott Incorporated is a leading international energy services company. The company and its subsidiaries provide engineering and construction services to the offshore oil and gas industry, and manufacture steam generating equipment, tubular products, insulating products, and automated machine tools.

Submarine Navigation Contract For \$21 Million Awarded To Rockwell

Autonetics Marine Systems Division, Rockwell International Corporation, Anaheim, Calif., has been awarded a \$21,385,000 contract to fabricate, test, and furnish electrostatically supported gyro monitors for Poseidon and Trident Submarine Navigation Subsystems, including ancillary equipment and spare parts. The Naval Sea Systems Command, Washington, D.C., is the contracting activity. (N00024-82-C-4022)

Nautilus Offers New Crane And Equipment Brochure

Nautilus Crane & Equipment Corporation of New Orleans, La., recently acquired by Beckwith Machinery Company of Pittsburgh, has published a new equipment brochure. The brochure includes photographs and detailed specifications on the company's varied line of cylinder-lift hydraulic boom cranes.

Nautilus cranes are used in offshore drilling and production, petroleum loading docks, on jack-up barges, workboats, and many special applications such as construction of bridges and nuclear power plants. Nautilus cranes are equipped to handle loads from 2 to 70 tons with features that include telescoping or straight booms, hydraulic diesel or electric power, and a variety of mounting and boom length options. All cranes are API monogrammed.

For a free copy of Nautilus Crane's illustrated equipment brochure,

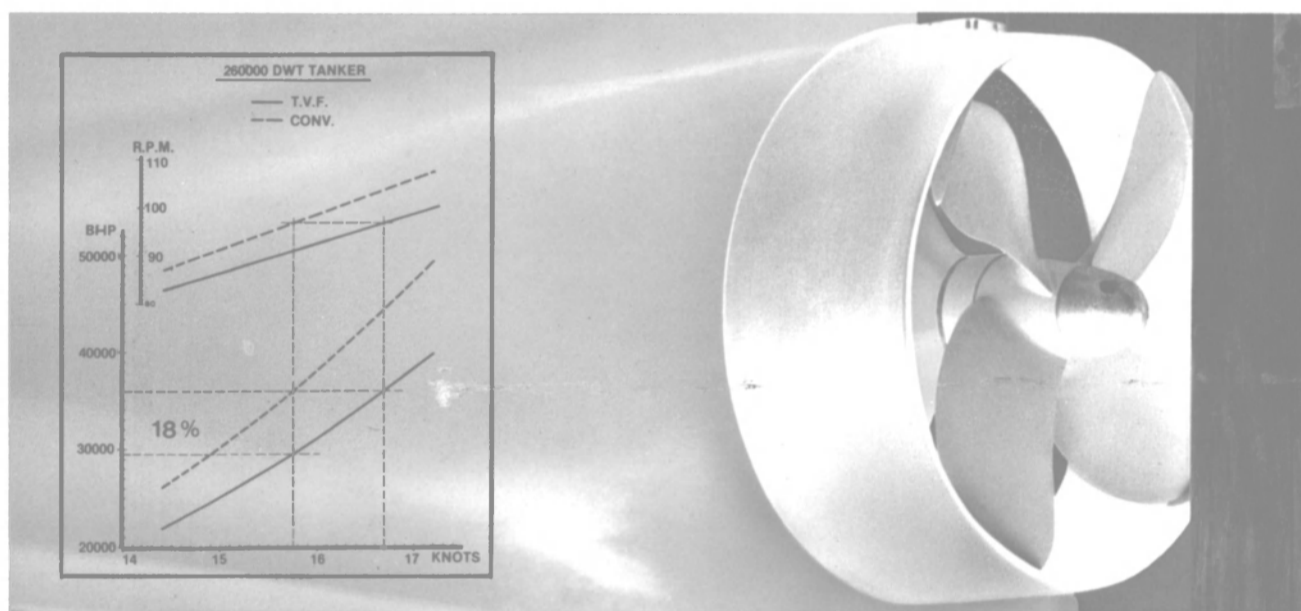
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T.V.F. PROPELLERS (*)

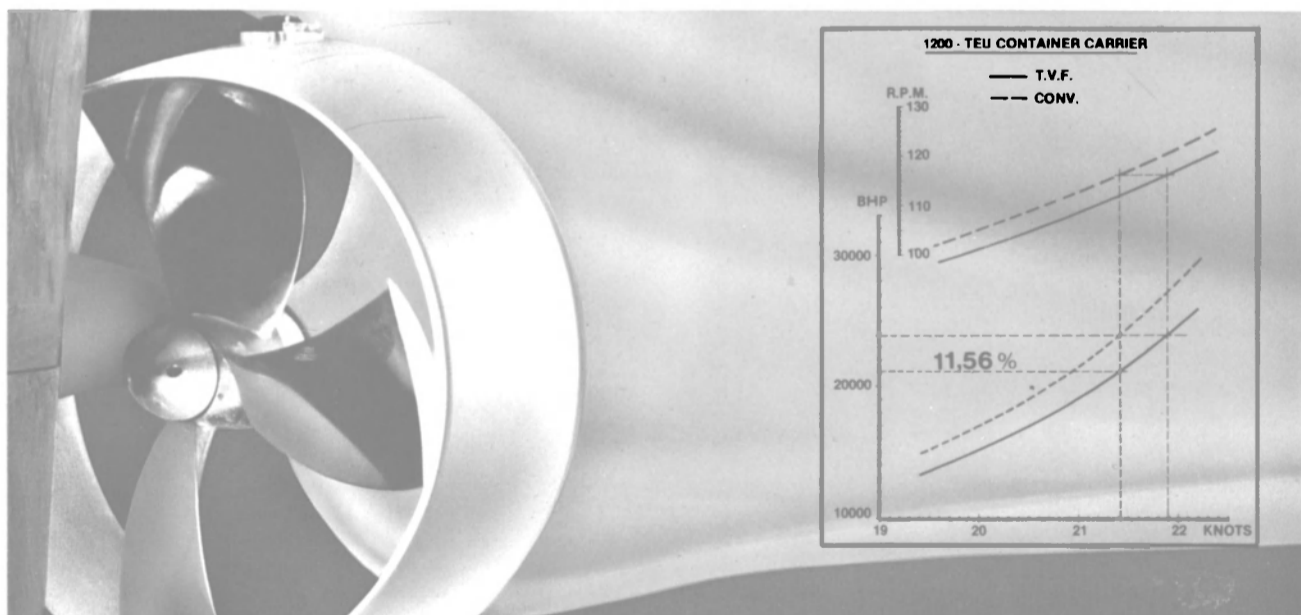
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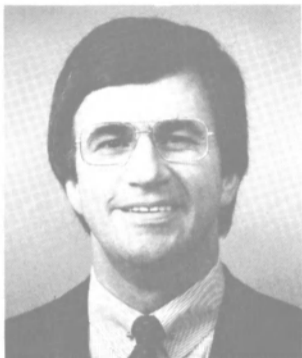
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Phone: 34.1. 4357840

Cable : "Astilleros" - Madrid

John LeProhon Named VP For Marketing At Morland Valve Co.

John P. LeProhon was recently promoted to vice president of marketing for Morland Valve Company, a subsidiary of Smith Valve Corporation, Manchester, Conn.



John P. LeProhon

Mr. LeProhon has been involved in the marine valve industry for 18 years and is responsible for all phases of marketing and sales for Morland. The company manufactures high technology valves used in the construction of submarines and surface ships for the U.S. Navy.

Award Norden \$10-Million Navy Contract For Radars

Norden Systems, Incorporated, Norwalk, Conn., has been awarded a \$10,378,260 firm fixed-price and fixed-price-incentive contract for conversion of four AN/SPS-40A radars to AN/SPS-40D configuration, spares, technical data, engineering services. Work will be performed at Melville, N.Y. The Naval Sea Systems Command, Washington, D.C., is the contracting activity. (N00024-82-C-7062)

Panama Sponsors Maritime Symposium Sept. 20-22

A maritime symposium sponsored by the Republic of Panama will be held at the new Atlapa Conference Centre in Panama City from September 20-22.

The symposium has attracted an eminent group of speakers including Sir Y.K. Pao, C.P. Srivastava, Phillip Loree, Charles Kiskadon, Shigeo Nagano, Paul Slater, Fernando Manfredo, Luis H. Moreno, and Dr. H.J. Stocker.

The president of the organizing committee is the director general of Panama's National Port Authority, Major Jose Santos Motta, who noted that the country "has a total commitment to building up new and improved commercial relationships worldwide." He cited the granting of two important concessions to private companies for the operation of major facilities in the port and canal areas in 1981 as an example of Panama's commitment.

The symposium will be hosted by Dr. Aristides Royo, president of the republic. Many other key

Panamanian figures in international trade and foreign investments also will participate.

Major issues to be covered include: the future of the Panama Canal; the revision of international maritime laws; an analysis of the future development of the world fleet; and the problems, alternatives, and importance of open registry.

Also, the future importance and participation of international

commercial cargo in marine transportation; labor codes for seamen; new safety regulations; and cargo sharing.

The symposium is being sponsored by the Panamanian Institute of Law, the Maritime Chamber of Panama, and the Panamanian Maritime Foundation, with the full backing of the government. A full program of cultural and recreational activities are being arranged for the 400

delegates who are expected to attend. Also available will be opportunities for liaison with Panamanian ministers from the economic and commercial sectors involved in international trade and foreign investment.

For further information contact Major Motta, National Port Authority, Apartado 8062, Panama 7, Panama, tel: 69-5444, telex 2765, or

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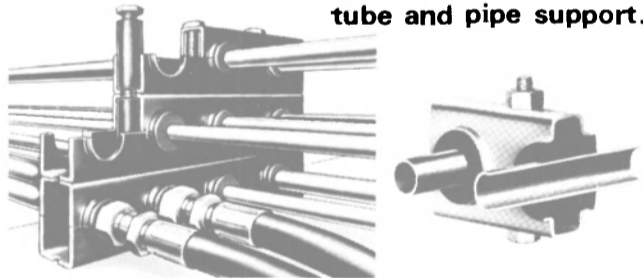
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Campbell Industries Christens 221-Foot Tuna Seiner For InterOcean



The Ocean Pearl's fish-spotting helicopter lands aboard the new tuna superseiner during christening ceremonies at the Campbell Industries shipyard in San Diego. The vessel is powered by an EMD 20-645-E7B diesel.

The Ocean Pearl, newest addition to the San Diego tuna fleet, was christened recently at Campbell Industries. The tuna superseiner of 1,200-ton carrying capacity is similar to other seiners in the current Campbell series.

The Ocean Pearl is owned by InterOcean Ships, Inc., a subsidiary of InterOcean Systems, Inc., both of San Diego. The parent firm specializes in the development and manufacture of high-technology marine equipment for fisheries research, offshore exploration, marine communications, and marine systems monitoring equipment. Ocean Pearl is the first tuna fishing vessel to be built for InterOcean.

The Ocean Pearl is 221 feet 5 inches in length with a beam of 40 feet 3 inches and a molded depth of 26 feet 10 inches. She will cruise at 16 knots powered by a General Motors Electromotive Division model 20-645-E7B

diesel rated at 3,600 hp at 900 rpm. The main engine drives a five-blade, 10.8-foot stainless-steel Coolidge propeller through a Falk reduction and reversing gear at a shaft speed of 179 rpm. The Ocean Pearl carries Caterpillar auxiliaries.

The vessel will be fully outfitted to fish the world's oceans, featuring Marco fish deck machinery highlighted by the Marco WS454 purse seine winch with independent purse drum drive. Also provided by Marco are a 56-inch Puretic power block, power inhaul winch, anchor winch, brailing winch, corkline winches, and main boom topping winches. Main boom vang winches are by Gearmatic.

In keeping with her up-to-date refinements, Ocean Pearl carries a full complement of electronics and navigational aids. There are multiple radars, sonars, radios, depth sounders, and radio direction-finding equipment, along with Sperry's gyrocompass, autopilot, and magnetic autopilot. The ship also carries a Magnavox satellite navigation system and an Avicon monitoring system, which measures fuel consumption for maximum efficiency.

InterOcean has developed specialized equipment to assist in locating fish using oceanographic sensors for sea salinity, temperature, water clarity, oxygen concentration, and acidity (pH), as well as acoustic instruments for classifying fish. The Ocean Pearl will be fully equipped with these as well as other experimental instruments. Particular care has been exercised to deliver the catch in the best possible condition, and a custom fish well temperature monitor/alarm system is installed to assist the crew in maintaining the fish at an optimum temperature.

