

# MARITIME REPORTER

AND  
ENGINEERING NEWS



## ASNE DAY • OTC '89

APRIL 1989 ISSUE

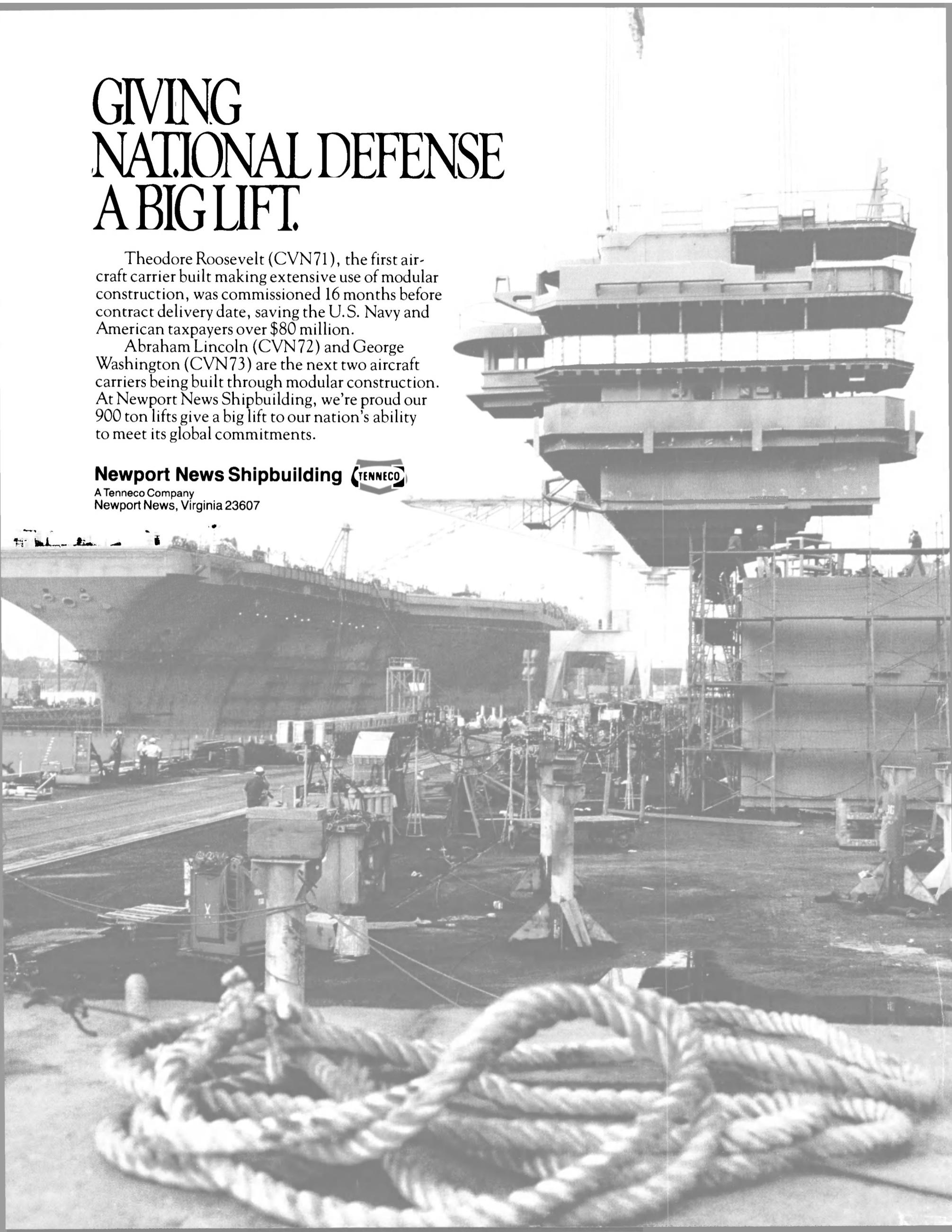
# GIVING NATIONAL DEFENSE A BIG LIFT.

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## ON THE COVER

**Cover photos** (clockwise from logo): Semi-submersible off the coast of Corpus Christi (American Petroleum Institute); Guided missile frigate Robert G. Bradley, FFG-49 (Navy photo); Diamond M Eagle semisubmersible off the Louisiana coast (American Petroleum Institute); OTC '88 exhibits; Guided missile frigate Aubrey Fitch, FFG-34 (Navy photo); (inset) Aegis guided missile cruiser, USS Ticonderoga, CG-47 (Navy photo).

### Preview-OTC '89

(photo: Jackup drilling rig in Gulf of Mexico, API)

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### Preview-ASNE Day

(photo: Battleship Iowa, BB 61, underway during sea trials off the Mississippi coast, Navy photo)

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### Balehi Marine Converts Crewboat Into Party Charter Yacht 'Celebrity'

Balehi Marine, Inc. of Lacombe, La., recently converted a former crewboat, the Grandeur, into a yacht for use as a party charter boat in New York Harbor by Peter Mercurio of Leisure Yacht Sales.

The vessel, renamed the Celebrity, was stripped, a new steel superstructure added aft and an aluminum stateroom installed behind the pilothouse. It was rewired, piped and outfitted to yacht standards. Extensive steel repairs were necessary because the hull had been extensively dented, as happens to crewboats in rough water service when loading crews and supplies up against oil rigs in heavy seas.

A complete new electronic package was installed, consisting of Raytheon radar and loran, Uniden VHF, Apelco hailer, Data Marine Fathometer, and Newmar Phone intercom.

The 100-foot-long Celebrity is USCG certificated for 149 passengers. She is powered by two Caterpillar D-348 engines and two General Motors generators, one 40 kw and the other 30 kw. Speed is 20 mph.

The vessel, which is now like new, was bought and converted for less than \$700,000, which is approximately one-fourth the cost of building a new, identical boat.

For free literature giving full details on the facilities and capabilities of Balehi Marine shipyard,

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## Matson Agencies Announces New Personnel Appointments

Matson Agencies has appointed **Michael J. Brady** and **James R. Popham** vice presidents and **Dennis A. Peterson** has been named to the newly established position of controller, it was announced by **E.R. Swanson**, president.

Mr. Brady, formerly sales manager, northern California, will be responsible for Matson Agencies' system-wide sales and marketing.

Mr. Popham, formerly line manager, will be responsible for the newly expanded liner management department.

Mr. Peterson, formerly manager, accounting, will be responsible for system-wide accounting system procedures and financial affairs.

"These appointments are planned to further strengthen, expand and continue to improve our management team's focus on customer service," Mr. Swanson said.

## New MIG Welding Power Sources Use Single Phase, AC Power

Regency 200 and 350 are the new family of single phase, constant voltage, DC power sources for gas metal arc welding (MIG) from Miller Electric Mfg. Co. Both models operate with a wide variety of constant speed and voltage sensing wire feeders, and are described in new literature.

Units have 14 pin Amphenol receptacle, consistent with other Miller constant voltage machines, for easy direct connection to Miller constant speed wire feeders: Spoolmatic 3 feeder/gun, Miller 50 series, and XR-15 and XR-30 push-pull systems. For MIG spot welding, both models can be used with spoolmatic 1C/S gun and control with spot timer, or with spot controls installed with Miller wire feeders.

Both units have Cam-Lok output receptacles with mating plugs for secondary connections. Regency 200, rated 200 amps at 60 percent duty cycle, has six position voltage adjustment, high/low range for 12 different voltage selections. Regency 350, rated 350 amps at 60 percent duty cycle, provides 25 voltage selections with a five position coarse, five-position fine voltage switch. Volt meter and ammeter are standard.

For more information and free new full-color literature from Miller Electric,

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## Combustion Engineering, Alstom Plan Joint Boiler Manufacturing Business

Alstom and Combustion Engineering recently announced the

opening of negotiations to form joint companies that will combine their respective worldwide activities in the field of fossil-fuel boilers, associated equipment and services. Alstom and Combustion Engineering will hold an equal stake in this new group of companies.

Combustion Engineering is the largest boiler manufacturer in the U.S.

Through its subsidiary, Stein Industrie, Alstom is one of Europe's

leading boiler manufacturers and a prominent exporter of boilers to many countries. It has been cooperating with Combustion Engineering for over 40 years.

The new group is expected to have sales totaling about 12 billion francs (\$1.9 billion) and is expected to rank among the leaders in the industry.

This agreement is in line with the recently announced alliance of Alstom and GEC-Power Systems, fur-

ther consolidating a leading position in the world power generation market.

For free literature detailing the boiler equipment and associated products of Combustion Engineering,

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For further information on Alstom and its power generating equipment,

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## New High-Efficiency Incinerators Introduced By Hamworthy Offer Solution To On-Board Waste

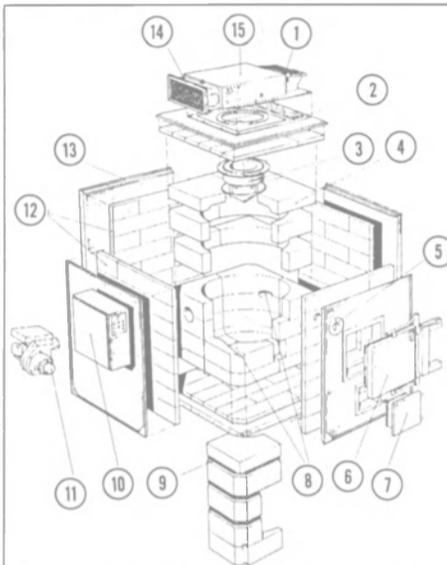
—Free Literature Available—

Hamworthy Engineering has been a leading worldwide marine equipment manufacturer for over 75 years. With its own offices worldwide, Hamworthy is able to provide ship-owners the assurance of the availability of spare parts and service for their equipment. Besides compressors and pumps, Hamworthy offers an extensive line of pollution abatement equipment.

One such product is the Hamworthy Neptune Incinerator. With the ratification and implementation of Annex V of MARPOL 73/78, a greater importance has been placed on the disposal of waste generated aboard ship.

Hamworthy recognized the waste problem and developed and designed the Neptune 20R and 40R incinerators to provide a solution. Both sizes of incinerator are of the "cyclone" type, with high rates of combustion limiting the daily operating time to a minimum. The model 20R has been designed to consume solid waste only, while the 40R has the ability to burn liquid and solid wastes. Hamworthy reports that both models have fully automatic control systems and are constructed to fulfill the safety requirements of the classification societies. Both Neptune models are especially designed for the retrofit market and can also be supplied as a "flat-pack" for installation at a selected space on board ships.

Some of the features of the Nep-



Exploded view drawing of Hamworthy Neptune Incinerator. (1) Cooling inlet grill; (2) double-skinned shell top panel assembly; (3) refractory collar and flue diverter cone; (4) cast refractory blocks; (5) combustion chamber viewer; (6) manually operated furnace loading door; (7) ash door; (8) combustion air inlet ports; (9) ceramic fiber jointing blanket; (10) control panel; (11) auxiliary burner; (12) fiber insulation blocks; (13) double-skinned shell side panel assembly; (14) flue discharge char grill plate; and (15) horizontal flue.

tune incinerators include: a conveniently located control panel for easy operation; an auxiliary burner that has a capacity of 665 MJ/h when burning light oil with a high and low fire capability of 20.5 liters and 4.5

liters per hour, respectively; a horizontal flue that incorporates an air diluter; a garbage door that provides easy access to the combustion chamber; an ash removal door; combustion air inlets; and an induced draft fan supplied for customer installation adjacent to the incinerator.