The vessel is equipped to carry and support helicopter operations from the deck on the top of the pilothouse. She will carry a Hughes 500D helicopter equipped with inflatable floats and a full range of aircraft and marine communications equipment.

Keppel Marine Appointed U.S. And Canadian Agents For Nico-International

Nico-International has announced the appointment of Keppel Marine Agencies Inc. of New York, N.Y., and Houston, Texas, as their exclusive agent in the U.S. and Canada. Nico International are specialists in onboard repair and modification work and are located in 12 strategic world-wide locations.

Keppel Marine Agencies is the representative office of The Keppel Group of Singapore as well as agents for CMR Shipyard, Marseilles, France, and Clyde-Dock Engineering of Glasgow, Scotland.

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Motorola Awarded \$24-Mil Navy UHF Satellite Communications Contract

Motorola, Incorporated, Government Electronics Division, Scottsdale, Arizona, is being awarded a \$24,749,000 contract for the TD-1271 multiplexer/demultiplexer. This equipment is used aboard ships and at time-share channels for more efficient UHF satellite communications. The Naval Electronic Systems Command, Washington, D.C., is the contracting activity. (N00039-82-C-0047)

SMM '82 Marine Exhibit And Conference Set For Sept. 28-Oct. 2 In Hamburg

Some 500 firms from more than 30 countries will take part in the SMM '82 maritime exhibition and convention to be held next fall at the Hamburg exhibition grounds.

Scheduled from September 28 through October 2, 1982, the 10th Exhibition Ship, Machinery, Marine Technology International — SMM '82 — will bring together major representatives of the shipbuilding and related industries. Last held in 1980, the event attracted 27,000 visitors from 47 countries.

Concurrently with the SMM '82 exhibition, the Intermaritec '82 convention will be staged at the Hamburg Congress Centrum, adjacent to the exhibition.

The SMM '82 features all areas of the maritime industry, including shipbuilding, propulsion, cargo handling systems, navigation equipment, marine fittings and equipment, dock installations, marine technology, drilling platforms, LNG technology, sea-bed exploration equipment, marine research, and pollution control.

Information is available from Hamburg Messe und Congress Centrum, Jungiusstrasse 13, Hamburg 36, West Germany, or from Hans J. Rathje/Inter-View Communications, Inc., 545 Madison Ave., New York, N.Y. 10022, (212) 758-4651, or

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APL Dedicates New Seattle Terminal

American President Lines (APL), operator of the West Coast's largest fleet of trans-Pacific ships, recently dedicated its new \$29-million Seattle, Wash. terminal.

Mrs. Charles Royer, wife of the Seattle mayor, broke a champagne bottle against a \$3-million crane to formally open Terminal 46.

APL president Bruce Seaton described the new facility, which nearly doubles the space the line

had at Terminal 24, as the company's premiere terminal.

He said Seattle is APL's busiest port for inbound cargo, while Los Angeles has the top ranking for outbound shipments.

"Being the most modern and computerized, Seattle is our most efficient port," Mr. Seaton said.

APL has a 20-year lease from the port which includes 46 acres, offices, three container cranes,

yard equipment, and 1,728-feet of pier berthing space.

Under a new formula devised by the port, APL will pay \$45,000 an acre in rent, for a total of \$2.1 million a year. That makes it the port's No. 2 tenant, behind Sea-Land Service. It will also pay extra charges for equipment rentals. Mr. Seaton said improved efficiency will make up for the higher rent.

Coinciding with the ceremony

were the first shipboard arrivals of some of APL's new 45-foot containers. Mr. Seaton said the boxes, which are 9.5-feet high, carry 17 percent more cargo, yet cost no more to transport by rail or truck than the traditional 40-foot long, eight-foot high containers.

The new APL terminal also serves Johnson Scanstar vessels engaging in European and Pacific Rim trade.



At work offshore for Petrobras is the Rincao, 185' by 38' with a 16' depth. This tug/supply vessel is one of five built for Brazil.



At work offshore for NASA is the UTC Freedom, 176' by 37'. Designed to recover the space shuttle's rocket booster, this vessel and her sister ship, the UTC Liberty, can also accommodate a variety of scientific and technical missions.



At work for the University of Miami is the coastal zone research vessel Cape Florida. The 135' vessel will work a wide variety of research projects for the University.



At work for the Louisiana based Circle Bar Drilling Company is the posted drill barge Pat Taylor. It is rated to work drilling depths of up to 30,000 feet.

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Pennsylvania Shipbuilding Names Principal Officers

The names of the principal officers of Pennsylvania Shipbuilding Company, the company that has acquired the assets of Sun Ship, Inc., have been announced.

Ned Marandino has been appointed president of Pennsylvania Shipbuilding Company. Mr. Marandino was formerly president of

the Ingalls Shipbuilding Division of Litton Industries, Inc., and a senior vice president of Litton.

John Serrie has been appointed vice president, operations. Mr. Serrie's career in shipbuilding includes the positions of chief engineer at the Electric Boat Division of General Dynamics; vice president, operations, at the Ingalls Shipbuilding Division of Litton Industries; president of

Seatrail Shipbuilding; and, most recently, president of Levingston Shipbuilding.

Dan Johnston has been appointed vice president, administration. Mr. Johnston joins Penn Ship from Levingston Shipbuilding Company, where he was vice president, planning and control.

Joe Romano has been appointed vice president, industrial relations. Mr. Romano also joins Penn

Ship from Levingston Shipbuilding Company, where he was director, industrial relations.

K.L. (Shorty) Dow has been appointed vice president, internal controls. Mr. Dow joins Penn Ship from Levingston Industries, Inc., where he was vice president, operations.

Tim Colton has been appointed vice president, marketing. Mr. Colton also joins Penn Ship from Levingston Industries, Inc., where he was vice president, corporate development.

Raytheon Marine Appoints Hayden To Florida Post



David J. Hayden

Larry Anderson, marketing manager/dealer distributor program for Raytheon Marine Company has announced the appointment of **David J. Hayden** as area manager/Florida. In addition to these duties, Mr. Hayden will also serve as sales manager for Raytheon Marine's Tampa office and will direct the NECO autopilot program.

Mr. Hayden was formerly with NECO Marine Ltd. of Portsmouth, Hampshire, England. In 1975, he came to the U.S. to do a survey of the U.S. market for NECO autopilots. He served as president of NECO Marine Inc. at Annapolis, Md. from 1976 until April 1980, when Raytheon Marine became the U.S. marketing firm for NECO autopilots.

Curacao Yard Completes Repairs To Offshore Rig

Curacao Drydock Inc., at Curacao, Netherlands Antilles, recently completed a multimillion dollar contract to repair the semi-submersible offshore mobile drilling unit Blue Water No. 3 for its owner Santa Fe Drilling Inc.

Among the significant items of repair were extensive electrical renewals, reconstruction of living and machinery spaces, and sandblasting and recoating of the rig structure.

Extensive repair facilities at the yard include the widest graving dock in the western hemisphere, 6,000 feet of repair wharves to 40-foot draft, and cranes to 140 ton. The yard is represented in America by Curacao Drydock (USA) Inc.

For more information on the yard and its capabilities,

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Halter Delivers Two New Crewboats To Command Marine, Inc.



The Halter-built crewboats Pamela Ann and Patricia Ann are each powered by three Detroit Diesel 12V71TI engines.

Halter Marine, Inc., New Orleans, La., delivered two new 101-foot all aluminum crewboats, the Pamela Ann and the Patricia Ann, to Command Marine, Inc. of Lafayette, La.

Both were purchased from Halter's stock boat program and de-

livered to their owner within 21 days of contract signing. They are working out of Intracoastal City, La., and Freeport, Texas.

Jim Mello, president of Command Marine said, "Both of our customers have commented favorably on the performance of

these vessels as compared to other crewboats that have worked for them." He added, "Crew acceptance of the boats is outstanding and their seakeeping ability is superior."

Each boat is 101 feet 6 inches long, with a 21-foot 3-inch beam, and 9-foot 6-inch depth. Normal operating draft is 5 feet, 6 inches.

Power is provided by three Detroit Diesel 12V71TI diesel engines developing 510 hp each at 2,100 rpm. They turn 3-inch stainless steel shafts through Twin Disc M6514 reduction gears of 2:1 ratio. The two engine control stations on each boat are equipped with Kobelt 2544 and 2545 air controls.

A prominent feature on each boat is a 55 by 17-foot aft deck which can carry up to 30 tons of cargo. This capacity coupled with the boat's ability to carry 55 pas-

sengers gives them an unusually high payload for vessels this size.

The new boats each are equipped with a Decca 150 radar, Motorola single-sideband radio, a Danforth compass, and two Sailor VHF radios.

They can carry 2,478 gallons of fuel oil, 511 gallons of potable water, and 4,681 gallons of ballast water.

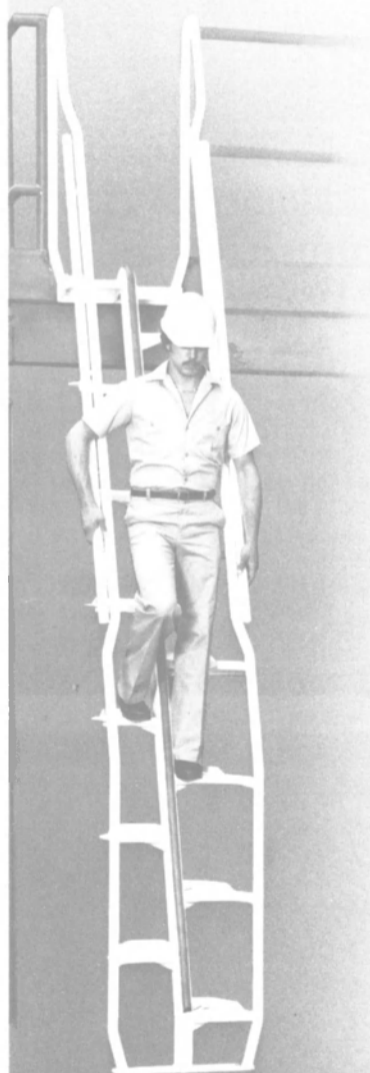
The Pamela Ann was named after Mrs. Jim Mello, and the Patricia Ann was named after Mrs. Don Goodwin, whose husband is Command's operations manager.

Command Marine currently operates nine 180-foot supply boats, three 110-foot surface effect "Dashboats," and the two new 101-foot crewboats.

The Pamela Ann and Patricia Ann were built at Halter's Chalmette division, one of a group of shipyards owned and operated by Halter in the Southeastern U.S.

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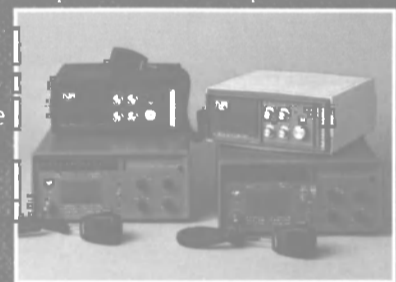
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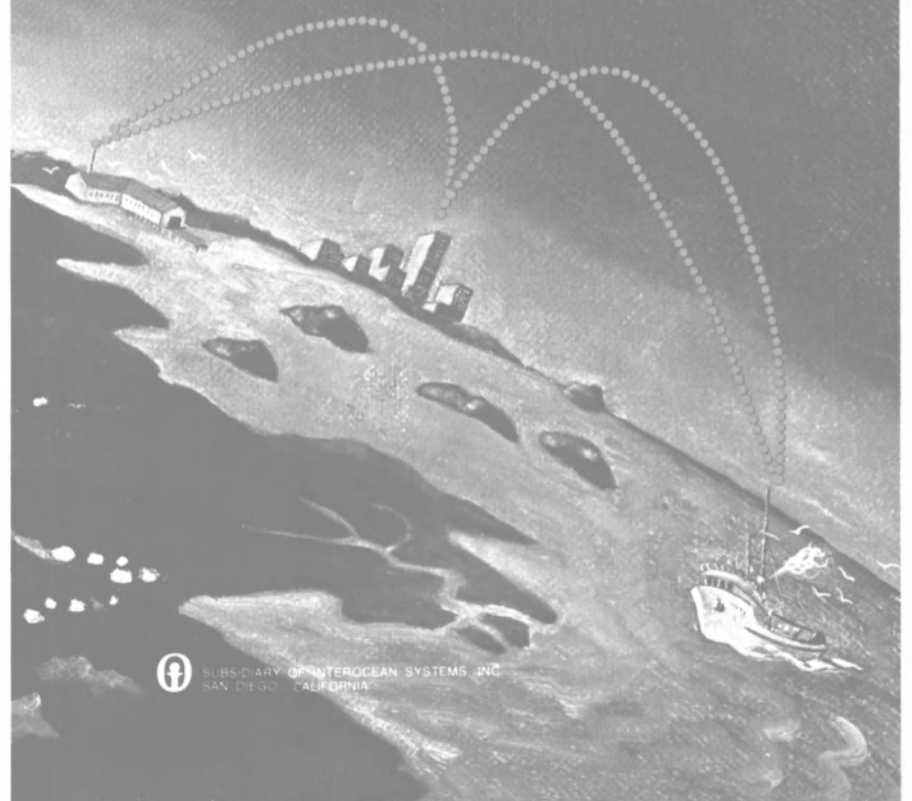
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**\$7.8-Million Hose System
Order To Uniroyal
—Literature Available**

A \$7.8-million contract to supply two new marine hose systems, for use in loading tankers anchored to offshore terminals in the Gulf of Campeche, has been awarded to Uniroyal International of Oxford, Conn., by Petroleos Mexicanos, Mexico's national petroleum production company.