For free literature fully detailing Hamworthy's Neptune line of incinerators for maritime use,

Circle 108 on Reader Service Card

### Fincantieri Delivers Rail/Car/Passenger Ferry To Italian State Railways

The Palermo shipyard of Fincantieri recently delivered the rail/car/passenger ferry Logudoro to the Italian State Railways. The ferry is now in service between Civitavecchia, near Rome, to Golfo Aranci in Sardinia, and between Messina, in Sicily, and Reggio Calabria.

Built to the rules of Registro Italiano Navale, the 2,040-dwt Logudoro, which has facilities for 1,000-1,500 passengers and transport drivers, as well as the capability to handle rail coaches and wagons totaling a maximum of 1,350 tons and 100 private cars, is powered by two six-cylinder, four-stroke medium-speed diesel engines built by Fincantieri's Grandi Motori Trieste (GMT) Division. The two GMT550.6 turbocharged models, the largest in the GMT medium-speed engine series, develop a total of 16,800 bhp at 450 rpms. Each engine is connected by an electro-magnetic coupling to a Fincantieri reduction gear to give a constant propeller speed of 150 rpms. Ship speed and direction,

ahead and astern, is regulated electro-pneumatically from either the bridge or engine room by the two Lips Italiana controllable-pitch propellers.

Electric power for ship's services and lighting is supplied by four 1,300-kw Fincantieri GMT BL230 turbocharged, four-stroke, eight-cylinder diesel engines coupled to a 450-volt, 60-Hz Ansaldo three-phase alternator. These engines are water-cooled but the 250-kw emergency generator is driven by an air-cooled, four-stroke Isotta Fraschini diesel engine. Esaccontrol supplied machinery control and monitoring systems.

For free literature detailing the shipbuilding services of Fincantieri,

Circle 69 on Reader Service Card

### Tracor Unit Awarded \$3.9-Million Contract

Tracor Applied Sciences, Inc., a subsidiary of Tracor, Inc., has received a \$3.9-million, three-year contract for analytical and technical support to the Information Technology Division of the Naval Research Laboratory (NRL) in the design, development, and evaluation of advanced Integrated Warfare Technology concepts, testbeds and prototype systems.

The contract calls for design, planning, control, and integration support for NRL's Strategic Defense Initiative (SDI) Testbed Simulation Systems and Command and Control Center used for developing and evaluating Battle Management algorithms and advanced information processing and display concepts.

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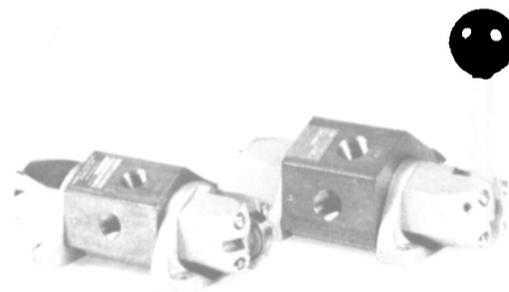


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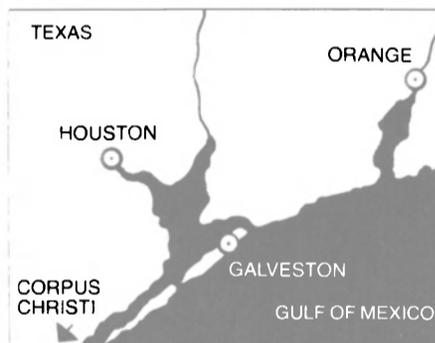
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## Harris Introduces New Remote Control Unit For Its RF-3200 SSB Radio

New from Harris is a remote control device for its RF-3200 marine single sideband radio. Now you can mount the radio in one location and the remote control up to 125 feet

away, with operation from either location

The RF-3234 Remote Control Unit is now available as an optional accessory with the RF-3200. The package includes a remote control unit with built-in speaker, a mounting cradle with hardware, microphone, control cable and an interface circuit board for installation in the RF-3200 transceiver.

Front-panel controls on the RF-3234 include channel and scan group selectors, scanning switch, squelch, clarifier, mode and noise blanker, as well as indicators showing system status. Operation of the remote control is similar to the RF-3200, making it easy to learn and use.

The RF-3234 has a rugged, weather resistant housing that is



Harris's RF-3234 Remote Control Unit for the RF-3200 SSB radio.

designed for the harsh marine environment. The remote unit is less than 3-1/2 inches high, 8-3/4 inches wide and 5-1/2 inches deep. It weighs approximately 3-1/2 pounds, including the mounting frame.

The RF-3200, introduced by Harris last year, is a 125-watt SSB radio, which pioneered a number of new features not previously available in any other marine SSBs. It was the first with single-knob tuning, the first with nine preprogrammable scan groups and the first with a single coaxial cable between the radio and antenna coupler.

Harris Corporation, with sales of more than \$2 billion, is a major supplier of information, communication and semiconductor systems, products and services to government and commercial markets worldwide. The RF-3200 is made by Harris's Long Range Radio Division, which is part of Harris RF Communications Group in Rochester, N.Y. The Long Range Radio Division is a world leader in the design, manufacture, installation and support of advanced FH, VHF and UHF radio equipment, turnkey systems and networks.

For more information and free literature on the new remote control device for the RF-3200 marine single sideband radio from Harris,

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## TFC Adds New Safety Features To Marine Compactor Line

Maritime models of the Pollution Packer waste compactors/recyclers now include a "heavy seas" door stop on the compaction compartment door; it prevents the door from swinging while cubes of compacted wastes are being removed or when empty cubes are being inserted.

Also, these compactors are now being equipped with "sea legs" that can be inserted in the wheel slots and then welded or bolted to a ship's deck.

Both of these new features are available on all four sizes and models in the Pollution Packer line, providing appropriate sizes for the smallest oceangoing ship to the largest luxury liners.

For free literature giving complete information on Pollution Packer waste compactors/recyclers from TFC,

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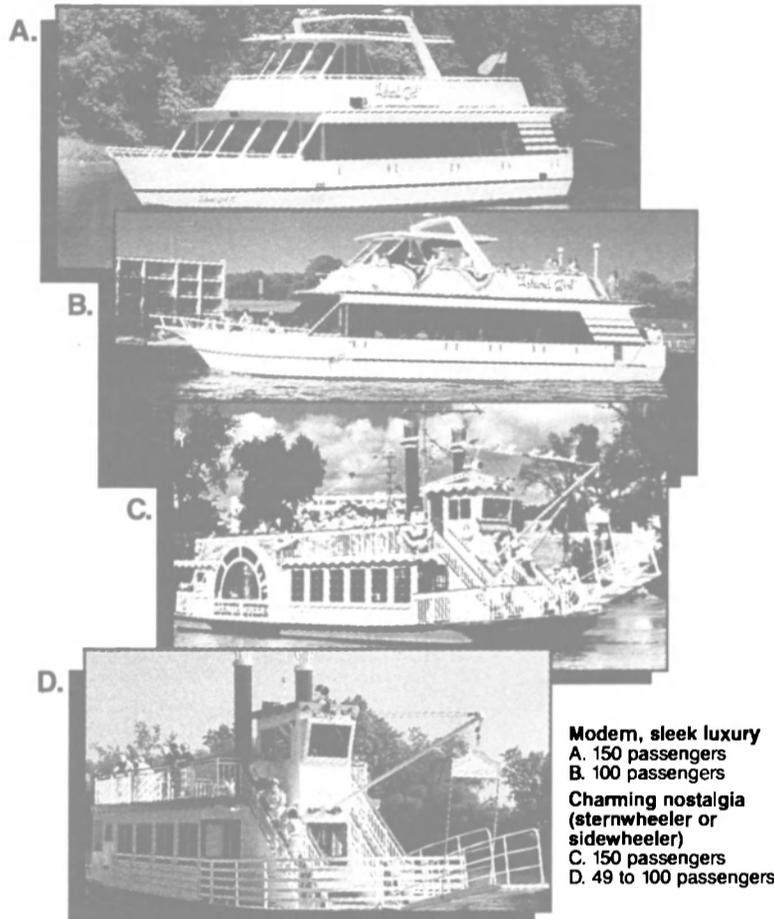
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## SNAME Opens Membership Doors

The Society of Naval Architects and Marine Engineers (SNAME) membership doors have opened to embrace a new group of talented and capable people who wish to advance the society's goals. The society's bylaws were revised in November 1988 to open the grade of associate members to "... persons whose pursuits, attainments, education or practical experience qualify them to cooperate in the advancement of the objectives of the society, but who have not held a position of sufficient responsibility or lack the experience required for the grade of member or affiliate."

Now persons just starting in the marine industry and professions can become members of the society. They can immediately get in on the edge-of-the future technical information presented and discussed at society meetings. "Starters" can now begin their professional career with both feet planted firmly in the society.

The change was written to include many others of long experience who may not now qualify as a member of affiliate, such as:

- In the marine industry, people who work in finance, contracts, administrations, purchasing, public relations, construction, and operations.
- In laboratories and government offices, those who support the professionals.
- In the small craft industry, support personnel of diverse occupations.
- In the offshore industry, operations and similar support personnel.

A membership brochure and application form is available from The Society of Naval Architects and Marine Engineers, 601 Pavonia Avenue, Jersey City, N.J. 07306, Attn: Membership Department; or call (201) 798-4800.

### SNAME SECTION MEETINGS IN 1989

#### ARCTIC SECTION

- APRIL 19**, Westin Hotel, Calgary  
"Hibernia/Terra Nova Production Structures" (Tentative Title) by **A. Ewida**, Petro Canada Resources
- MAY 17**, Westin Hotel, Calgary  
"Fracture Mechanic Aspects of Arctic Vessel Design" by **M. Tomin**, Reltec
- JUNE 21**, Westin Hotel, Calgary  
"Shaft Line Modeling for Ice Class Shifts" by **B. Cowper**, Fleet Technology Limited

#### CANADIAN ATLANTIC SECTION

- APRIL 24**, Halifax  
Student Award Paper Presentation
- MAY 29**, Halifax  
"Ice-Breaker Mid-Life Modernization" by **Met Welke** and **Janusz Wypior**, H-DIL

#### CHESAPEAKE SECTION

- APRIL 4-5**, USCG Yard, Curtis Bay, Md.  
"Design and Construction of a Domestic 80-Foot Icebreaking Buoy Tender" by **Scott Marple** and **Andrew Dize**
- APRIL 12**, Crystal City  
Student Papers
- MAY 24**, Crystal City  
"U.S. Commercial Ships for Tomorrow" by **Alex Landsburg**, **Eric Gabler**, **Richard**

**Sonnenschein**, **George Levine**, **Chao Lin** and **Earl Simmons**

**JUNE 13**, Crystal City  
"The Promise of Advanced Naval Vehicles for the NATO ASW Mission" by **William Rogalski Jr.**, **Kenneth Spaulding** and **David Lavis**

#### EASTERN CANADIAN SECTION,

**APRIL 4**, Ottawa  
"Integrated Machinery Control—A Stepping Stone" by Comdr. **David Marshall**, Annual General Meeting

**MAY 2**, Toronto  
"Restoration of Steam Yacht Wanda III" by **George Thomson**

#### GREAT LAKES/GREAT RIVERS SECTION

**MAY 11-12**, St. Louis, Mo.  
Spring Meeting

#### GULF SECTION

**APRIL 12**, New Orleans, Sheraton Hotel  
Spring Meeting, STAR Symposium

**JULY 20**, New Orleans  
"Calculation of 'K' Factors in the Leg Design of Liftboats" by **M. D. Korkut**

#### HAMPTON ROADS SECTION

**MAY 13**, Fisherman's Wharf  
"A Comparison of the Relative Costs and Effective Characteristics of the Conventional Plan Position Radar Indicator (PPI) and the Raster-Scan Display" by **George Tsirimokos**

**MAY 12**, Newport News Shpbuilding Building 520  
Spouses Night/SNAME Update by **Curtis Woolard**

**MAY 18**, Asheville, N.C.  
"Waterfront Production/Producibility" by **Curt Molten**

**JULY 20**, Asheville, N.C.  
"Developments in Naval Engineering" by **Tom Schievelbein** and **Lou Bissette**

#### HAWAII SECTION

**APRIL 12**, Honolulu  
Student Paper Meeting

**MAY 17**, Honolulu  
"Submarine Operations" by Capt. **M. McHugh**

#### LOS ANGELES METROPOLITAN SECTION

**APRIL 13**, Los Angeles  
Student Paper Night

**MAY 11**, Los Angeles  
Open

**JUNE 6**  
Field Trip

#### NEW ENGLAND SECTION

**APRIL 20**, Bristol, R.I.  
"Composite Rudders and Rudder Posts" by **Mathew Smith**

**MAY 11**, Mystic, Conn.  
"Historical Significance of ALBACORE and its new Mission" by Prof. **E. Eugene Allmendinger**

#### NEW YORK METROPOLITAN SECTION

**APRIL 6**, Officers Club, Governors Island, N.Y.  
"Distributed Digital Control System Approach to Dynamic Positioning" by **John Glove**, Bailey Controls

**MAY 27**, Governors Island  
Dinner Dance

**JUNE 7**, (TBA)  
"Thermatorator Viscosity Regulating System—A New Concept to Regulate Heavy Fuel to Diesel Engines" by **S. Kobayshi**

#### NORTHERN CALIFORNIA SECTION

**APRIL 13**, Berkeley, Calif.  
Student Paper

**MAY 5**, Tiburon, Calif.  
A field trip to the China Cabin in celebration of The Webb Institute's Centennial. Date and details to be announced.