It is the largest single order for marine hose ever received by Uniroyal, and is the largest such order ever given by Pemex to a U.S. company.

The two hose systems will be delivered by July 1982, and will be used at terminals loading tankers with petroleum for the U.S. and Europe.

The systems use both flotation-type and submarine hose. The contract also calls for additional components for three offshore

terminals using Uniroyal products.

Flexible hose for the systems will be manufactured at the plant of Uniroyal Manuli, Italy. The systems also employ fittings, valves, buoys, lights, navigation aids, and other items, most of which will be made in the U.S. Uniroyal will supervise the installation.

Uniroyal said its engineers have designed and developed dozens of comparable hose systems

for oil rigs, military installations, shipping terminals, and dredging sites.

All components will conform to specifications of the Oil Companies International Marine Forum, Uniroyal said.

Pemex, one of the world's leading exporters of petroleum, is expanding its facilities, including marine terminals, to accommodate steadily growing production.

For more information on Uniroyal hose systems,

Write 33 on Reader Service Card

**American Steamship Names
James Wager VP-Traffic**

James J. Wager has been named vice president-traffic for American Steamship Company, Buffalo, N.Y. The announcement was made recently by D. Ward Fuller, president.

Mr. Wager joined American Steamship in 1959 in the foreign agency department. In 1965 he became a dispatcher with the traffic department and was named chief dispatcher in 1969. He was appointed assistant vice president and traffic manager in 1978.

**Seaworthy Engine Systems
Names Wilson To VP Post**

David A. O'Neil, president of Seaworthy Engine Systems, Inc., Essex, Conn., has announced the appointment of Charles W. Wilson to the post of vice president.



Charles W. Wilson


Mr. Wilson will manage the downtown New York City office and will be Seaworthy's area technical representative. Mr. Wilson has over 35 years of experience in the marine industry, having been manager of marine sales in the marine division of Babcock & Wilcox. He is well-known for his experience in boiler design and operation.

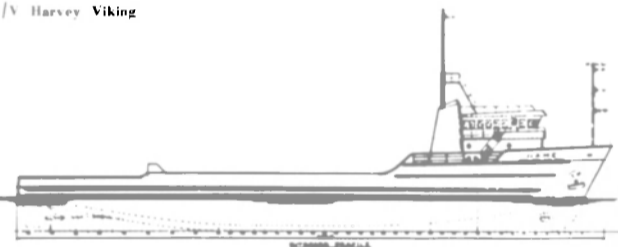
His memberships include the board of directors of the Shipbuilder Council of America, the national executive committee of the Propeller Club, and the executive committees of IME and ASNE.

Seaworthy Engine Systems, founded in 1973, specializes in marine engineering and shipboard fuel cost reduction programs with particular emphasis on power plant upgrading and conversions, alternate fuels, and fuel systems improvements.



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Patti's new yard will consist of approximately 250,000 sq. ft. of covered work area, overhead cranes, several outside platen areas, and a 200' wet dock. The Bayou Chico Yard will produce four to six vessels a year. Patti will continue to build smaller vessels at its shipyard in downtown Pensacola. Call Patti Industries to discuss your 1983 projects.

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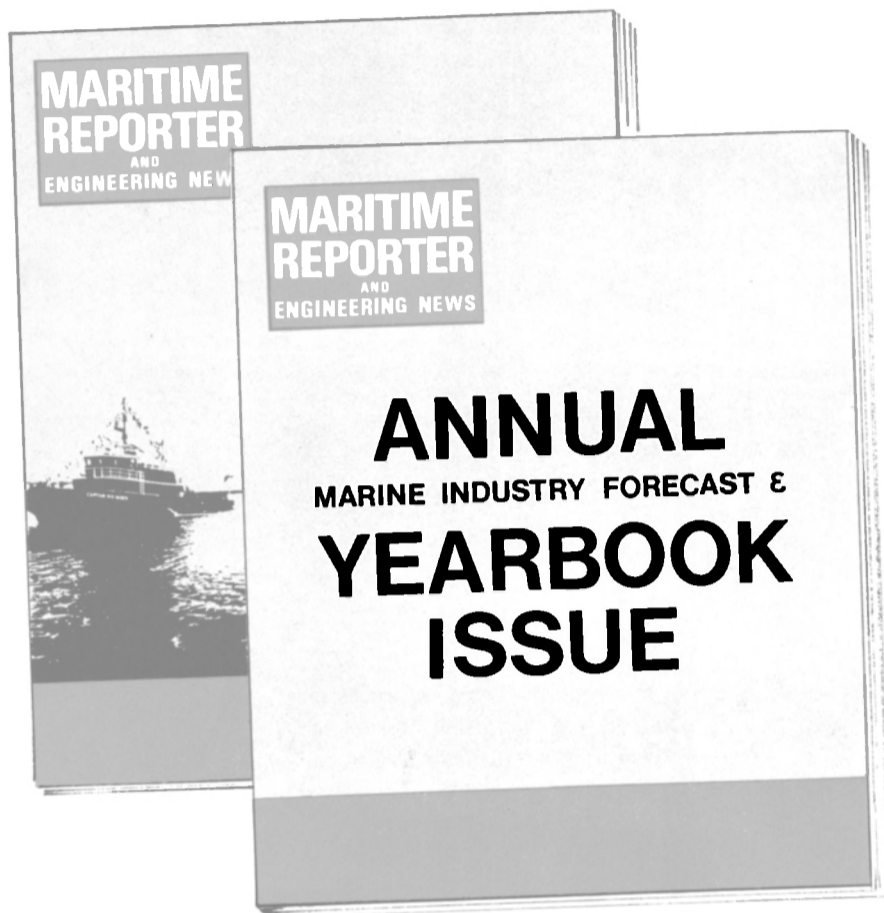
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This will be a true outlook issue...dealing little with the past... primarily with future predictions by leading marine industry experts of activities to come in all areas of the commercial maritime/offshore industry. Among the contents planned for this ANNUAL YEARBOOK ISSUE are...

- **U.S. SHIPBUILDING REPORT AND OUTLOOK**— Vessels building or on order in U.S. shipyards plus the outlook for the future.
- **U.S. NAVY**— A complete report - The present size and future prospects for a larger, more formidable U.S. Naval Fleet.
- **WORLDWIDE SHIPBUILDING OUTLOOK**— A view toward future ship construction levels in leading foreign yards.
- **OFFSHORE DRILLING**— The current picture on new rig and support vessel orders plus estimations of an even brighter future by key industry leaders.
- **U.S. INLAND WATERWAYS**— A solid picture for the future in detail provided by leading experts on shallow draft vessel operations and tug, towboat and barge construction.

INTEREST THIS JUNE 1st YEARBOOK ISSUE WILL GENERATE.

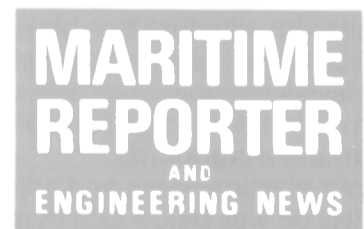
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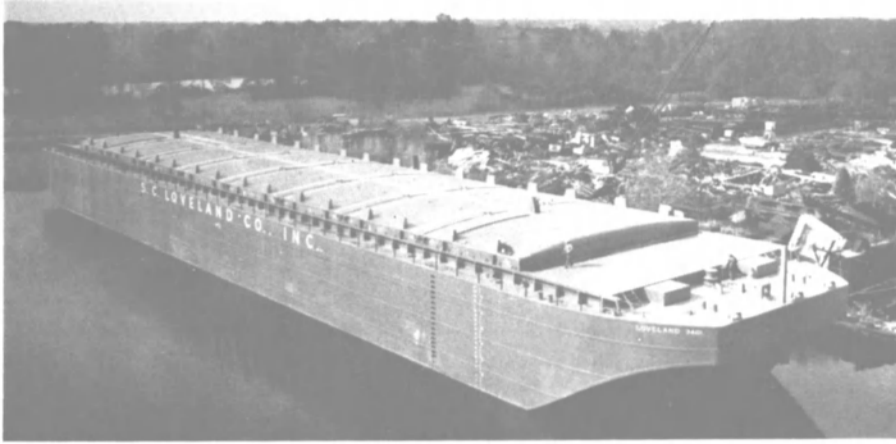
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Tidewater Equipment Delivers 340-Foot Covered Hopper Barge 'Loveland 3401'



Tidewater Equipment Corporation of Norfolk and Chesapeake, Va., recently delivered the covered hopper barge Loveland 3401 to its owner, S. C. Loveland Co., Inc. of Philadelphia.

The 340-foot-long, 70-foot-wide barge (shown above) is 26 feet deep at its sides with a 3-foot 5-inch coaming above deck level. Over 2,000 short tons of steel were used in its construction.

The open hopper is covered by eight roll-type structural fiberglass reinforced plastic covers especially built for the barge. These covers weigh over 30 tons each and are unique in that this installation is reported to be the

largest of its kind for unrestricted ocean service. The covers were designed and built by Proform, Inc. in their Minneapolis, Minn., plant.

The well deck of the double bottom is heavily reinforced to support extremely heavy concentrated loads. The bow is fabricated in a ship shaped form and the stern is raked.

The barge is designed to haul over 11,400 short tons of cargo at a 19-foot 1-inch draft. Ballasting capabilities were designed into the construction to facilitate certain loading conditions and for movement under low bridges.

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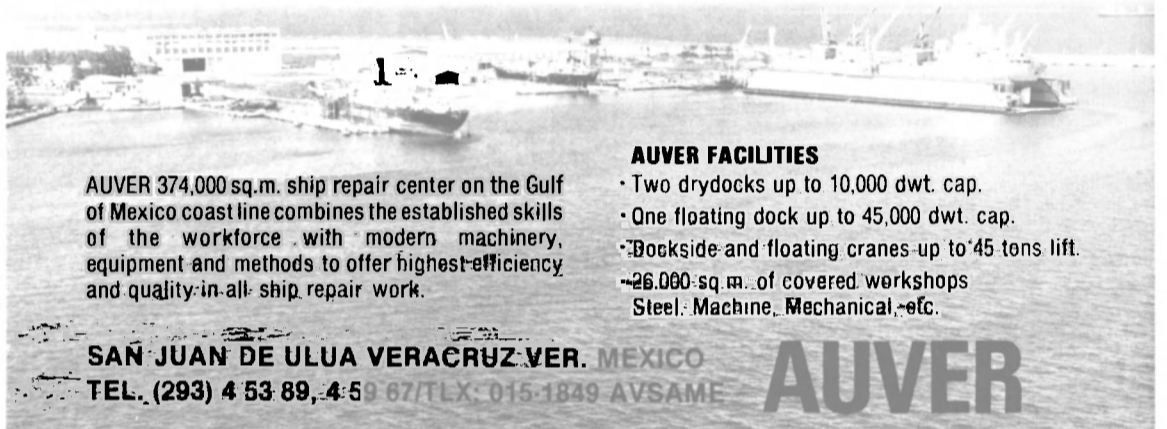


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full hydraulic power system which includes a power pack, a 12,000-pound-capacity capstan at the stern, and a 21,500-pound-capacity capstan/windlass at the bow. These units were furnished by New England Trawler Equipment Co. of Chelsea, Mass. Also included in the hydraulic system are jacking stations along the coaming for raising and lowering the covers for rolling. The covers are rolled by two hydraulic powered Beebe winches.

A machine room at the stern houses two GMC 30 kW diesel generators and stowage.

The barge was inspected during construction by the American Bureau of Shipping and the U.S. Coast Guard and at completion was classed and load lined for unrestricted ocean service with A-1+ Classification.

J.J. Henry Co., Inc., naval architects and marine engineers, designed "Loveland 3401" in their Moorestown, N.J., office.

The barge's cargo will vary according to demand, transporting grain, coal, sugar, or paper, maybe airplanes, new or scrap steel, or any other type of dry cargo headed for ports in the U.S., Canada, the Caribbean, or any other destination via the high seas.

**Appoint Richard Salo
Marine Project Manager
At Lake Shore**



Richard A. Salo

E.F. Coughlin, vice president, marine and nuclear, of Lake Shore, Inc., Iron Mountain/Kingsford, Mich., has announced the appointment of **Richard A. Salo** as project engineering manager in the company's marine engineering group.

Prior to joining Lake Shore, Mr. Salo held supervisory engineering posts with the Navy. Lake Shore, Inc. is a major manufacturer of marine, nuclear, mining, and industrial products, and a well-known distributor of heavy equipment and supplies.

**Shell Eastern Orders
Four Vosper SES's
Costing \$6 Million**

Vosper Hovermarine Limited, Southampton, England, announced the recent signing of a contract with Shell Eastern Petroleum (Pte) Limited of Singapore, for four, 18-meter HM 218

passenger Surface Effect Ships (SES). Inclusive of support equipment, the total value of this order is in excess of \$6 million.

The first ferry will be delivered to Shell Eastern Petroleum on March 31, 1983, the others following at monthly intervals thereafter.

Initially the craft will ferry Shell personnel from Singapore to Shell's oil refinery on the adjacent island of Bokum.

**NKK To Convert Five
Chemical Tankers In
\$15-Million Contract**

Nippon Kokan has received a \$15-million contract to convert five chemical tankers for Pan-ocean-Anco Ltd. of England.

Seiichi Muto, executive vice president of NKK's U.S. subsidiary, NKK America Inc., said conversion includes increasing pump capacity by installing ad-

ditional cargo pumps and preventing corrosion by replacing steel pipes with stainless steel pipes.

About 45 days will be required for each conversion, which will cost \$3 million per tanker. Pan-ocean-Anco is a consortium consisting of Peninsular Oriental Steam Navigation Co., John Swire and Sons Ltd., Lewis Trust Group of England, and the Worms Group of France.



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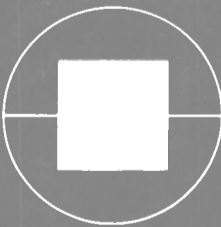
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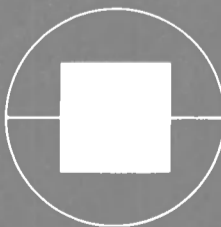
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east coast of Florida and is performing beyond expectations," he added. "She is very functional, great in heavy weather, and maintains approximately the same speed whether on hawser or in the notch."

A unique feature of the Halter-Bouchard 127-class tug is its triple skeg design to protect underwater gear that features parallel skegs extending below each propeller. The design was incorporated after extensive model testing to determine its feasibility and to insure that water flow to the propellers would not be impeded. The skegs have already proven effective safeguards against prop damage.

The new tug is nearly identical to two Halter-built sister ships for Bouchard, the Buster Bouchard and Marion C. Bouchard, delivered in 1979 and 1980 respectively. Prior to that, Halter had built two 109-foot tugs for Bouchard and is now building two newly designed 112-foot tugs for the company's East Coast operations.

The Capt. Fred Bouchard is 127 feet in length with a 37-foot beam and 20-foot depth. She is powered by two EMD 16-645E turbocharged diesel engines developing 2,850 hp each at 900 rpm. They drive two 140-inch, five-blade bronze propellers through Falk 3040 MRV reverse/reduction gears with a 4.96:1 ratio. The vessel is equipped with Wabco engine controls at three stations and a Sperry electro-hydraulic steering system with autopilot. The main switchboard and distribution panels were custom built by Continental Electric.

"Additional time and money savings are generated by the Capt. Fred's large 169,756-gallon fuel capacity," said Mr. Bouchard.

"Because of her higher useable fuel volume, she is self-sustaining for longer periods of time which gives her greater range and therefore fewer costly port calls on long tows."

Other capacities include: 6,006 gallons of lube oil, 8,592 gallons of potable water, 39,298 gallons of ballast water, 1,819 gallons of dirty oil, and a 1,819-gallon sanitary holding tank.

Electricity is produced by two 99-kW generators driven by two GM8V71 diesel engines. Compressed air for diesel engine starting, clutches, pneumatic control systems, air whistle, sea chest blow down, and ship service is provided by two Quincy D-340 motor-driven, air-cooled compressors.

Bilge, ballast, and fuel transfer pumps were made by Aurora,

and the potable water pressure set was manufactured by Jacuzzi. The deck is fitted with a Markey double drum TD SD 36 towing winch and two New England Trawler capstans with line pulls of 11,400 pounds and 22,000 pounds.

The boat's American Bureau of Shipping classification is for full ocean towing, and it is U.S. Public Health approved.

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CAPT. FRED BOUCHARD Specifications

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Beam	37 ft.
Depth	20 ft.
GRT	199.56
Crew	9
Main propulsion	EMD 16-645E
Gears	Falk
Bearings	B.F. Goodrich
Generator sets	GM 8V-71, 99-kW
Panels	Continental Electric
Controls	Wabco
Steering	Sperry
Pumps	Aurora, Viking
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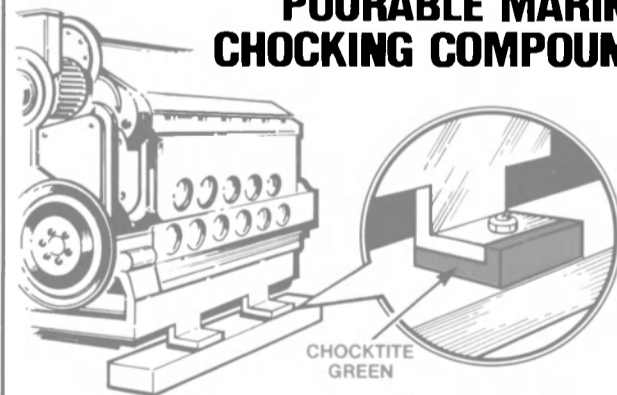
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NASSCO Hosts Workshop On Computerized Cost Estimating For Shipbuilding

The National Steel and Shipbuilding Company (NASSCO) recently hosted a workshop in San Diego for members of the Institute for Research and Engineering for Automation and Productivity in Shipbuilding (IREAPS) to provide a detailed explanation of implementing prototype software for a computer aided estimating system for shipbuilding (CAESS).

The CAESS system, developed by NASSCO, provides the esti-

mator with a flexible means of obtaining detailed information which aids in formulating estimates. CAESS relieves the estimator of laborious accounting tasks; increases estimate accuracy; improves timeliness; reduces preparation costs; provides a central database for easy access; provides flexibility for growth; and provides capability for early trade-off options and changes desired by the customer or offered by the shipbuilder.

The CAESS software was delivered to IREAPS in late March 1982 for distribution to interested members.

Coordinated by IREAPS, the workshop is one of several research and development projects designed to improve U.S. shipyard productivity. IREAPS is managed by ITT Research Institute, a contract research and development organization which has applied science and technology to solve problems for industry and government since 1936.

Among the attendees were representatives of Todd Shipyards; Bethlehem Steel, Sparrows Point; University of Michigan; Newport

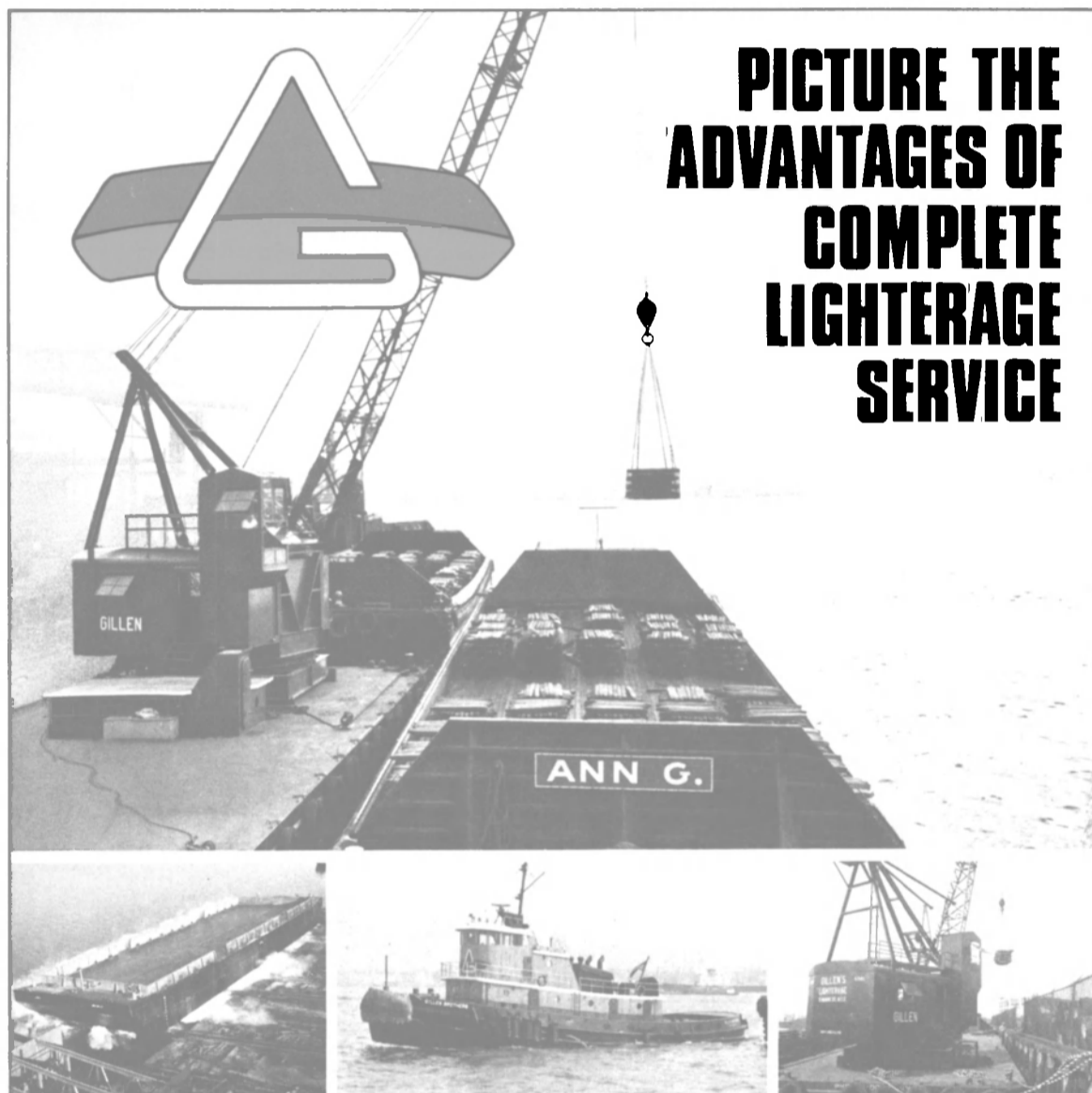
News Shipbuilding; MarAd; Avondale Shipyard; and NASSCO.

For further information on the IREAPS program,

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MarAd Awards Contract To Repair 'State Of Maine'

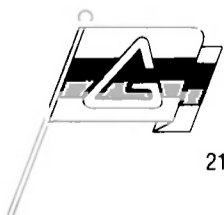
The Maritime Administration has awarded a contract to Industrial Welding & Machine Co., Portland, Maine, to perform annual maintenance and repair on the government-owned schoolship T.S. State of Maine. The company submitted a low bid of \$710,440.