#### PACIFIC NORTHWEST SECTION

**APRIL 4**, Portland, Ore.  
Portland Technical Meeting



Artist's conception of an ultramodern dinner boat based on a new design by **Luther H. Blount**, president of Blount Marine Corporation, Warren, R.I.

## Blount Marine To Build Ultramodern Dinner Boat

### 400-Passenger Vessel Based On New Design

The Warren, Rhode Island, shipyard of Blount Marine Corporation has begun the construction of a new, ultramodern design 400-passenger dinner boat for Rentacruise, Inc.

To be called the Vista Jubilee, the passenger vessel is based on a new design unveiled by **Luther H. Blount**, president of Blount Marine Corporation. The boat design was revealed at the recent annual NAPVO (National Association of Passenger Vessel Owners) convention in San Diego.

**Marcia L. Blount**, executive vice president, Blount Marine, referred to the new vessel as an "operator's boat." The new design incorporates a number of alterations as suggested by experienced shipboard restaurateurs and tour hosts.

Available in lengths from 114 to 145 feet, the vessel boasts a 39-foot beam, providing the luxury of space vital to the nature of the restaurant and entertainment business. The vessel is designed and certified to carry 450 to 600 passengers on lakes, bays, and sounds, and the final design for a 145-foot vessel may accommodate up to 800 passengers.

The new design will be offered in two versions by Blount, one of which will feature the Blount Marine bow ramp, enabling the vessel to dock at any facility as well as make shoreline landings. Both versions will be enhanced by a futuristic bow/window configuration affording panoramic views from the dining areas. Design and mechanical patents are pending for the bow/window design, a split level bandstand and atrium, and other unique concepts.

The Vista Jubilee, which will have a length of 114 feet, beam of 39 feet and be able to accommodate over 400 passengers, is expected to be delivered in July 1989.

She will offer service from two new departure points in Providence, R.I., and Battleship Cove State Pier, Fall River, Mass., and Warren, R.I.

For free literature detailing the boatbuilding services of Blount Marine,

Circle 109 on Reader Service Card

## SNAME

(continued)

**MAY 12, 13**, Victoria, B.C.

Victoria Spring Meeting

**JUNE 1**, Officers Club, Bremerton

ASNE/SNAME Joint Meeting

### PHILADELPHIA SECTION

**APRIL 6**, Ladies Night

**JUNE 6**, Dinner-Dance

### SAN DIEGO SECTION

**APRIL 4-5**, Kona Kai Club, San Diego

"Yacht Construction Using One-Off Male Molds and Advanced Composites" by **Mike Copps**

**MAY 6-8**, NASSCO Engr

Field Trip-AOE 6 Machinery Room Scale Model and 3-D Computer Graphic Design

### SOUTHEAST SECTION

**MAY 4-5**

To Be Announced

April, 1989

### TEXAS SECTION

**APRIL**, Dallas Dinner, Paper to be announced

**MAY**,

OTC Luncheon

**JUNE**,

Dinner, Paper to be announced

**JULY**

Luncheon, Paper to be announced

## Mitsui Orders Five Bulk Carriers From Japanese Yard

Mitsui & Co. recently confirmed an order for five 43,000-dwt bulk carriers. The vessels will be constructed by the Japanese shipbuilder Tsuneishi Shipbuilding, and are expected to be delivered between June and November 1989. The order is reported to be for an associate company.

## Lykes Bros. Acquires Argonaut Line, Parent Company Of Farrell

New Orleans-based Lykes Bros. Steamship Co. recently announced that it has agreed to acquire 100 percent ownership of Argonaut Line, Inc., the parent company of U.S.-flag ship operator Farrell Lines, New York, N.Y.

"The combination of Farrell and Lykes will be an improved service for our customers," said **Richard V. Parks**, president of Farrell Lines. "They and our suppliers will realize more frequent sailings to a greater range of ports than is currently served by either company. Because there will be a greater opportunity for use of U.S.-flag vessels, the American flag presence in the Mediterranean will also be strengthened," he added.

"We are delighted to be merging with a carrier of such position in the industry," said **Carl J. Horn**, senior vice president, Mediterranean services, Lykes. "The Farrell family has a long history in this industry, and Lykes intends to build on that

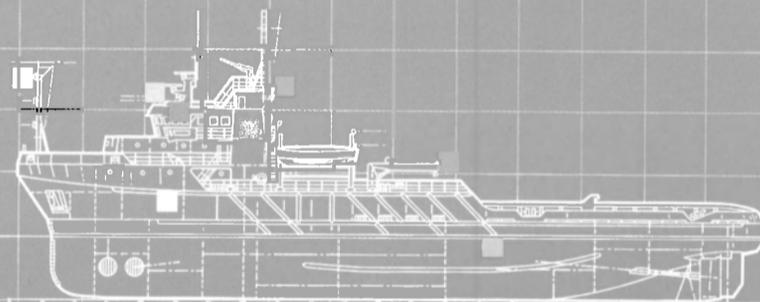
history and our own 90-year reputation for excellence."

Lykes will obtain four 1,100-TEU container vessels and one LASH vessel from Farrell. The Argonaut, Freedom, Patriot and Resolute will become part of Lykes' present 10-vessel container fleet, while the LASH vessel, Rainbow, will remain on charter to the Navy's Military Sealift Command.

"Lykes' acquisition of Farrell will also permit us to expand our breakbulk service to the Mediterranean and the African continent," said **E.F. McCormick**, president and chief operating officer of Lykes. "Lykes has been the industry forerunner in assuring self-sustaining breakbulk service to the developing world," he said.

**W.J. Amoss Jr.**, chairman, Lykes Bros. Steamship Co., Inc., said, "Six years ago this month we became an independent company. Our goal then was to commence the replacement and procurement of assets either by construction or acquisition and the expansion of our services in those areas most profitable for our company. We remain fully committed to that strategy."

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**PHOENIX**

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PX-5-9

## Bethlehem Steel Yard Performs Repairs On Premier Cruise Ship

The 605-foot passenger cruise ship S.S. Royale recently entered the Sparrows Point shipyard of Bethlehem Steel for hull repairs.

The Italian-built, Panamanian-flag ship was drydocked recently for hull renovations. Owned by Premier Cruise Lines, Ltd., Cape Canaveral,

Fla., the ship operates out of Port Canaveral carrying passengers to Nassau in the Bahamas.

Premier plans to sell the Royale. The ship will be renamed the S.S. Seabreeze I and its cruise operations will be marketed by Dolphin Cruises of Miami.

For free literature detailing the shipbuilding and ship-repairing services of Bethlehem Steel,

Circle 82 on Reader Service Card

## Peterson Builders Awarded \$185-Million Navy Contract To Build Three More MCMs

Peterson Builders, Inc. (PBI), Sturgeon Bay, Wis., recently received a contract valued at more than \$185 million to build three 224-foot wooden-hulled Mine Countermeasure ships (MCMs) for the U.S. Navy.

The contract is the largest single award ever received by PBI and is the continuation of the Avenger Class MCM construction program currently under way at the yard. Peterson Builders, which is the lead shipbuilder for the class, expects to complete the delivery of the three new MCMs by late 1992. The contract also contains a provision for the exercise of up to three additional hulls during the next fiscal year.

The award of these vessel provides PBI with a solid backlog of shipbuilding work which includes four other MCMs in various stages of construction. MCM-3 and MCM-5 are ready for trials and will be delivered to the Navy shortly. MCM-6 and MCM-8 are scheduled for delivery in 1990. The newly awarded vessels are to be christened the USS Pioneer (MCM-9), USS Warrior (MCM-10) and USS Gladiator (MCM-11).

Other U.S. Navy work under way at the yard includes the completion of a series of 85 twenty-four-foot Harbor Security Boats and the construction of two MK II 50-foot Dive Boats and Diving System Modules.

The 85 harbor boats, built under a contract with options worth about \$4.5 million, will be used by the Navy to maintain security at harbors and anchorages worldwide. The 22-knot vessels, each powered by a 165-hp output Volvo Penta outdrive engine, have a beam of 7 feet 7 inches, draft of 5 feet 2 inches and full load displacement of 8,400 pounds.

The 50-foot, steel-hulled MK II

Dive Boats, being constructed under a \$2.45-million contract, will have a beam of 14 feet 9 inches, draft of 2 feet 9 inches, and full load displacement with a Diving System Module of 83,000 pounds.

The dive boats will be delivered to San Diego, Calif., and Norfolk, Va., and be used to support the U.S. Navy's diving and salvage operations.

The new contract also contains options for an additional 16 MK II Dive Boats and Diving System Modules. These options when exercised, would bring the total contract value to \$13.2 million.

In the commercial shipbuilding sector, PBI was recently awarded a contract to construct a 100-foot steel ferry for the Washington Island Ferry Lines located in Wisconsin. The construction of the vessel, which began earlier this year, is expected to be completed in June 1989.

To be named the Washington, the passenger/vehicle ferry is designed by Timothy Graul Marine Design of Sturgeon Bay, Wis. Mr. Graul, a naval architect, will represent the owner as on-site contract representative during the construction phase.