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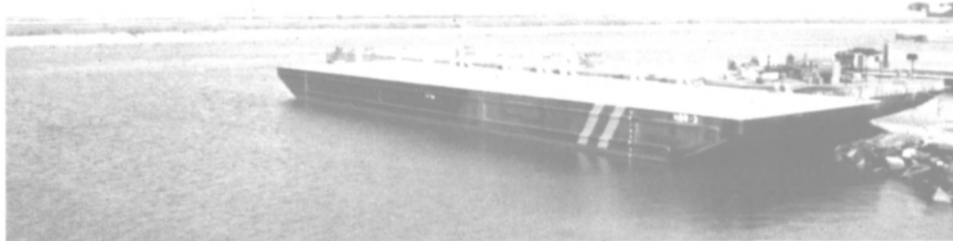
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110 — 1 1/2"	12 — 8"	2 — 26"
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111 — 2 1/2"	10 — 12"	2 — 34"
775 — 3"	24 — 14"	


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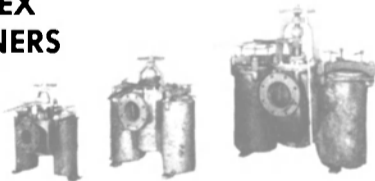
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In Stock — ask for Dean Gibson

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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



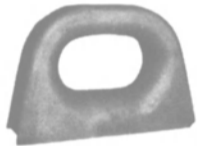
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PANAMA CHOCKS**

(MEET PANAMA REGULATIONS)
14" X 10" CLEAR OPENING

With extended legs for welding to deck. 14" Wide on base — length 28" — height 27¼". IMMEDIATE DELIVERY FROM STOCK.

NEW UNUSED 12" X 6½" CLOSED CHOCKS

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Closed chocks — 12" X 6½" inside opening — 23" overall outside — 8" high — 15" high — 3½" radius — weight 110 lbs. IN STOCK.

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\$2950

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Opening between vertical rollers 8½" — between horizontal rollers 3¼". Roller size 8½" — pin size 2½". Rollers 24" long. Extended legs for welding to deck. All are 18¼" x 33½" at top angled to 44" x 46½" at bottom. 7/8" Steel. Rollers have grease fittings. Plans available on request. SUITABLE FOR VESSELS UP TO 20,000 TONS. MAXIMUM LEAD 80°.

6 ROLLER TYPE

**MOORING FAIRLEADS
WITH 12" CLEAR OPENING**



\$2750

4 Vertical rollers — 5" diameter — 2 horizontal rollers — 4½" diameter, split to enable working from either end of fairlead. Steel sideframe 3/4" — top & bottom 1". Handles 1½" wire easily — up to maximum lead 80°.

**15½" POLISHED BRASS
PORTLIGHTS
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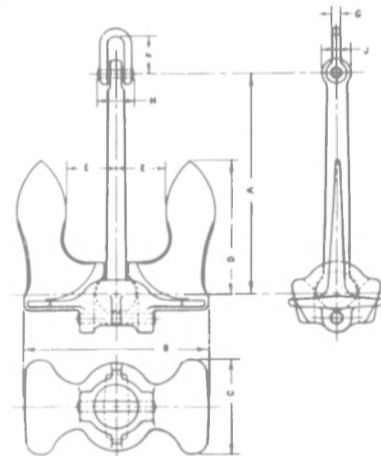
Misc. Sizes — 15" — 15½" with 4 Dogs.

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12000 LBS & 8000 LBS**



**DANFORTH TYPE
ANCHOR**

New — unused — 1000 lbs.



**BALDT MUSHROOM
TYPE ANCHOR**

4000 lbs. — Shank approx. 62" — head diameter approx. 64"

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- 1½" Di-Lok — 90' — 1140 lbs — \$478.80
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- 1½" Stud-Link — (2) 90' — 1935 lbs — \$812.70 ea. length
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 - (1) 48' — 1251 lbs — \$525.42
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370' x 59' x 16'

EXCELLENT CONDITION

Gross Tons-2255 DWT Capacity-3000 L/T
Propulsion 3 Enterprise Diesels, DMG 38, 2100 HP
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Built-Portland, Oregon to ABS 1957
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Hydraulic power to be supplied by purchaser
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combination trawler with CAT 3412, 520
H.P. engine, 3 cylinder lister generator, elec-
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Classed Maltese Cross A-1
International Load Line

U.S.C.G.
Oceans
Certificate of Registry
Gross Tons — 8914
Panama Canal Tonnage
Certificate

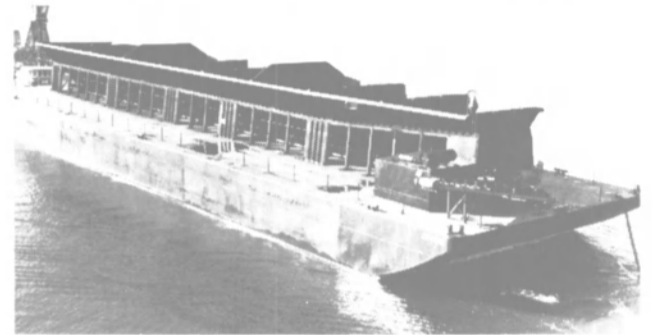
Length 400' 0"
Beam 99' 6"
Depth 25' 0"
Deadrise 27'
Draft Light 3' 11"
Draft Loaded 19' 4"
Transverse Bulkheads 5 O.T.
Length Bulkheads 3 O.T.
No. Tanks 20
Rolled Bilge 48" R.
Mich. Bow 60' length
Sq. Raked Stern 80' length

DECK CARGO
Open Deck Area 37,886 S.F.
Deck Load 1,500 P.S.F.
D.W.T. 18,500 L.T.

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Oil Cargo 150,000 BBL's
..... 21,000 L.T.
Cargo Piping 14" Mains
..... 10" Suctions

AVAILABLE DECEMBER 14, 1981

Self Unloading Aggregate Barge



ZAG-501

Length (O.A.) 248' - 0"
Beam 63' - 0"
Depth 16' - 0"
Displacement Light 1010 S.T.
Draft Light (F.W.) 2' - 7 1/2"
Draft Loaded (F.W.) 11' - 8"
DWT 4000 S.T.
Diesel Electric Set 100 KW
Hopper Volume 2667 cu. yd

Hopper Unloading Gates: 27-36" x 36" Horiz. sliding gates
w/individual hydr. controls.

Main Unloading Conveyor: 48" wide belt, 30 H.P. elect. motor, 250
ft./min. Max. disch. rate — 667 cu. yd./hr.

Transfer Conveyor: 42" wide belt, 10 H.P. elect. motor, 350 ft./min
off loading location — Stbd. side fwd. at 9 ft. above deck.

Hull Plating: Deck, side shell & bott. 9/16"

Split Type Self Dumping Scows

Built 1979. For sale, long
or short term charters

SPECIFICATIONS

ABS loadlined for USCG-approved
offport dumping

Length (MLD) 180 - 0"
Beam (MLD) 50 - 0"
Depth of Mid-Body (MLD) 14' - 0"
Hopper Length (MLD) 128' - 0"
Level Hopper Volume 1421 cu. yd.
DWT @ d = 10.22 ft 1615 L.T.
Rake Lengths F & A 26' - 0"
Twin Skegs

Stern & Fwd. Rake Decks Stepped up 2' - 0"
Engine GM 671

Hydraulic Pumps (2) 12 GPM & 75 GPM
Time To Open (Fully Closed to Fully Open)
..... 6 Min. 5 Sec.

Time To Close 4 Min. 34 Sec.
Hopper Angle Fully Open 53.78

Fuel Tank Capacity 445 Gal.
Hydraulic Cylinders (2 Fwd. & 2 Aft)
..... 18" Diam. 120" Stroke

Plating
Side 9/16"
Bottom 5/8"
Hopper 5/8"

Combination Deck Cargo & Tank Barge

Fully-Classed
Ocean Service



230' x 60' x 15' Comb. Deck Cargo & Grade 'D' Tank Barge

Length O.A. 230' - 0"
Beam 60' - 0"
Depth 15' - 6"
Deadrise 6"
Number of Tanks 10
Total Tank Volume @ 95% 24,000 BBL
Cargo Pumps Two Twin Screw, Devalval IMO GTS-268-066-CBEM
Rating 1500 GPM, 1150 RPM, 100 PSIG Disch. Press., 5000 SSU
Location Below Deck Pumproom in Fwd. Rake
Diesel Engines Two Detroit Model 8V-71, 230 HP @ 1800 RPM
Location Above Deck in Fwd. Deckhouse
Fuel Capacity 1400 Gal.
Fill & Disch. Connections 8" ANSI 150# FLG P/S
Heating Coils 2" Sch. 80 Pipe For Shore Steam
Hull Plating Deck 1/2", Side Shell 3/8", Bott. 3/8", Shear Strake 1/2"
Deck Cargo Dwt. at Loadline 3900 S.T.

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Two 500-ton Gantry Cranes 70-foot Track Span

(CAN BE WIDENED TO 100 FEET)



Originally Barge Handling. As used on LASH Ships. Manufactured by Alliance Late Model built to ABS and MARAD requirements.

Good Condition. Immediately Available. Priced at a fraction of New Replacement Cost. Complete with Lifting Beams and Spreader Beams (not shown in photograph)

AC Power Input Through Cable Reel
DC Hoist & Gantry Motors & Controls
4-150 HP-240 Volt DC Hoist Motors
4-150 HP-240 Volt DC Gantry Motors
2-265 KW-500 Volt DC M-G Sets

Units Can Be Modified

Possible other uses:

- 1) Moving heavy equipment
- 2) Dam Sites
- 3) Concrete Prefab plants
- 4) Railroad yards
- 5) Steel plants

Geared Track is also available at extra cost



American Crane Barge

BARGE DATA	
Displacement Light	1,200T.
Gross Tonnage	911
Net Tonnage	911
Length	151'-6"
Beam	60'-0"
Hull Depth	12'-0"
Flush Deck Area	6,000 Sq. Ft.
Engine Room Area	412 Sq. Ft.
Office & Eating Area	136 Sq. Ft.
Diesel Fuel Tanks	36,000 Gal.
Fresh Water Tanks	36,000 Gal.
Bunker "C" Fuel Tanks	12,000 Gal.
Ballast System	None

CRANE DATA	
Manufacturer	American Hoist & Derrick Co.
Model & Type	305 Revolver
Capacity	125 T.
Boom (Certified rating with 140' length, 160' available)	
20 part rigging	2,200 ft., 7/8" C - 6 x 36 I.P.S.
4 part standing standing bail	2-186 ft., 1 1/4" C - 6 x 36 I.P.S.
Main Hoist (Certified rating: 58.5 T. @ 50' to 100', 8 part. rigg.)	
20 part rigging	3,250 ft., 1" C - 6 x 36 I.P.S.
Aux. Hoist (Certified rating: 10.0 T. @ 100') 15 T. Capacity	
2 part rigging	635 ft., 7/8" C - 6 x 66 I.P.S.

FOUR 30-TON

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.

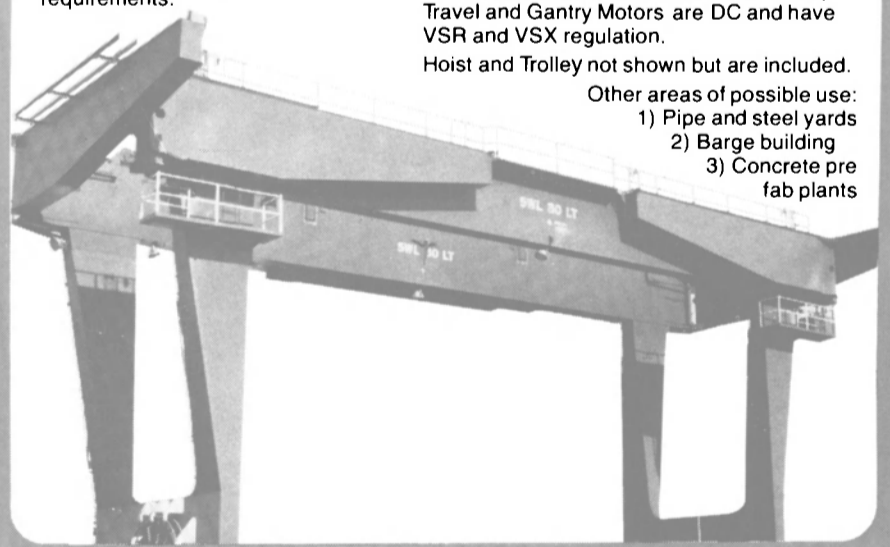
MG set: 250 HP-AC-170 KW 230 DC.