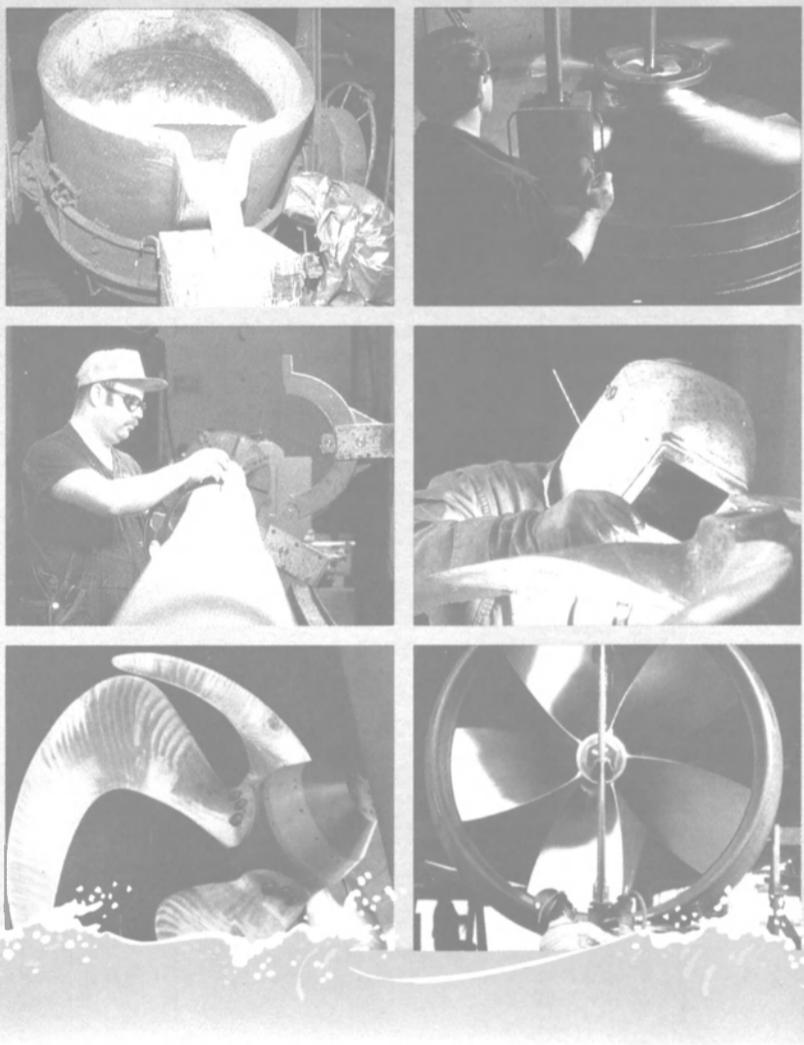
The Washington will be similar in construction to the Robert Noble, a 90-foot passenger/vehicle ferry built by PBI for Washington Island Ferry Line in 1979.

The Washington Island Ferry Lines offers regular transportation services to island residents and the tourist industry year round, operating a fleet of passenger/vehicle ferries.

For free literature detailing the shipbuilding capabilities of PBI,

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## Fjellstrand Wins Order For Two High-Speed Passenger Catamarans

Two 38.8-meter (about 127.3-foot) high-speed passenger catamarans worth about NOK75-80 million (about \$11-12 million), have been ordered from Fjellstrand of Norway by the Spanish shipping company Cat Lines S.A. in Valencia.

This order marks a fresh market breakthrough for the Norwegian yard that will strengthen its position as the world's leading high-speed ferry specialist. Spain is the 15th country in the world to get delivery of a high-speed vessel from Fjellstrand.

In all, Fjellstrand has sold more than 50 high-speed vessels, and the value of this export is about NOK one billion. The two vessels for Spain will be Nos. 26 and 27 of the successful 38.8 M version. This de-

sign was introduced in autumn 1985.

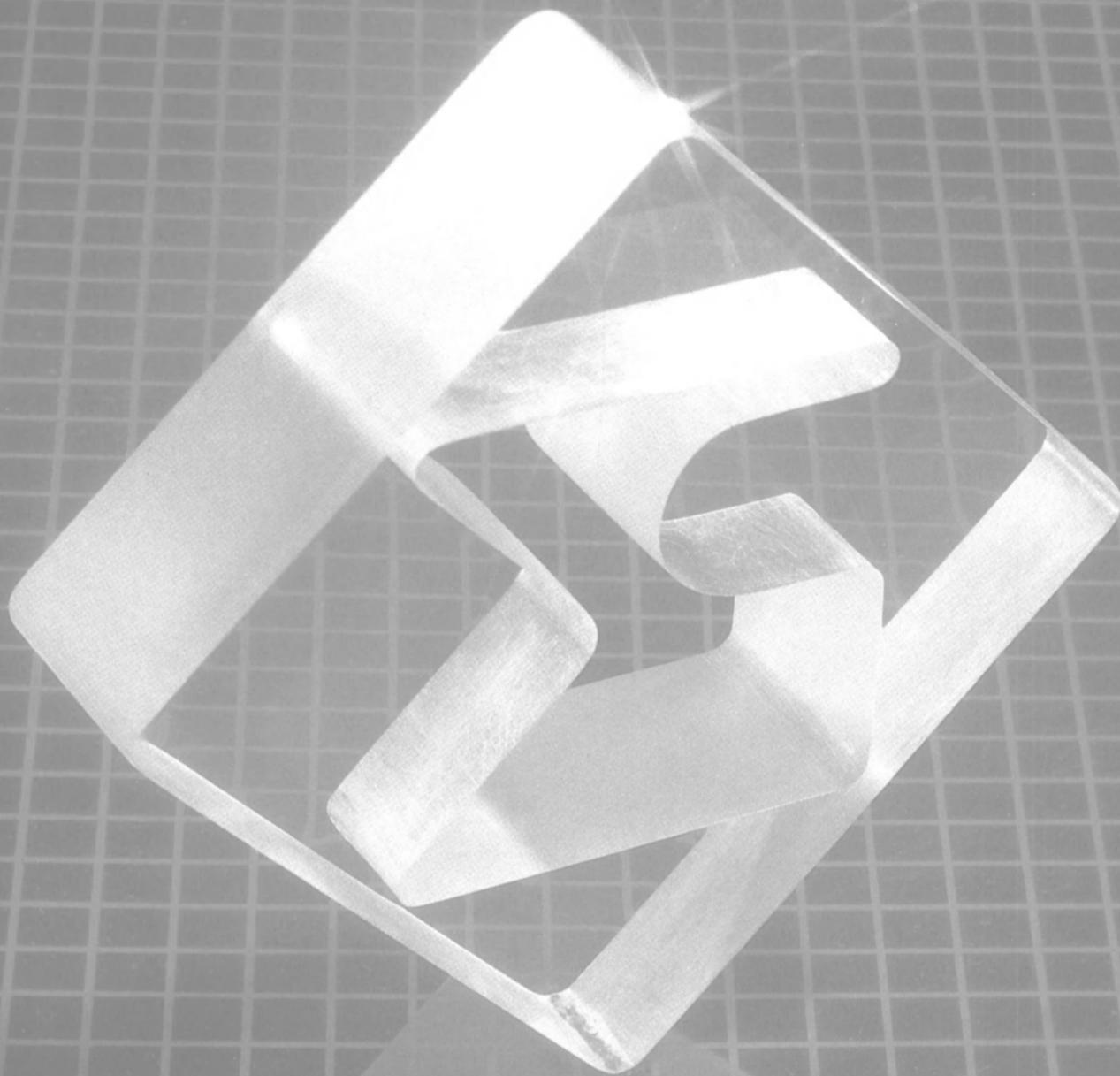
The catamaran units are due for delivery to the owner in June and September 1989. They will be put in year-round service between the Balearics—Mallorca, Menorca, Ibiza and Formentera—and the mainland.

The vessels will be equipped with MTU main engines and KaMeWa waterjets, giving a speed of 40 knots. Designed to carry 300 passengers, the catamarans will accommodate 216 of these on the main deck. Facilities will include sofa groups, video and a panorama saloon as well as a play area for children.

The upper deck includes a VIP lounge with its own bar and seating for 62 persons.

For free literature giving full information on the facilities and capabilities of Fjellstrand,

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## Ocean Specialty To Charter U.S.-Flag Product Carriers From OMI, Hvide Shipping

Ocean Specialty Tankers Corporation (OST), a newly formed Houston-based company, recently announced an agreement in principal

to long term charter three modern U.S.-flag parcel vessels from OMI Corporation and Hvide Shipping, Inc.

The vessels, OMI Dynachem, OMI Hudson and Seabulk Magnachem, are all in the 40,000 to 50,000 deadweight tonnage range. It is planned that OST will acquire certain assets and business interests

from Seabulk Ocean Systems Corporation, an Hvide Shipping affiliate, and OMI Corp., and will expand on existing bulk liquid parcel services to U.S. East and West Coasts. Additionally, OST has agreed to charter the Seabulk America, which is expected to undergo reconstruction shortly in a U.S. shipyard. The Seabulk America will

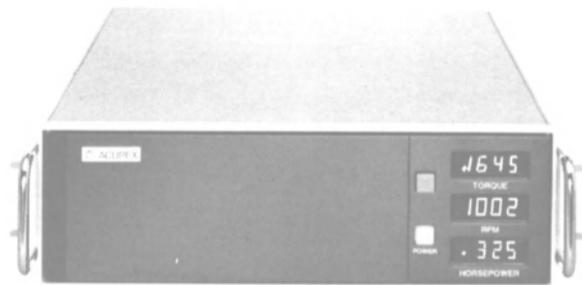
add 41,000 deadweight tons of new capacity to the Jones Act parcel trade. The unique aspect of the Seabulk America is that she has a significant amount of stainless steel capacity.

OMI Inc. is a publicly held major bulk shipping company operating in both the international and U.S. domestic markets.

Hvide Shipping, Inc., is a privately held U.S. flag owner and operator with significant interests in the shipping industry.

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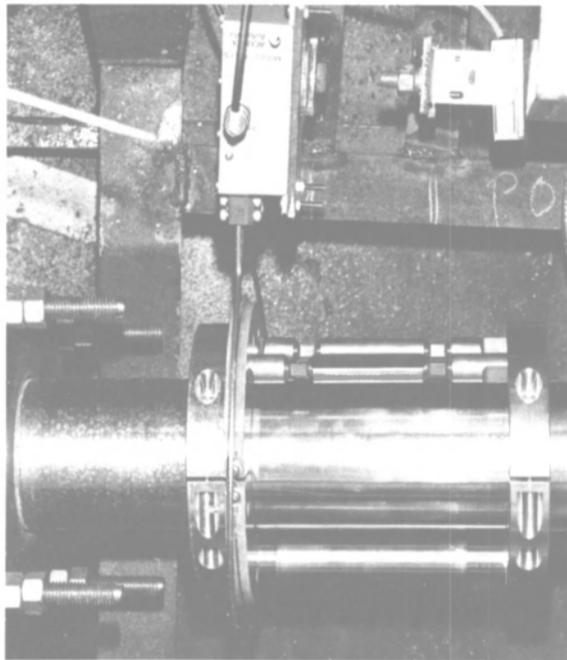
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## Acurex Sea Trials Meter Provides User With Complete Versatility



The Acurex Sea Trials Meter has torque and horsepower scaling adjustment controls accessible from the front, allowing display scaling at any time, even while underway.

Acurex Corporation/Autodata Division, Mountain View, Calif., is a manufacturer of measurement and test equipment for surface and undersea ships of the U.S. Navy and other navies around the world.

The Acurex Model 1605A Universal Sea Trials Meter for the first time combines the proven Acurex (torque) Deflection Sensor P/N 10021, with lightweight clamp rings, and the new Model 1645A Field Adjustable Readout Electronics. This combination provides the user with the complete versatility of being able to use the same electronics and sensor for any ship with the significant benefit of last minute scale factor adjustment onsite and the capability of fully checking those adjustments at any time without stopping the shaft.

The sensor is calibrated for a range of deflection which, coupled with the switchable calibration features of the receiver (DEMOM) card allows the user to set up the Sea Trials Meter for any torque or power level on any ship. Torque and horsepower scaling adjustment controls, accessible from the front, allow display scaling at any time, even while underway.

Ships power, shaft parameters and clamp ring dimensional parameters establish the sensor deflection under operating conditions. The ratio of operating deflection and sensor calibration is set into the readout using a voltmeter and screwdriver at the front panel. Display scaling is also set with a screwdriver and these scaling factors can be checked at any time.