• 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 or to make an appointment to inspect, call or write:
Dennis Kearney or Ace Logan



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**SERVICE • REPAIR • PARTS
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**CUNNINGHAM MARINE
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FOR SALE

Small ship repair facility on St. Johns River in Jacksonville, FL. Marine railway, minor piers. \$480,000.00

Contact Bill Keller (714) 233-5291
or send inquiries to
510 16th Street, San Diego, CA 92101

**UNION CARBIDE PCM-250
PORTABLE PLASMA ARC
CUTTING OUTFIT**



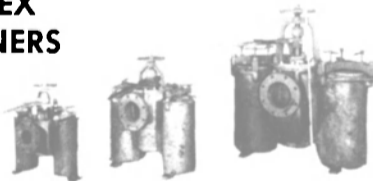
**CUTS:
ALUMINUM
STAINLESS
BRASS
STEEL**

Output: 250 amps at 150 volts. Used only 5 months on special project. Complete.

THE BOSTON METALS COMPANY

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Marine Warehouse (301) 752-1077
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**DUPLEX
STRAINERS**



FACTORY NEW

- (1) Hayward 3" cast iron — face-to-face 13½" — 22" width — 17½" high. Wt. 177 lbs.
- (1) Hayward 6" cast iron — face-to-face 22" — 31¼" width — 35" high
- (2) Hayward 8" cast iron — 45½" width — 50½" high — wt. 1500 lbs.

RECONDITIONED — FROM EX-ALCOA "SEAPROBE"

- Kraisel 4" steel — face-to-face 17" — 28" wide — 19" high — 7½" bolt circle
- Kraisel 2½" steel — face-to-face 12½" — 24" wide — 18" high — 4 hole 5½" bolt circle
- Bethlehem 3" steel — face-to-face 13" — 24" wide — 27" high — 6" bolt circle

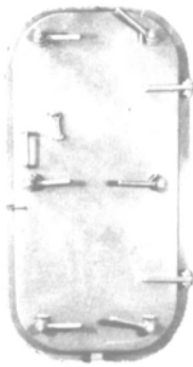
In Stock — ask for Dean Gibson

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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

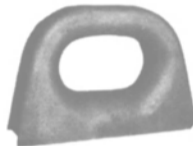


NEW 7" RADIUS PANAMA CHOCKS

(MEET PANAMA REGULATIONS)
14" X 10" CLEAR OPENING

With extended legs for welding to deck. 14" Wide on base — length 28" — height 27¼". IMMEDIATE DELIVERY FROM STOCK.

NEW UNUSED 12" X 6½" CLOSED CHOCKS FOR SMALL VESSELS



Closed chocks — 12" X 6½" inside opening — 23" overall outside — 8" high — 15" high — 3½" radius — weight 110 lbs. IN STOCK.

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FAIRLEADS



\$2950

NEW — UNUSED 4-ROLLER TYPE UNIVERSAL SHIPBOARD FAIRLEADS

Opening between vertical rollers 8½" — between horizontal rollers 3¼". Roller size 8½" — pin size 2½". Rollers 24" long. Extended legs for welding to deck. All are 18¼" x 33½" at top angled to 44" x 46½" at bottom. 7/8" Steel. Rollers have grease fittings. Plans available on request. SUITABLE FOR VESSELS UP TO 20,000 TONS. MAXIMUM LEAD 80°.

6 ROLLER TYPE

MOORING FAIRLEADS WITH 12" CLEAR OPENING



\$2750

4 Vertical rollers — 5" diameter — 2 horizontal rollers — 4½" diameter, split to enable working from either end of fairlead. Steel sideframe 5/16" — top & bottom 1". Handles 1½" wire easily — up to maximum lead 80°.

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**15½" POLISHED BRASS
PORTLIGHTS
WITH SLOTTED BRASS NUTS
15½" CLEAR OPENING**



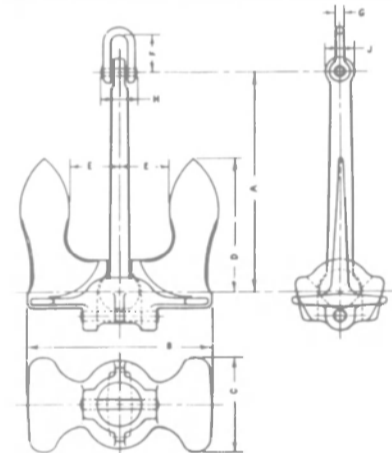
Misc. Sizes — 15" — 15½" with 4 Dogs.

THE BOSTON METALS COMPANY

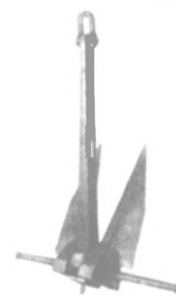
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ANCHORS — CHAIN

**DETACHABLE LINKS
PEAR-SHAPED DETACHABLE LINKS**



**LARGE BALDT-TYPE ANCHORS
NEW — UNUSED LLOYD'S OR ABS CERTIF.
12000 LBS & 8000 LBS**



**DANFORTH TYPE
ANCHOR**

New — unused — 1000 lbs.



**BALDT MUSHROOM
TYPE ANCHOR**

4000 lbs. — Shank approx. 62" — head diameter approx. 64"

MOORING CHAIN — RANDOM LENGTHS

- 1½" Di-Lok — 90' — 1140 lbs — \$478.80
- 1¼" Stud-Link — 90' — 1345 lbs — \$564.90
- 1½" Stud-Link — (2) 90' — 1935 lbs — \$812.70 ea. length
- 1½" Di-Lok — (2) 90' — 2345 lbs — \$984.90 ea. length
 - (1) 48' — 1251 lbs — \$525.42
 - (1) 20' — 522 lbs — \$219.24
- 1¾" Stud-Link — (4) 82' — 2360 lbs — \$991.20 ea. length
- 17/8" Stud-Link — (2) 83' — 2744 lbs — \$1152.48 ea. length
 - (1) 87' — 2876 lbs — \$1207.92
 - (1) 76' — 2513 lbs — \$1055.46
 - (5) 84' — 2777 lbs — \$1166.34 ea. length
- 2¼" Di-Lok — (2) 90' — 3750 lbs — \$1496 ea. length

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**EXTRA HEAVY DUTY
EXTRA LARGE PANAMA CHOCKS**



Clear opening 16" X 20" —
10" Radius. 36½" High—40½"
long. For extra large tankers
or heavy dredges where 1½"
wire or eye-spliced large
loop must pass-thru chock.

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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
or
230 Volt D.C. Input — 1800 RPM
NEW - UNUSED EX - U.S.N.



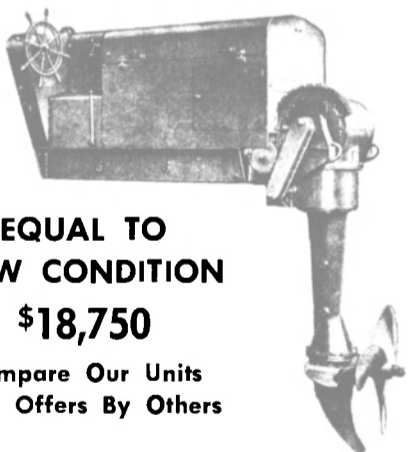
2½ KW—115 volts single phase A.C. output. GENER-
ATOR: Type GNA—class 1G— Frame 28A—Form A—
1800 RPM—5 KVA—2.5 KW 115 volts AC— 60 cycle
—50% PF—43.4 amps. MOTOR: Louis Allis—Type GNA—
Class E—Frame 25A—Form A—1800 RPM—115 volts
DC—32 amps—shunt wound (with attached Ward-
Leonard frequency regulator).

CAN FURNISH WITH 230 VOLT DC INPUT

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**M & T Model O-2D
Marine Outboard Diesel
Driven Propulsion Units**



**EQUAL TO
NEW CONDITION
\$18,750**

Compare Our Units
With Offers By Others

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

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**OUR WAREHOUSE IS
HATCH CITY!**



**24" I.D. MAN-WAY
3-DOG HATCHES**

18" Coaming. Available with T socket
wrench or removable handwheel (can be
welded in place) for top opening. Spring-
loaded lid w/inside handwheel. Coaming
12mm thick, top 11mm. Bosmet
#67/56



**21" I.D. MAN-WAY
3-DOG HATCHES**

10" Coaming. Available with T socket
wrench or removable handwheel (can be
welded in place) for top opening. Coam-
ing 12mm thick, top 11mm. Bosmet
#64/55



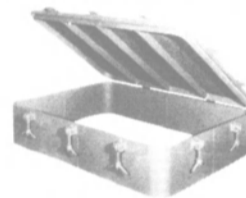
**TANKER
EXPANSION TRUNK**

36" Diameter — 26" coaming — 7-Dog
drop-bolts. Drawing #36/26



**20" ROUND
HATCH**

18" Coaming — 3 brass dog drop bolts.
Coaming 12mm thick — top 11mm. Bosmet
#68



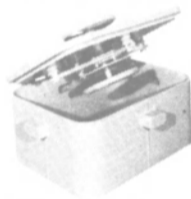
CARGO HATCHES

48" x 36" x 5" 48" x 48" x 9"
66" x 81" x 12" 72" x 72" x 12"
72" x 74" x 12"



FLUSH HATCHES

24" x 30" 30" x 30"
4 Dogs bottom — T-key top opener. 4"
Maximum coaming. Coaming 8mm thick —
top 7mm.



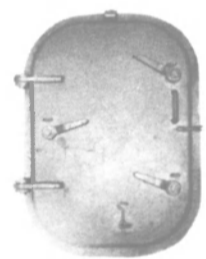
**QUICK-ACTING
4-DOG HATCHES**

Heavily constructed. Handwheel operated.
Handwheels top & bottom. Size A: 27" x
21" w/12" coaming. Size B: 31" x 31"
w/12" coaming. For ocean-going barges,
etc.



**QUICK-OPENING
HATCH**

Handwheel top & bottom. 4 Dogs. 16" x
24" with 5" coaming. Drawing #60-40



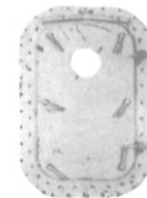
WATERTIGHT DOORS

24" x 36" — 3-DOG
Right & Left Hand

**GENERAL PURPOSE
HATCH**



15" x 23" x 5"
4-DOG
ALL-BRASS
FITTED



**6-DOG WATERTIGHT
DOORS**

32" x 54" Clear opening. 10" Deadlight.
As carefully removed from Alcoa "Sea-
probe"

**IMMEDIATE DELIVERY
ON THE HATCHES
YOU ORDER**

*Inquire about doors
and hatches not
listed here!*

**WE HAVE MANY
MORE IN STOCK**

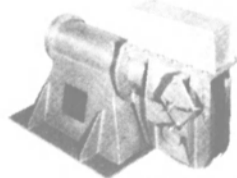
THE BOSTON METALS COMPANY

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313 E. Baltimore St.

— Call Al or Dean —
TWX: 710-234-1637

WAREHOUSE (301) 752-1077
Baltimore, Md. 21202 U.S.A.