For further information and free literature from Acurex,

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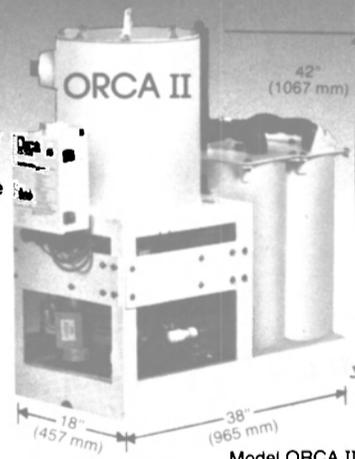
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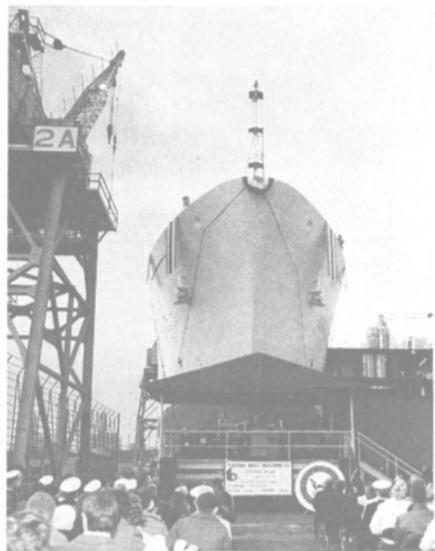
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## Navy's Newest T-AGOS Christened At Tacoma Boat



The U.S. Navy ocean surveillance ship USNS Audacious (T-AGOS-11) at her recent launching ceremony at Tacoma Boatbuilding Co., Tacoma, Wash.

The U.S. Navy's newest ocean surveillance ship, the USNS Audacious (T-AGOS-11) was recently christened at Tacoma Boatbuilding Co., Tacoma, Wash.

Speakers at the launching ceremony included Rear Adm. Select **Stephen S. Clarey**, Deputy Commander/Comptroller, Naval Sea Systems Command, and the Honorable **Norman D. Dicks**, U.S. Representative.

The USNS Audacious has a length of 224 feet, beam of 43 feet, displaces 2,265 tons and range of about 3,000 nautical miles at 11 knots. Propulsion and ship service electrical power is provided by four 600-kw, 600 vAC diesel generators. At any one time, two of the four diesel generators drive direct-coupled DC motors, producing 1,600 shp. When commissioned, she will be operated by the Military Sealift Command to gather underwater acoustical data and then transmit ashore for evaluation.

For free literature detailing the boatbuilding facilities and capabilities of Tacoma Boatbuilding,

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## Nissen's Line Of Industrial Markers Described In New Full-Color Catalog

A new full-color illustrated catalog describes Nissen's line of industrial markers and their applications.

There are economical, easy-to-use markers available for all materials, including metal, plastic, glass, rubber, wood, and cardboard. The markers will make permanent weather-resistant marks on wet or oily, rough or smooth surfaces. They are available in many bright colors for marking or color-coding.

For more information and a free copy of the catalog from J.P. Nissen Co.,

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## Literature Available On New Marine Products Made From 'Orkot'

Orkot Engineering Plastics, Carlsbad, Calif., is offering free literature on 'Orkot' bearings, bushings, wear pads and other components ideal for marine use.

'Orkot' is a laminated material

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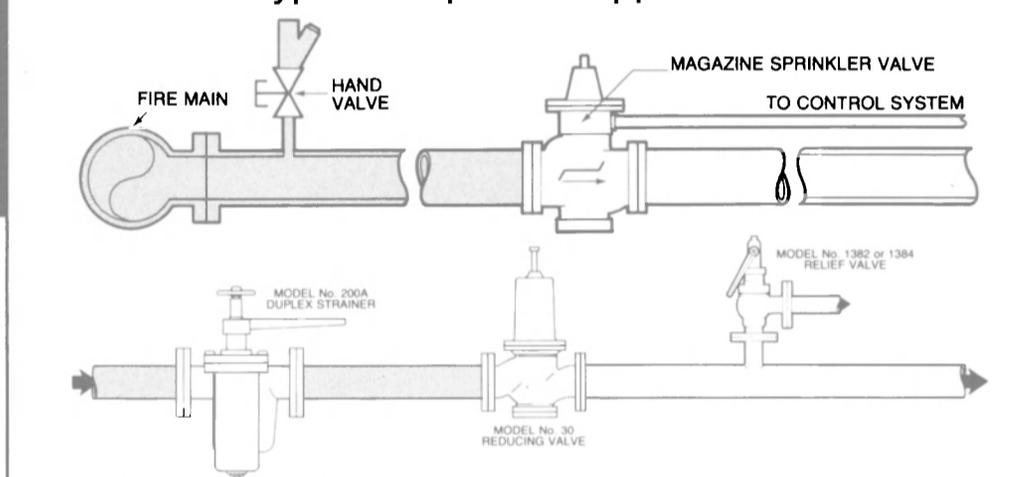
'Orkot' contains no harmful or toxic products and has exceptional dimensional stability in wet conditions. It is available in rod, tube or sheet form, or can be fully machined to customers' own drawings.

For further information and free literature from Orkot Engineering Plastics,

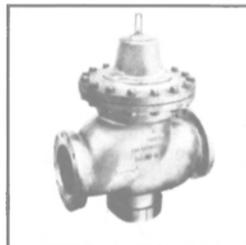
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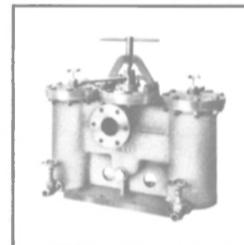
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• Provide intermittent relief service on salt water lines to protect piping and equipment  
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• Flanged per MIL-F-20042 or Sil-braze per MIL-F-1183



**Model 30**  
Pressure Reducing Valve (Manufactured to MIL-V-2042D)  
• Provides accurate regulation of pressure on salt water service  
• Sizes 1/2" through 6"  
• Flanged per MIL-F-20042 and Sil-braze per MIL-F-1183



**Model 200A**  
Duplex Strainer (Manufactured to MIL-S-17849D, Type 2, Class II)  
• For salt water applications where service cannot be interrupted  
• Sizes 3/4" through 8"  
• Flanged per MIL-F-20042

Since 1924 Bailey has been a supplier of strainers and control valves to the marine market. Bailey products are backed by dependable engineering and reliable delivery schedules.

**Bailey** Automatic Control Valves, Strainers, Polyjets

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## USCG Amends Illegal Drug Policy For Commercial Fishing

U.S. Coast Guard Commandant Adm. Paul Yost and Customs Service Commissioner William von Raab recently announced that personal-use of illegal drugs found on commercial fishing industry vessels will no longer subject the vessel to

immediate seizure, provided the vessel is engaged in fishery operations, or is en route to or from fishery operations.

The new interim procedure recently went into effect. Specific regulations will be published in the near future. The recent action results from requirements contained in the Anti-Drug Abuse Act of 1988, and applies only to commercial fishing industry vessels. Common carriers, such as ferryboats, cruise

ships, etc., are handled differently. The law already protects this class of vessel from seizure and forfeiture due to the conduct of a passenger possessing or bringing drugs on board unless there is evidence that the master/operator knew of the violation or was grossly negligent in preventing the violation.

In the past, under the administration's zero tolerance policy, commercial fishing industry vessels found with personal-use quantities of illegal drugs would have been immediately seized and escorted into port to await forfeiture proceedings by the U.S. Customs Service.

Now, the operator of the vessel will be handed a summons by the boarding officer who discovers the drugs. The summons requires the vessel to be presented before the local director of customs at a specified port, at the completion of the trip, or within a stated time period. It will then be determined, through administrative procedures, whether the vessel is to be forfeited or a penalty is to be paid.

The procedure also addresses what happens to a vessel after it is seized. It calls for expedited procedures to settle all such matters, providing a 20-day period to petition for the return of the vessel and requiring a decision from Customs within 20 days of receipt of the petition.

When a summons is issued, the operator of the vessel will also be given details of the revised forfeiture procedures. Failure to appear subjects the vessel to seizure, and may subject the operator to arrest and criminal prosecution.

Personal use illegal drug quantities are generally defined as less than one gram of cocaine or heroin, and less than one ounce of marijuana.

## Comsat Names Taricco Western Region Manager, Maritime Industries Sales



Thomas Taricco

Comsat Maritime Services recently announced that **Thomas Taricco** has been named Western region manager, maritime industries sales, responsible for the company's maritime satellite services sales efforts within the shipping, fishing and offshore markets located on the West Coast.

Mr. Taricco, who is based in Seattle, will also manage West Coast sales/service of SeaPhone<sup>SM</sup>, a new telephone system designed especially for crew members.

Comsat, a publicly traded corporation, based in Washington, D.C.,

provides international, domestic, and maritime communication and information services and conducts research on advanced communications techniques. Comsat represents the U.S. in the International Maritime Satellite Organization (INMARSAT) and the International Telecommunications Satellite Organization (INTELSAT).

For more information and free literature,

Circle 45 on Reader Service Card

## Bird-Johnson Wins Contract To Supply T-AO Class Propellers

Bird-Johnson Company of Walpole, Mass., has been awarded the contracts to supply the twin-screw controllable-pitch (CP) propeller systems for the Navy fleet oilers T-AOs 198, 200, 202 and 204.

Avondale Shipyards Division of Avondale Industries, Inc. of New Orleans, La., which is building the ships, made the announcement earlier this year following a thorough evaluation of proposals from a number of manufacturers. Bird-Johnson is supplying the CP propeller systems for the 11 previously contracted T-AO-187 Henry J. Kaiser Class oilers.

The nickel-aluminum-bronze blades will be manufactured at Bird-Johnson's Pascagoula, Miss., propeller foundry. Assembled, each 21-foot diameter, four-bladed CP propeller unit will be rated at 16,000 hp. Delivery of the propellers will be in August 1989.

Bird-Johnson Company is a leading manufacturer of controllable and fixed pitch propellers for commercial and naval applications with facilities in Walpole, Mass.; Pascagoula, Miss.; and Seattle, Wash.

For free literature detailing the propeller products of Bird-Johnson,

Circle 68 on Reader Service Card

## Free Literature On Self-Contained A/C Unit From Eastern Marine

Eastern Marine Manufacturing, Stuart, Fla., is offering free literature detailing its new marine self-contained 12-volt DC/115-volt air conditioning unit with a capacity of 6,500 BTU, 9,000 BTU or 12,000 BTU.

The bulletin provides a brief overview of the self-contained unit, with the use of a black-and-white photograph, text and a specification chart.

The spec chart highlights three A/C models offered by the company for marine applications, providing model number, dimensions, amperage, power available, and price.

For a free copy of the bulletin from Eastern Marine Manufacturing,

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But that's only part of the reason why Eastern remains America's largest stainless plate producer. Another reason is Eastern's attitude: Our on-time delivery performance is at a new high. Our customer service people make sure that you get kid-glove care. Whether it's a quick status report or technical support, we work with you to make your job easier.

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Circle 226 on Reader Service Card

## TTS Receives \$5.5-Million Contract In Shipyard Modernization

Total Transportation Systems (International) A/S (TTS) recently announced the receipt, through its United Kingdom subsidiary, of a \$5.5-million contract to significantly modernize the steel fabrication facilities at Kvaerner Govan Limited in Glasgow, Scotland.

The historic Govan shipyard, which last year was bought by the Norwegian Kvaerner Group, plans to become one of Europe's most productive shipbuilders through the introduction of state-of-the-art technology. Its contract with TTS includes a new panel production line, a web line, a profile cutting line, and a new automated plant for shot-blasting and painting of plates and profiles.

The custom-designed equipment will be engineered by TTS in Norway, and will be manufactured by Norwegian and British subcontractors. All welding equipment as well as a numerically controlled cutting machine will be supplied by the Swedish ESAB Group. ESAB is a world leader in welding and cutting technology and a partner in TTS's shipbuilding activities.

The new equipment will be delivered in the second half of this year. The contract includes installation, operator training, and start-up assistance. Prior to winning the contract, TTS provided consulting assistance to analyze the yard's material flow and advise on the most cost-effective technical solutions.

TTS recently received a similar but smaller contract from a prominent German shipyard. Together, the two contracts confirm TTS's leading position as a supplier of shipyard production lines, resulting from the company's determined efforts to develop new shipbuilding technology.

According to Einar Pedersen, managing director of TTS, the outlook for the international shipbuilding industry is now rapidly improving after several difficult years. As a consequence, TTS is currently having discussions with several shipyards wishing to expand or modernize their facilities, and there is a new interest among shipbuilders to take advantage of new technology to improve productivity.

For free literature detailing the state-of-the-art steel fabrication and shipbuilding equipment designed and manufactured by TTS,

Circle 94 on Reader Service Card

## Dr. Daniel True Appointed Senior Research Civil Engineer At NCEL

Dr. Daniel G. True, senior research civil engineer at the Naval Civil Engineering Laboratory (NCEL), Port Hueneme, Calif., has been promoted to director of the Seafloor Engineering Division.

He succeeds Norman D. Albertsen who has been appointed

manager of the laboratory's Technology Base Program.

Dr. True's new duties include the supervision of 13 full-time professional and support personnel and management of an annual budget of approximately \$2 million. The division is responsible for all Navy ocean facilities engineering research relating to the seafloor, including anchors, cables, foundations, pipelines, and breakout and recovery.

## Apelco's Color Fishfinder/ Plotter Is Powerhouse In A Small Package

Apelco's XVC 8100 Color Video Fishfinder/Plotter is a powerhouse in a small package. It gives sharp, bright, eight-color displays of bottom and midwater fish and other targets on a 6-inch screen, plus valu-

able plotting information to help you reach and return to important fishfinding events and navigation points.

With a new technology dual-beam transducer, Apelco's fishfinder/plotter also lets you switch, at the touch of a keypad, from wide-area searching (37-degree beam) to pinpoint targeting (15-degree beam) to get the best picture in all conditions.

# Engines of

Beneath all the radio hubbub and navigational checkpoints, the whistle and whir of lines going out and lines coming in, one sound says more about your operation's well-being than any other.

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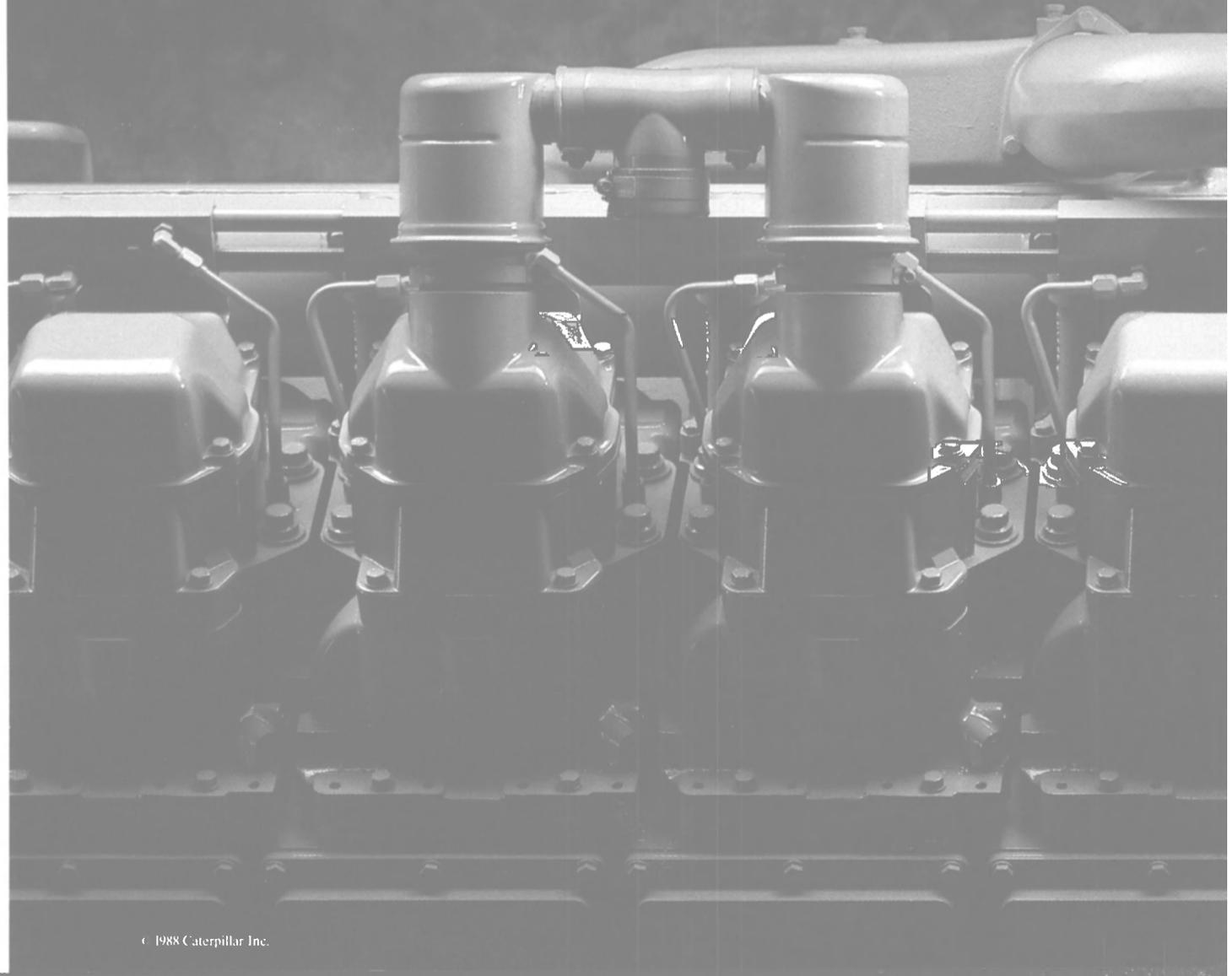
But engines that deliver reliable, honest horsepower. Engines frugal with fuel over their entire operating range. Engines which are engineered to outperform, outlast, and outdo

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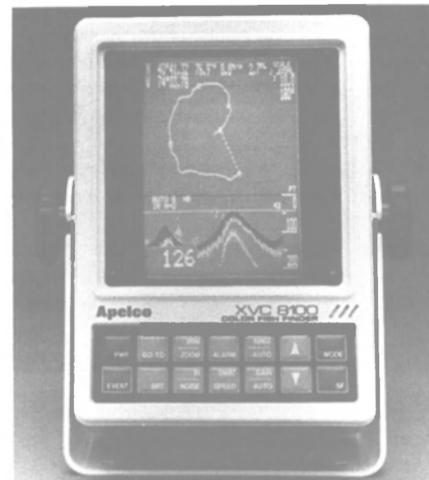
Because this new fishfinder/plotter interfaces with most Lorans having standard NMEA 0182/0183 formats, Apelco makes it easy to enjoy the latest plotting features available without purchasing a new Loran. In addition to its standard full-screen color fishfinding, the XVC 8100 provides full-screen zoom close-ups, and split-screen plotting with fishfinding, or split-screen digital navigation data display with

temperature graph.

The Apelco XVC 8011 automatically adjusts its 800-watt (p-p) maximum transmit power, pulse repetition rate, and transducer beam width. Shift range from 5 to 995 feet, fathoms, or meters is automatic or manual. Clarity is enhanced on this 256-by-256 bit, high-resolution screen, by keyboard selectable scanning speeds, 10 levels of brightness, and advanced interference and

noise suppression circuits.

When its Plot Mode is active, the XVC 8100 lets you plot and track up to 20 events, recording position, surface water temperature, and depth of each event. The plot display shows own-boat on the screen, plus route of selected event marks. When selected, the XVC 8011 will electronically draw a dotted line from own boat to selected events, and give distance and bearing to events.



The Apelco XVC 8100 Color Video Fishfinder/Plotter (split-screen plotting and fishfinding displays are shown).

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The screen will also show where you've been with a solid track line. Digital event data is displayed at the bottom of the screen. At the top of the screen the XVC 8100 displays readouts of your boat's position in Lat/Long or TDs, plus temperature, boat speed, trip log, distance and bearing to events, and selectable chart scales, from 2 to 100 nm or km.

Features such as alarm for preset fish "window," and shallow and deepwater limits are also provided. The XVC 8100 is supplied with a lithium battery for memory protection, standard sun shield, and transom mount transducer (thru-hull transducer, optional). Power requirements are 11-16 Vdc, 13.6 Vdc nominal. Power consumption is approximately 2 amps. Speed and temperature sensors are built into the dual-beam triducer.

For more information on this color fishfinder/plotter and Apelco's complete 1989 line,

Circle 47 on Reader Service Card

## Nedlloyd Seeks Tenders To Build 15 Containerships

Rotterdam-based ship operator Nedlloyd recently announced plans to build 15 new containerships ranging in size from 3,000 TEUs-4,600 TEUs, and has invited tenders from Europe and the Far East to construct the vessels. The price for the 15 ships would be approximately \$750 million.

The 15 containerships would consist of five vessels of 3,000 TEUs for delivery in 1991, with options for five of 3,800-TEUs and five huge post-Panamax-sized 4,600-TEU ships for delivery between 1992-1994.

The 3,000-TEU ships will have a length of 872-1/2 feet, breadth of 106 feet and deadweight of 30,000 tons. The 3,800-TEU and 4,600-TEU vessels both will have a length of 964 feet. However, the 3,800-TEU ships will have a breadth of 106 feet and deadweight of 43,000 tons, while the 4,600-TEU vessels will have breadths of 124 feet, larger than the Panama Canal can accommodate, and deadweights of 51,000 tons.

Circle 244 on Reader Service Card



The ship-handling tug Charles H. Cates X features a hull of all-welded steel, double-chime form, with transverse framing, which is unique to the Cates fleet. The hull form was developed jointly by the company and naval architect Robert Allan Ltd.

## Allied Shipbuilders Delivers Caterpillar-Powered Tug

Allied Shipbuilders, Ltd., North Vancouver, B.C., Canada, recently delivered the 57-foot 8-inch shiphandling tug Charles H. Cates X to C.H. Cates & Sons Ltd., North Vancouver, B.C.

Based on a design by Vancouver-based naval architecture and marine engineering firm Robert Allan Ltd., the Charles H. Cates X has a molded breadth of 24 feet 2 inches, depth of 9 feet 9 inches and extreme draft of 10 feet.

Her propulsion machinery consists of two high-speed Caterpillar 3508 TA main diesel engines, each rated at 650 bhp at 1,600 rpm, coupled to 360-degree azimuthing drives through a 1.1 ratio gear/clutch assembly. The

drive shafts contain flexible coupling elements at the input to the Niigata model ZP-56 Z-drives, and the gear reduction of 378 rpm at the propellers are achieved within the Z-drive units themselves.

Electric power for the winch drive, steering unit control and all shipboard services is provided by a pair of 95 kw, 230/3/60 AC generators. Mitsubishi 6D16-T auxiliary engines each drive a Simpover B254C alternator.

The winch drive and Z-drive steering motors are controlled by Mechtronics 59000 series frequency modulating motor drives, to achieve a full range of variable speed control from the AC power supply.