NEW BALANCED HEAD FAIRLEADS



MODEL NUMBER	LINE SIZE	SHEAVE DIAM.	SHANK OPENING	BASE LENGTH	BASE WIDTH
BM-10	¾"	10"	4.76"	16.5"	22"
BM-12	1"	12"	5"	24"	28"
BM-14	1¼"	14"	5"	28.3"	31.9"
BM-18	1½"	18"	5.98"	32"	39.4"

THE BOSTON METALS COMPANY

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Marine Warehouse (301) 752-1077
TWX: 710-234-1637

PRICES

BM-10	BM-12	BM-14	BM-18
\$2417	\$2646	\$2673	\$3949

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Appleton Machine Company, P.O. Box 2339, Appleton, WI 54911
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Nautilus Crane, P.O. Drawer 1287, Metairie, LA 70004
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Phosmarin Equipment, 21, Boulevard de Paris, 13002 Marseille, France
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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, Inc., 4769 North 27th Street, Milwaukee, WI 53209
Port Electric Supply Corp., 157 Perry Street, New York, N.Y. 10014

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Millard Controlled Metals, 5 Louise Drive, Ivyland, PA 18974

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Advanced Marine Enterprises, Inc., 1725 Jefferson Davis Highway (Suite 1300), Arlington, VA 22202
Agemor, Ave. 17 No. 108-129, P.O. Box 1465, Maracaibo, Venezuela
All Points Associates, Inc., RD #1, Box 3309, Monroeville, OH 44847
Amirikian Engineering Co., Chevy Chase Center Bldg., Suite 505, 35 Wisconsin Circle, Chevy Chase, Md. 20015
B.C. Research, 3650 Westbrook Mall, Vancouver, B.C., Canada V6S 2L2
J.L. Bludworth, P.O. Box 2441, Corpus Christi, TX 78403
Jacksonville, Florida 32211
Del Breit Inc., 326 Picayune Place (Suite 201), New Orleans, LA 70130
C.D.I. Marine Co., Regency East, Suite 222, 9951 Atlantic Blvd., CTS & Associates, 11320 S.W. 108 Court, Miami, Fla. 33176
CADCOM, 107 Ridgely Ave., Annapolis, MD 21401
Childs Engineering Corp., Box 333, Medfield, Mass. 02052
John P. Colletti & Associates, P.O. Box 13378, Pittsburgh, PA 15243
Crandall Dry Dock Engrs., Inc., 21 Pottery Lane, Dedham, Mass. 02026
Crane Consultants Inc., 15301 1st Ave., So. Seattle, Washington 98148
C.R. Cushing & Co., Inc., One World Trade Center, New York, N.Y. 10048
Norman N. DeJong & Associates, Inc., 1734 Emerson St., Jacksonville, Fla. 32207
Design Associates Inc., 14360 Chef Menteur Highway, New Orleans, LA 70129
Designers & Planners, Inc., 1725 Jefferson Davis Highway, Suite 700, Arlington, VA 22202
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
GEOD Corporation, 73 Oak Ridge Road, NJ 07438
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 Glisten 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
J.J. Henry Co., Inc., Two World Trade Center—Suite 9528, New York, N.Y. 10048
Hoffman Maritime Consultants Inc., P.O. Box 186, Glen Head, NY 11545
Hydranautics, Incorporated, 7210 Pindell School Road, Howard County, Laurel, Maryland 20810
Jantzen Engineering Co., 6655-H Amberton Drive, Baltimore, Md. 21227
James S. Krogen & Co., Inc., 3333 Rice St., Miami, Fla. 33133
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 Braou Hollow Road, Rte. 110, Melville, N.Y. 11746
Marine Technical Associates, Inc., 195 Paterson Avenue, Little Falls, NJ 07424
Rudolph F. Matzer & Associates, Inc., 13891 Atlantic Blvd., Jacksonville, Fla. 32225
George E. Meese, 194 Acton Rd., Annapolis, Md. 21403
Metritape, Inc., 33 Bradford Street, Concord, MA 01742
NKF Engineering Assoc., Inc., 8150 Leesburg Pike, Vienna, VA 22202
Nelson & Associates, Inc., 1405 N.W. 167th Street, Miami, FL 33169
Nickum & Spaulding Associates, Inc., 911 Western Ave., Seattle, WA 98104
Captain Conrad P. Nilsen, 66 Beverly Road, Bloomfield, NJ 07003
Norgaard and Clark, 114 Sansone 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
PRC Guralnick, 5252 Balboa Ave., San Diego, CA 92117
Pearlson Engineering Co., Inc., 8970 S.W. 87th Ct., Miami, Florida 33156
Pilagate Consultants, Inc., P.O. Box 2046, New Hyde Park, NY 11040
M. Rosenblatt & Son, Inc., 350 Broadway, New York, N.Y. 10013
and 657 Mission St., San Francisco, Calif.
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
Simmons Associates, P.O. Box 760, Sarasota, FL 33578
T. W. Spaetgens, 156 West 8th Ave., Vancouver, Canada V5Y 1N2
R.A. Stearn, Inc., 253 N. 1st Ave., Sturgeon Bay, WI 54235
Robert L. Stevens Associates, Inc., 654 Beacon Street, Boston, MA 02215
Richard K. Taubler Inc., 8 Columbia St., Milford, Del. 19963
Timsco, 622 Azalea Road, Mobile, AL 36609
Townsend Marine Consultants, 18 Church Street, Georgetown, CT 06829
Wadam Wartsila Helsinki Shipyard, P.O. Box 132, SF-00151 Helsinki 15, Finland
Wesley D. Wheeler Assoc., Ltd., 104 E. 40th St., Suite 206, New York, NY 10010
James Weisbeck, 240 O'Kell Street, Buffalo, NY 14220
Thomas B. Wilson Associates, 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
Frank L. Baier Radio, P.O. Box 10307, Jefferson, LA 70181
Comsat General Corp., 950 L'Enfant Plaza, S.W., Washington, D.C. 20024
DEBEG Marine, Inc., 10 Manor Parkway, Salem, NH 03079
Electro-Nav, Inc., 840 Bond Street, Elizabeth, NJ 07201
EPSCO Marine, 550 Wholesalers Parkway, Harahan, LA 70123
Furuno U.S.A., 271 Harbor Way, S. San Francisco, CA 94080
Harris Communications (RF Communications), 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
Hull Electronics Company, 7563 Convoy Court, San Diego, CA 92111
TT Mackay Marine, 2912 Wake Forest Road, Raleigh, N.C. 27611
Intermarine Electronics, Inc., Flowerfield Bldg. #7, St. James, N.Y. 11780
Iotron Corp., 5 Alfred Circle, Bedford, MA 01730
Kongsberg North America Inc., 135 Fort Lee Road, Leonia, NJ 07605
Kongsberg Vapenfabrikk, Noncontrol Division, P.O. Box 145, Horten 3191, Norway
Krupp Atlas-Elektronik, 241 Erie Street, Jersey City, NJ 07302
G.E. McKay Company (Dymek), 111 South College Avenue, Claremont, CA 91711
Magnavox Navigation Systems, 2829 Maricopa Street, Torrance, CA 90503
Maritel, Inc., 139 Old Solomon's Island Road, Annapolis, MD 21401
Nov-Com, Inc., 9 Brandywine Drive, Deer Park, NY 11729
Navidyne Corp., 11824 Fishing Point Drive, Newport News, VA 23606
North American Philips Communication Corp., 55 Knights Bridge Road, Piscataway, NJ 08854
Northern Radio Company, Subsidiary of Interocean Systems Inc., San Diego, CA
RCA Service Co., Building 204-2, Camden, N.J. 08101
Racal-Decca Marine, Inc., P.O. Box G, #1 Commerce Blvd., Palm Coast, FL 32037
Racal-Decca Marine, Inc., 4200 23rd Avenue West, Seattle, WA 98199
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 Roessler Rd., Glen Burnie, MD 21061
Robertson Auto Pilot, 135 Fort Lee Road, Leonia, NJ 07605
Scientific Atlanta Communications, 3845 Pleasantland Road, Atlanta, GA 30340
Simrad Inc., 1 Labriola Court, Armonk, N.Y. 10504
Si-Tex Marine Electronics, P.O. Box 6700, Clearwater, FL 33518
Southern Marine Research, Inc., 1401 N.W. 89th Court, Miami, FL 33172
Texas Instruments, Inc., P.O. Box 225012 M/S 84, Dallas, TX 75265