The ship-handling operations of the Charles H. Cates X are carried out from the fore deck, utilizing a single-drum variable speed electric-driven line-handling Burrard Iron Works winch. The Burrard winch stores a 400-foot 2-1/2-inch-diameter Round Plait Polyester Samson Braid towing line.

The all-steel Cates X will operate in Vancouver Harbor providing ship assist services.

### CHARLES H. CATES X Equipment List

Main engines (2)	Caterpillar
Z-drives	Niigata
Auxiliary engines (2)	Mitsubishi
Alternators	Simpover
Controls	Mechtronics
Radar	Racal-Decca
VHF radiotelephones	Raytheon
Echo sounder	Datamarine
Intercom	Regency
Line-handling winch	Burrard Iron Works
Towing line	Samson Braid

For free literature detailing the boatbuilding services of Allied Shipbuilders,

Circle 75 on Reader Service Card

For literature completely describing the naval architecture and marine engineering services of Robert Allan Ltd.,

Circle 76 on Reader Service Card

## Bestway Systems Develops Ship-Based Computer Systems For Private/Commercial Sectors

Bestway Systems, Inc. has developed ship-based computer systems for both the private and commercial sectors. A special chassis has been hardened to withstand abnormal temperature, humidity, dust, vibration and shock extremes. Based on Interactive's UNIX/ix, the platform is mated with fiber optic terminals, bringing EGA capability to all users, whether business or scientifically oriented.

The chassis, a standard 19-inch rack mount, is combined with a likewise mounted computerized UPS system which interacts directly with the operating system. Communication with land-based hosts is achieved over modems via satellite link. Up to 12 users per node are possible, with multiple nodes in a TCP/IP network.

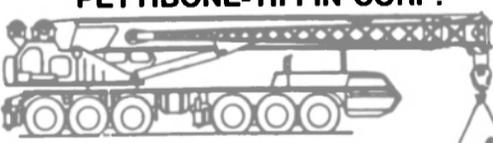
Targeted for private yachts 100 feet and greater, and commercial vessels, the systems are expected to be available in the second quarter.

For more information and free literature from Bestway Systems,

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Maritime Reporter/Engineering News

## JJH Awarded Navy Pact For Design Services For Lead Minehunter Ship

JJH Inc., a naval engineering company, has been awarded a contract by shipbuilder Intermarine USA, Savannah, Ga., for the detailed outfitting design for the lead ship of the U.S. Navy's new coastal minehunter (MHC-51) Class.

To be named the USS Osprey, the minehunter will be 188 feet long, 36 feet wide and have a depth of 17 feet. She will have an anti-shock single-skin, monocoque-glass-reinforced plastic hull, and will be powered by two amagnetic Isotta Fraschini diesel engines driving two Voith Schneider cycloidal propellers. The design is a derivative of Intermarine's highly successful Lerici Class minehunters built for the Italian Navy. The class will form the basis for the low-risk proven high technology minehunter solution required by the U.S. Navy.

When completed, the USS Osprey will be commissioned to hunt and clear mines from U.S. harbors and coastal waters.

Intermarine USA is a joint venture of Intermarine SpA, Saranza, Italy, and U.S.-based Hercules, Inc. Intermarine SpA has successfully completed a total of 10 Lerici Class mine countermeasure vessels for the Italian Navy.

JJH, Inc., has facilities in Cherry Hill, N.J., Portsmouth, Va., Bath, Maine, Crystal City, Va., and Long Beach, Calif. For information on JJH's services,

Circle 61 on Reader Service Card

For free literature detailing Intermarine USA's facilities and capabilities,

Circle 62 on Reader Service Card

## Bush Nominations Of Hills, Skinner And Mosbacher Approved By Senate

The Senate recently unanimously approved the nominations of **Samuel Skinner**, **Carla Hills** and **Robert Mosbacher** for the positions of Secretary of Transportation, U.S. Trade Representative and Secretary of Commerce, respectively.

Mr. **Skinner** told the Senate Committee on Commerce, Science and Transportation, that the new Administration is "committed to a comprehensive maritime policy with the ultimate goal of restoring the U.S. maritime industry."

## New Brochure Outlines Worldwide Capabilities Of Drew Ameroid Marine

A new eight-page, full-color capabilities brochure from Drew Ameroid® Marine offers a comprehensive overview of the products and

"added value" services offered by the company, including its geographic scope, programs, commitment to research, and history.

Titled "Drew Ameroid Marine: Innovative Technology and Worldwide Customer Service," the brochure describes the types of shipboard support and technical expertise that have made Drew the choice of owners and operators of over 15,000 vessels around the world.

Drew Ameroid Marine is widely

recognized as the leading supplier of marine chemicals and coatings for boiler and cooling water treatments, fuel treatments, and maintenance. In addition, Drew furnishes a complete line of welding gases, equipment, consumables and refrigerants, worldwide, through their Welding and Refrigerant Products (SRP) Department. The department's Fire Fighting Safety Service includes recertification of fire-fighting equipment and systems to the world's

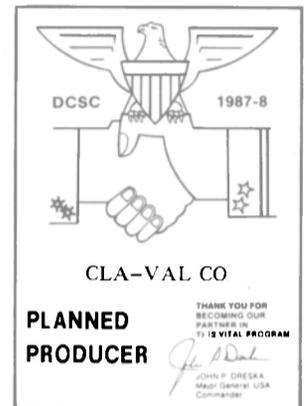
merchant fleets, in major ports. Drew is also a leading source of high-quality, asbestos-free sealing products. Drew's strong distribution network includes 150 supply locations, servicing over 800 ports in 43 countries.

For more information on Drew Ameroid Marine's products, programs and services, and a copy of the capabilities brochure,

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- AFFF System Control Valves
- Ballasting Valves

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# ELECTRONICS UPDATE

## Furuno Introduces New Line Of Medium-Size Radars And New Video Sounder With Etched CRT

Furuno U.S.A., Inc., San Francisco, Calif., has introduced a new line of medium radars, and a new monochrome video sounder with etched CRT.



Furuno's FR-8000D series radar.

Furuno's new FR-8000D Series radars are designed to provide top performance at a reasonable price for most workboats, fishing vessels and larger yachts. These radars, available in 5-, 10-, and 25-kw models, feature extremely high resolution (481 x 640 pixels) 12-inch monochrome CRT displays with no-compromise eight-level quantization. The result is a bright, non-fad-

ing radar picture that is sharp and crisp.

Range scales from 1/4 to as high as 96 n.m. (depending on output power), picture off-centering anywhere on the CRT, 2X target zoom, dual EVRMs, dual EBLs (one of which may be offset or of floating origin) fully adjustable visual and audible alarm, and choice of three antenna lengths are standard. Also included are echo trails for rapid target plotting, echo averaging for improved sea clutter performance, echo stretch for target enhancement, and Furuno's exclusive low noise MIC receiver. With nav and heading sensors, a full range of navigation data can be displayed on the CRT.

In addition, the optional RP-3 video plotter allows overlaying course plot and chart data on the radar picture; the optional ARP-3 provides automatic tracking of 10 targets, with target course and speed shown digitally and by vector.

Furuno's FMV-603 is a new compact video sounder with a bright, high-resolution 6-inch CRT which has been specially etched to reduce



The FMV-603 etched CRT video sounder.

glare from sunlight, and that displays returning echoes in four distinct shades of amber. It is a dual frequency unit with a single transducer. It can also have an optional speed/temperature sensor or a compact four-in-one transducer.

Both 50 and 200 kHz transmitters give the FMV-603 optimum deep and shallow water performance, and

four presentation modes permit viewing various combinations of high, low, or mixed frequencies, bottom lock, any of eight zoom ranges, stored data, speed and surface water temperature. Standard features include noise limiter, automatic phasing and an audible alarm that works as either a fish or bottom alarm.

The FMV-603 offers eight basic range scales to 1,000 feet, phasable in 1-foot steps to 2,000 feet, and output power is a full 150 watts. On-screen data (with appropriate optional sensors) includes depth readout, ship speed, water temperature and temperature plot, and ship position in Lat/Lon.

For more information and free literature on Furuno's new line of medium radars,

Circle 9 on Reader Service Card

For free literature giving full information on the FMV-603 video sounder from Furuno,

Circle 40 on Reader Service Card

## KaMeWa Expands Product Range Through Licensing Agreement

KaMeWa recently expanded its product range through a licensing agreement with Seapacer Marketing AB, Gothenburg, Sweden.

The new product, to be marketed under the name of KaMeWa-Seapacer, is an integrated system for maintaining optimum economical performance at sea.

Together with KaMeWa's other products, i.e.—controllable-pitch propellers, tunnel thrusters, etc., the company has taken another step towards its goal of providing the shipping industry with the most optimal way of operating a vessel.

The new KaMeWa-Seapacer continuously measures the values for actual speed, fuel consumption and sailed distance and can either be set to maintain a preset fuel consumption, a preset speed or a preset arrival time, all utilizing the advantages offered by the controllable-pitch propeller.

A number of units have been installed and are in operation and these units have successfully attributed to substantial fuel savings and improved route keeping. The company expects a significant market for the KaMeWa-Seapacer.

For free literature containing further detailed information on the KaMeWa-Seapacer,

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A0-30"	F1-6"x25"	CC1-40"
A1-40"	F2-9"x25"	CC2-50"
A2-50"	F3-9"x30"	CC3-60"
	F4-9"x41"	CC4-75"
A3-60"	F5-12"x30"	CC5-90"
A4-75"	F6-12"x43"	CC6-110"
	F7-15"x40.5"	Also in Stock: Polyform Mooring Irons for the CC Series Mooring Buoys Listed Above
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A6-110"	F11-24"x57"	
A7-130"	F13-32"x77"	

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Also introducing the new marker buoy/anchor buoy system, which would be perfect for numerous applications for marking offshore/inshore, harbors, and inland waterways.

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Circle 333 on Reader Service Card

Maritime Reporter/Engineering News

# The pipe connecting system that leaves other methods dead in the water.



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Other methods simply sink to the bottom when compared with the reliability and cost saving features of Pyplok® swage marine fittings.

This proven swage technology developed by Deutsch Metal Components makes the most reliable, permanent pipe connections in a fraction of the time required with hot work-type fittings. And Pyplok® eliminates costly gas freeing, fire watches and drastically reduces system flushing. With Pyplok® NDT is a simple check with a Go-No-Go gage.

Perhaps more important than the dramatic time and cost savings offered with Pyplok® is its proven\* superior performance compared with MIL-F-1183 fittings. In side-by-side comparative tests, Pyplok® endured more punishment, more vigorous testing than its labor-intensive counterpart, including an unprecedented, scorching 2000 degree fire test conducted at a major independent research facility. Pyplok® fittings

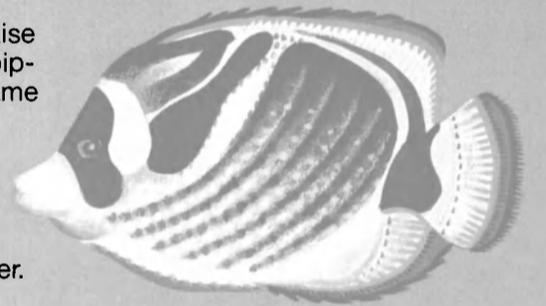
outperform and outlast MIL-F-1183 connections.

And Deutsch has developed new DLT series tools which have reduced tooling size and weight by nearly 65 percent. That means even easier access into tight, confined compartments. Areas a torch would never fit.

Available in 600 to 6000 psi pressure classes, sizes to 2" NPS and in a variety of configurations including sweep tees, elbows, couplings and reducers, and in a variety of materials.