- Tracor, Inc., Industrial Products Div., 6500 Tracor Lane, Austin, Texas 78721
- OILS—Marine—Additives**
 Gulf Oil Company—U.S. (Domestic Oils), 909 Fannin Street, Houston, TX 77001
 Gulf Oil, New York District Sales Office (Domestic), 433 Hackensack Avenue, Hackensack, NJ 07601
 Gulf Oil Trading Co., 1290 Ave. of Americas, New York, N.Y. 10019
 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**
 Butterworth Systems Inc., 224 Park Ave., Florham Park, N.J. 07932
 Centrico, Inc. (Westfalia Separators), 100 Fairway Court, Northvale, NJ 07647
 McTighe Industries Inc., 1615 Ninth Avenue, Suite 1 South, Bohemia, NY 11716
 National Marine Service, Inc., 1750 Brentwood Blvd., St. Louis, MO 63144
 Sigma Treatment Systems, Merry Meadows, RD 1 Box 70, Chester Springs, PA 19425
- PAINTS—COATINGS—CORROSION CONTROL**
 American Abrasive Metals, 460 Coit Street, Irvington, NJ 07111
 Ameron, 4700 Ramona Blvd., Monterey Park, CA 91754
 Bywater Coatings, 1610 Engineers Road, Belle Chasse, LA 70037
 "CONSOL" manufactured by Hanline Paint, 200 S. Franklinton Road, Baltimore MD 21223
 Devco Marine Coatings Co., P.O. Box 7600 Louisville, KY 40207
 E.I. Dupont de Nemours & Co., Inc., Nemours Bldg. Rm. N-2504-2, Wilmington, DE 19898
 Henkel Corporation, 4620 West 77th Street, Minneapolis, MN 55435
 International Paint Company, Inc., 2270 Morris Avenue, Union, NJ 07083
 Jotun-Baltimore Copper Paint Co., 840 Key Highway, Baltimore, MD 21230
 Mobil Chemical Co., Maintenance & Marine Coatings Dept., P.O. Box 250, Edison, N.J. 08817
 Palmer Products Inc., P.O. Box 8, Worcester, PA 19490
 Selby, Battersby & Company, 5220 Whiby Avenue, Philadelphia, PA 19143
 Woolsey Marine Division, 1250 Broadway, New York, NY 10001
- PETROLEUM SUPPLIES**
 Shell Oil Co., 1 Shell Plaza, Houston, Texas 77002
- PIPE—HOSE—Cargo Transfer, Clamps, Couplings, Coatings**
 Camlock Flange Sales Corp., 449 Sheridan Blvd., Inwood, L.I., N.Y. 11696
 CUNICO Corp., Cooney Pipe & Copper Works Div., 214 N. Hawaiian Ave., Wilmington, CA 90748
 Hydro-Craft, Inc., 4223 Edgeland, Royal Oak, Mich. 48073
 Knights' Piping Inc., 5309 Industrial Road, Pascagoula, MS 39567
 Kubota Ltd., 2-47, Shikit Suhigashi 1-Chome, Naniwa-Ku, Osaka 556-91, Japan
 Penco Division/Hudson Engineering Co., P.O. Box 68, Bayonne, NJ 07002
 Sanchem, Inc., 1600 South Canal Street, Chicago, IL 60616
 Tiago Pipe & Supply Company, 2450 Wheatseaf Lane, Philadelphia, PA 19137
- PLAQUES—BRONZE—ALUMINUM**
 Duramax Metals, Inc., 2401 Wesley Street, Portsmouth, VA 23707
- PLASTICS—Marine Applications**
 Griffolyn Company, P.O. Box 33248, Houston, TX 77033
 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
 Armc 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
 Colt Industries Inc. (Fairbanks Morse Engine Div.), 701 Lawton Avenue, Beloit, WI 53511
 Columbian Bronze Corporation, 216 No. Main Street, Freeport, NY 11520
 Combustion Engineering, Inc., Windsor, Connecticut 06095
 Cummins Engine Company, Inc., 40642, 1000 Fifth Street, Columbus, IN 47201
 Elliot Company, 900 N. Fourth Street, Jeannette, PA 15644
 General Electric Co., Diesel Power Products, 2901 E. Lake Rd., Erie, PA 16531
 George Engine Company, Inc., Lafayette, LA
 Jacuzzi Bros. Division, P.O. Box 3533, Little Rock, AR 72203
 Kawasaki Heavy Industries, Ltd., 2-4-1 Hamamtsu-cho, Minato-ku, Tokyo, Japan
 Krupp Mak Diesels, Inc., 9701 West Higgins Road, Rosemont, IL 60018
 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
 Penske GM Power, Inc., 180 Route 17 South, Lodi, NJ 07644
 P.J. Plishner Marine, 2 Lake Avenue Ext., Danbury, CT 06810
 Port Electric Turbine Div., 155-157 Perry St., New York, N.Y. 10014
 SACM (Societe Alsacienne De Constructions Mechaniques De Mulhouse) 1, Rue De La Fonderie, Boite Postale 1210, 68054 Mulhouse Cedex, France
 Schottel of America, Inc., 8375 N.W. 56 Street, Miami, Fla. 33166
 Skinner Engine Company, P.O. Box 1149, Erie, PA 16512
 Steamco Corporation, 1020 East 8th Street, Jacksonville, FL 32206
 Tacoma Boat Co./Escher Wyss, 1840 Marine View Dr., Tacoma, WA 98422
 Transamerica DeLaval Inc., Engine & Compressor Div., 550 85th Ave., Oakland, CA 94621
 Transamerica DeLaval, Inc., Turbine & Compressor Div., P.O. Box 8788, Trenton, N.J. 08650
 Tricon Corporation, P.O. Box 149, Redding, CT 06875
 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
 Waukesha Engine Division, Waukesha, WI 53187
 ZF of North America, Inc., 3225 Commercial Avenue, Northbrook, IL 60062
- PUMPS—Repairs—Drives**
 Barco Corporation, 16 Bahama Circle, Tampa, FL 36606
 EMMI Corporation, P.O. Box 955, Flemington, NJ 08822
 FMC Corporation, Pump Division, 326 S. Dean Street, Englewood, NJ 07631
 Penco Division/Hudson Engineering Co., P.O. Box 68, Bayonne, NJ 07002
 Transamerica DeLaval, IMO Pump Division, P.O. Box 447, Monroe, NC 28110
 Warren Pumps Division, Bridges Avenue, Warren, MA 01083
 Worthington Group—McGraw Edison Co., 270 Sheffield Street, Mountainside, NJ 07092
- REFRIGERATION—Refrigerant Valves**
 Bailey Refrigeration Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231
 Port Refrigeration Div., 157 Perry Street, New York, N.Y. 10014
- ROPE—Manila—Nylon—Hawseers—Fibers**
 American Mfg. Co., Inc., Willow Avenue, Honesdale, Pa. 18431
 Atlantic Cordage Corp., 60 Grant Avenue, Carteret, NJ 07008
 Samson Ocean Systems, Inc., 99 High Street, Boston, Mass. 02110
- RUDDER ANGLE INDICATORS—STEERING**
 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
 Wm. E. Hough Company, 1129 NW Ballard Way, Seattle, WA 98107
- Modular Systems, 164 Franklin Avenue, Rockaway, NJ 07866
- SAFETY EQUIPMENT**
 ACR Electronics, Inc., 3901 North 29th Avenue, Hollywood, FL 33020
 Datrex, 3795 N.W. 25th Street, Miami, FL 33142
- SANITATION DEVICES—Pollution Control**
 American United Marine Corp., 575 Madison Avenue, New York, NY 10022
 Argo Marine Pollution Systems Division, 140 Franklin St., New York, N.Y. 10013
 Chapman Engineers (Omnipure Division), 6101 Southwest Freeway, Suite 100, Houston, TX 77057
 Effluent Technology Corporation, P.O. Box 2094, Tacoma, WA 98401
 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
 National Sanitation Foundation, P.O. Box 1468, Ann Arbor, MI 48105
 Red Fox Industries, P.O. Drawer 640, New Iberia, LA 70560
 St. Louis Ship FAST Sewage Systems, 611 East Marceau St., St. Louis, Mo. 63111
 Somat Corporation, Pomeroy, PA 19367
- SCAFFOLDING EQUIPMENT—Work Platforms**
 Patent Scaffolding Co., 2125 Center Ave., Fort Lee, N.J. 07024
- SHACKLES**
 West Footsray Engineering Works P/L, 52 Cross Street, West Footsray, 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., P.O. Box 68, Bayonne, NJ 07002
- SHIPBREAKING—Salvage**
 The Boston Metals Co., 313 E. Baltimore St., Baltimore, Md. 21202
 Zidell Explorations, Inc., 3121 S.W. Moody St., Portland, Ore. 97201
- SHIPBUILDING STEEL**
 Armc 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 Maestranas de la Armada, Prat 856, Piso 14, Casilla 150-V, Valparaiso, Chile, S.A.
 Astilleros Unidos de Veracruz, S.A., San Juan de Ulua S.N., Apdo. Postal 647, Veracruz, Ver., Mexico
 Atlantic Marine Inc., P.O. Box 138 Ft. George Island, Jacksonville, FL 32226
 Avondale Shipyards, Inc., P.O. Box 52080, New Orleans, La. 70150
 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
 Burmeister & Wain Skibsvaerft A/S, P.O. Box 2122, Refshaleoen-1015 Copenhagen K-Denmark
 Burton Shipyards, Inc., P.O. Box 3636, Port Arthur, TX 77640
 Cantieri Navali Luigi Orlando, Piazza Mazzini, 92-57100 Livorno, Italy
 Cantieri Navali Riuniti, Via Cipro, 11, 16100 Genova, Italy
 Carrington Slipways Pty, Ltd., Old Punt Road, Tomago, N.S.W., Australia 2322
 China Shipbuilding Corp., 6th Floor, 20 PA Teh Road, Sec. 3 Taipei, Taiwan (105) Republic of China
 Conrad Industries, P.O. Box 790, Morgan City, La. 70380
 Curacao Drydock Company Inc., 26 Broadway, Suite 741, New York, NY 10004
 Dorbyl Ltd., Military Road, 1 Industrial Sites, West Bank, 5201 East London Republic of South Africa
 Dravo Steelship Corp., R.4, Box 167, Pine Bluff, Ark. 71602
 FMC Corp., Marine & Rail Equipment Div., 4600 N.W. Front Ave., Portland, Oregon 97208
 Galveston Shipbuilding Co., P.O. Drawer 2660, Galveston, TX 77553
 Golden Gulf Marine Operations, Inc., 814 Howard Avenue, New Orleans, La. 70151
 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.
 Hong Kong United Dockyards Ltd., P.O. Box 534, Kowloon Central Post Office, Kowloon, Hong Kong
 Hudson Shipbuilders, Inc., P.O. Box Q, Pascagoula, MS 39567
 Jeffboat, Inc., Jeffersonville, Ind. 47130
 Keppel Shipyard Limited, 325 Telok Blangah Road, P.O. Box 2169, Singapore 0409
 Kings Craft, Inc., Industrial Park, Florence, AL 35630
 Livingston Shipbuilding, P.O. Box 968, Orange, TX 77630
 Lisnave Estaleiros Navais De Lisboa, P.O. Box 2138, Lisbon, Portugal
 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
 Matton Shipyards Co., Inc., P.O. Box 645, Cohoes, New York 12047
 Midland Marine Corporation, One Pennsylvania Plaza, New York, NY 10001
 Misener Industries, Inc., 5353 Tyson Avenue, P.O. Box 13625, Tampa, Fla. 33681
 Monark Boat Co., P.O. Box 210, Monticello, Ark. 71655
 Nashville Bridge Company, P.O. Box 239, Nashville, TN 37202
 National Steel & Shipbuilding Corp., San Diego, Calif. 92112
 Newport Shipbuilding & Repair, Inc., 502 Cypress Street, Houston, TX 77012
 Newport News Shipbuilding & Dry Dock Co., 4101 Washington Ave., Newport News, Va. 23607
 O.A.R.N. (Officine Allistimento-Riprazioni Navil), P.O. Box 1395, Genoa, Italy 16100
 Paceco Inc. (A division of Fruehauf), West Seaway Access Road, Gulfport, MS 39501
 Pearlson Engineering Co., P.O. Box 8, Kendall Branch, Miami, Fla. 33156
 Progressive Shipbuilders & Fabricators, Inc., P.O. Box 9130, Houma, LA 70361
 Promet (PTE) Ltd., 27 Pandam Rd., Jurong Industrial Estate, Singapore 22
 Puerto Rico Drydock & Marine Terminals, Inc., P.O. Box 2209, San Juan, Puerto Rico 00903
- St. Louis Shipbuilding—Federal Barge, Inc., 611 East Marceau, St. Louis, Mo. 63111
 Savannah Shipyard Co., P.O. Box 787, Savannah, GA 31402
 Southwest Marine, Inc., P.O. Box 13308, San Diego, Ca 92113
 Sudaimport, 5 Kalyaevskaya, Moscow K-6, USSR
 Sun Ship Inc., Chester, PA 19013
 Swiftships Inc., P.O. Box 1908, Morgan City, LA 70380
 Tacoma Boatbuilding Co., Inc., 1840 Marine View Drive, Tacoma, WA 98422
 Tandano (Piacentini), Antartida Argentina 555 Darsena Norte, (1104) Buenos Aires-Republica Argentina
 Thomas Marine Inc., 37 Bransford Street, Patchogue, NY 11772
 Thunderbolt Marine, Inc., P.O. Box 5628, Savannah, GA 31404
 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
 Vancove 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
 Valmet Oy, Helsinki Shipyard, Laivanrakentajantie 2, P.O. Box 910 SF-00101 Helsinki 10, Finland
 West Coast Salvage And Contracting, 2150 East Kent Avenue, Vancouver, B.C. V5P 2T2
- SHIPPING—PACKING**
 Candia Shipping (USA) Inc., One World Trade Center, Suite 1611, New York, NY 10048
 Crane Packing Co., 435 Regina Drive, Clarksburg, MD 20734
 World Courier, Inc., 19 Rector Street, New York, NY 10006
- 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., P.O. Box 68, Bayonne, NJ 07002
 Salwico, Inc., 5 Marine View Plaza, Hoboken, NJ 07030
 Sybron/Gamlen, 121 South Maple Avenue, South San Francisco, CA 94080
- TANK LEVELING INDICATORS**
 Kockumera AB, Box 1044, S-212 10 Malmo, Sweden
 Transamerica Delaval, Inc., Gems Sensors Division, Cowles Road, Plainville, CT 06062
 Vitronics, P.O. Box 42305, Houston, TX 77042
 Vu-Gage System, 150 E. 42nd St. (Room 910), New York, NY 10017
- TOWING—Barges, Vessel Chartering, Lighterage, Salvage, etc.**
 Bay-Houston Towing Co., 805 World Trade Bldg., Houston, Texas 77002
 Chafin 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
 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
- VALVES AND FITTINGS**
 American United Marine, 575 Madison Avenue, New York, NY 10022
 Dover Corporation, Narris Division, P.O. Box 1739, Tulsa, OK 74101
 Hayward Marine Products, 900 Fairmount Avenue, Elizabeth, NJ 07207
 Littan Industrial Products, Inc. (Contramatics Division), 222 Roberts Street, East Hartford, CT 06108
 Marine Moisture Control Co., 449 Sheridan Blvd., Inwood, N.Y. 11696
 Newmans Inc., 9 Joanna Court, East Brunswick, NJ 08816
 Parker-Hannifin Corporation, 17325 Euclid Avenue, Cleveland, OH 44112
 Robert H. Wager Co., Inc., Passaic Avenue, Chatham, N.J. 07928
 Waukesha Bearings Corp., P.O. Box 798, Waukesha, WI 53186
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 Winel, Inc., 34655 Mills Road, North Ridgeville, OH 44039
 Zidell Explorations, Inc. (Valve Division), 3121 S.W. Moody Avenue, Portland, OR 97201
- VIDEO TRAINING FILMS**
 Videotel Marine International Ltd., 44 Great Marlborough Street, London W1V 1DB
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 Drew Chemical Corporation, One Drew Chemical Plaza, Boonton, NJ 07005
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 Specific Equipment Company, P.O. Box 55626, Houston, TX 77055
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 Markey Machinery Co., 79 South Horton St., Seattle, Washington 98134
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 Smith-Berger Manufacturing Corporation, 3236 16th Avenue S.W., Seattle, WA 98134
- WINDOWS**
 Kearfott Marine Products, A Singer Co., 550 South Fulton Avenue, Mt. Vernon, N.Y. 10550
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 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
 Universal Wire & Cable, Houston, TX
- WIRE ROPE—Slings**
 Armc Steel Corp., 703 Curtis St., Middletown, Ohio 45042
 Bethlehem Steel Corp., One State Street Plaza, N.Y. 10004
 A.L. Don Company, Foot of Dock Street, Matawan, NJ 07747
- ZINC**
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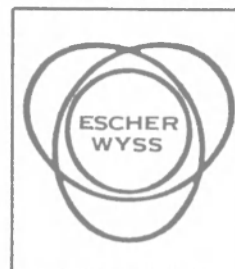
Featured here is the NAUTEK 20-50 Electric Hydraulic

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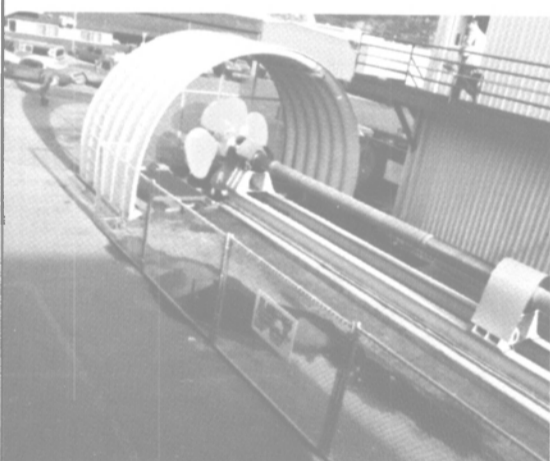
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