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**\*For comparative testing information between Pyplok and MIL-F-1183 and a list showing Pyplok® in-use, contact your local Deutsch office or 1-800-DEUTSCH.**

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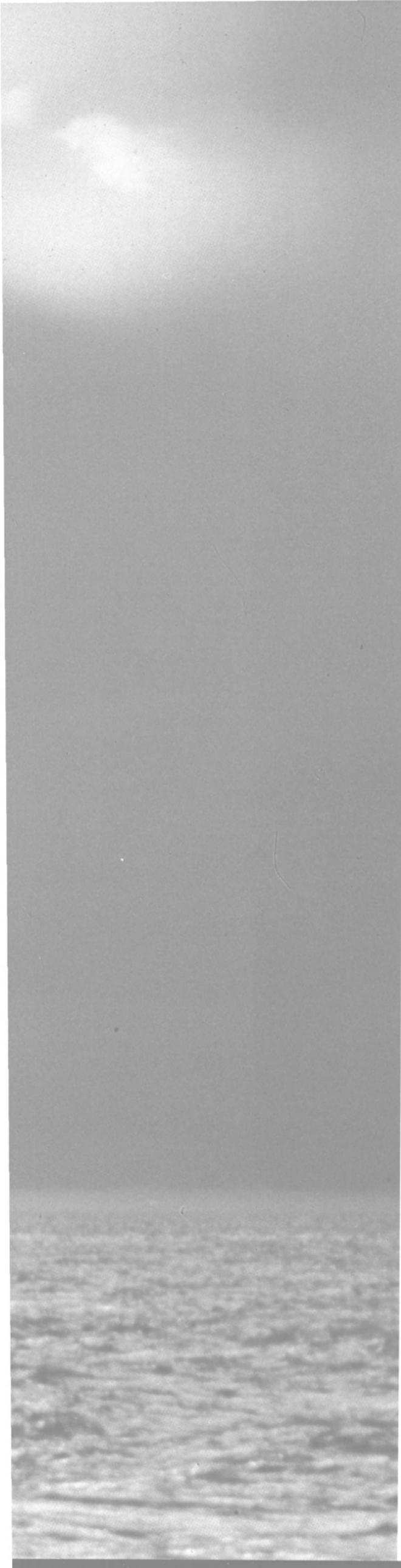


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# OTC

# '89

## SPECIAL PREVIEW

May 1-4, Houston, Texas

The annual Offshore Technology Conference, OTC '89, will once again be held in the spacious Astrodomain Complex in Houston, Texas, on May 1-4, 1989. The event, one of the largest of its kind in the world, will consist of an exceptional technical program and a large exhibition, featuring more than 1,200 exhibiting companies. The more than 25,000 registrants will be able to view some of the latest advances in equipment and offshore technology.

Besides its extensive exhibition, the 21st annual OTC will feature two keynote sessions, six topical luncheons and 12 special sessions. The two general interest keynote sessions highlight the 54-session technical program. The program will consist of over 300 papers, making it the largest number ever presented at OTC.

"Industry Trends for the Future," will be presented on Monday, May 1, by a panel of experts. The session will focus on prospects for the offshore industry. On Tuesday, May 2, "Safety Considerations," will focus on future adoption of specific precautions in the wake of the Piper Alpha experience and other offshore incidents.

Leading engineers, scientists and managers from both industry and academia will participate in the 12 special sessions scheduled on the OTC program. The program will examine major offshore projects in the areas of the South China Sea, Gulf of Mexico, North Sea and the South

Atlantic off Brazil. The special sessions will focus on newly developing technologies in the fields of geotechnical work, oilfield equipment seals, and corrosion-resistant alloys. Such major projects as Bullwinkle, Oseberg, and Smit compact semisubmersible are examined.

Three topical luncheons each will be held on Monday, May 1, and Wednesday, May 3. The Monday luncheons will include: "Green Canyon Joliet Field," by **Cornelis Langewis Jr.**, general manager of the Green Canyon Project, Conoco, Inc.; "Offshore China," by **You Dehua**, vice president of China National Offshore Oil Corp.; and "Gulf of Mexico Lease Economics," by **Joseph E. Warren**, president of Joseph E. Warren Inc. On Wednesday, "Placid's Operating Experience," will be presented by **Phillip G. Clarke**, vice president of operations, Placid Oil Co., as well as "Tommeliten—Marginal Field Development for the Future," by **Egril Endresen**, senior vice president, Statoil, and "Offshore Launch Platforms," by **Norman D. Howard**, McDonnell Douglas Astronautics Co.

Such national and international companies and organizations as the American Bureau of Shipping, Alexander Industries, Beard Industries, Canadian Marine Drilling, Brown & Root, Cummins Engine and Schottel-Lips will be among the 1,200 exhibitors occupying the 17 acres of

(continued)

## OTC '89 Preview

(continued)

exhibit space of the Astrodomain Complex and outdoor display area at OTC '89. Such countries as Brazil, Canada, Italy, France, Japan, Sweden, the U.K. and West Germany will be represented in what is

considered the offshore industry's leading international event.

For more than 20 years, the Offshore Technology Conference has been the largest annual forum in the world for the exchange of offshore and ocean resources technology. Through the years, as worldwide offshore industry announced a series of major technological advances at this event, the stature and importance of OTC grew.

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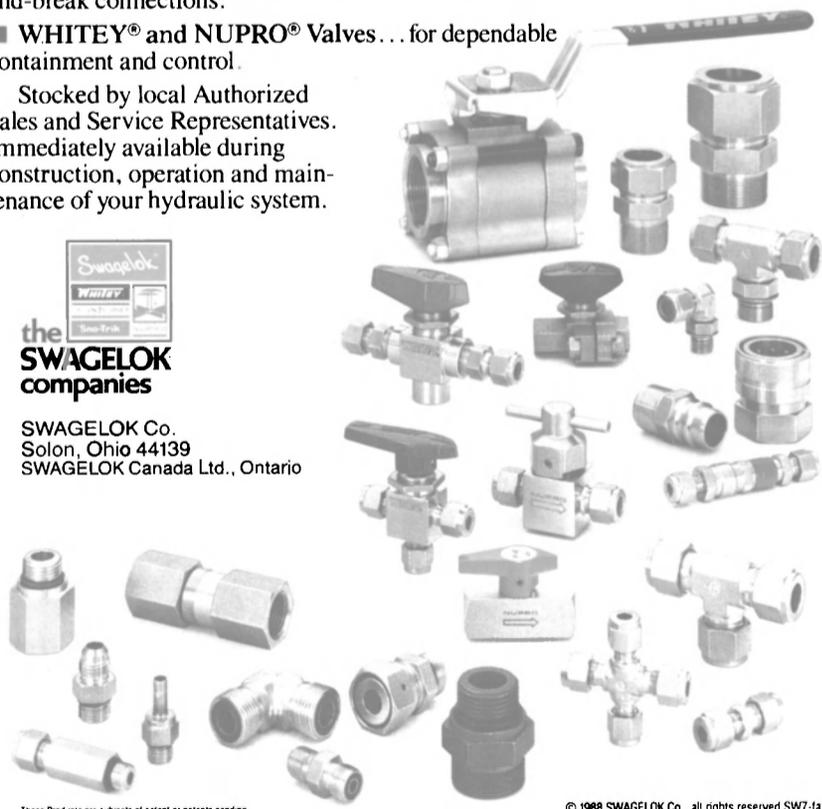
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Last year, OTC marked its 20th anniversary with an extensive technical program and major exhibition. OTC assembled a special museum to display the immense development and range of offshore technology produced during its 20 years in existence.

OTC primarily serves offshore industry engineers, managers, scientists and marine-related personnel from around the world. Over 1 million participants from around 90 countries have attended the combined technical programs and exhibitions of OTC since its inception in 1969.

The conference is sponsored by 11 prominent engineering and scientific organizations, including the Society of Naval Architects and Marine Engineers (SNAME) and the American Society of Mechanical Engineers (ASME), with combined worldwide memberships in excess of 700,000. The event is managed by the Society of Petroleum Engineers (SPE) for the sponsoring organizations.

For further information on OTC, contact: **Fred Herbst**, public rela-

### Conference Schedule

#### Monday, May 1

Registration 8 am-4:30 pm  
Exhibition 9 am-5 pm  
Technical Program 9 am-noon

2-5 pm  
Topical Luncheons 12:15-1:45 pm

#### Tuesday, May 2

Registration 8:30 am-4:30 pm  
Exhibition 9 am-5 pm  
Technical Program 9 am-noon

2-5 pm  
Awards Luncheon 12:15-1:45 pm

#### Wednesday, May 3

Registration 8:30 am-4:30 pm  
Exhibition 9 am-5 pm  
Technical Program 9 am-noon

2-5 pm  
Topical Luncheons 12:15-1:45 pm

#### Thursday, May 4

Registration 8:30 am-3 pm  
Exhibition 9 am-3 pm  
Technical Program 9 am-noon

tions manager, Offshore Technology Conference, P.O. Box 833868, Richardson, Texas 75083-3868; telephone: (214) 669-0072; and telex: 730989 SPEDAL.

### Technical Program

#### Monday, May 1 • 9:00 a.m.-12:00 noon

##### The 90's Offshore Trends and Forecasts

Major forces that will impact the offshore oil and gas industry in the decade of the 90's and into the 21st century are featured. Leading industry spokesmen will be joined by executives from international banking and investment communities.

- OPEC and the Offshore Industry
- Financing Requirements for Future Offshore Developments
- Investment Community Assessment of the Offshore Oil and Gas Industry

##### Subsea Production Systems

- The Underwater Production System • E.J. O'Brien III and S.B. Jensen, Den Norske Stats Oljeselskap a.s.
- Development Program for a Diverless Subsea Production System • C. Villeneuve, BP Intl. Ltd., and P. Metcalf, FUEL Subsea Engineering Ltd.
- Detail Design of a Guidelineless Subsea Satellite Completion • H.B. Skeels, FMC Corp.; A. Martins, CBV Industria Mecanica S.A.; and E.M. Mauret, FMC Corp.
- Field Experience and Design Evolution of the Diverless Layaway Flowline Subsea Christmas Tree • D.M. Underwood, FMC Corp., and M. Da Costa, CBV Industria Mecanica S.A.
- Deepwater Christmas Tree Development • P.P. Alfano, Equipamentos Villares S.A.; C.H.N. Barbosa, Petrobrás; and M.A. Lewis, Cameron Iron Works Inc.

##### Welding

- Underwater Wet Welding of High Strength Offshore Steels • S. Ibarra, Amoco Corp. Research; C.E. Grubbs, Global Divers & Contractors; and D.L. Olson, Colorado School of Mines
- Properties of Wet Welded Joints • I.P. Szelagowski, H. Stuhit, P. Loebel, J. Blight, G. Donnelly, and H.G. Schafstall, GKSS Research Centre
- Weldability of Duplex Stainless Steel • K.L. Killpack, R.W. Heid, and J.M. Sawhill Jr., Newport News Shipbuilding
- Advanced TIG and MIG Offshore Duplex Welding • C. Magloire and B. Andrier, E.T.P.M.
- Properties of Hyperbaric FCA Welds • J.F. Dos Santos, P. Szelagowski, and H.G. Schafstall, GKSS Research Centre

##### Development Geology & Geophysics of Offshore Fields

- The Marlim and Albasora Fields: Geophysical, Geological, and Reservoir Aspects • J.M. Souza, A. Candido, J.C. Scarton, and C.A.G. Cora, Petrobrás; and C.E.S. Cruz, Petrobrás/Cenpes/Diger
- Images of the Hibernia Reservoir: A Case Study • G.G. Tayiro, D.G. Ward, and W.L. Alexander, Mobil Oil Canada Properties
- Development Geology of the Cohasset Oil Field, Offshore Nova Scotia, Canada • E.S. Olynyk, Petro-Canada Inc.
- Case History of the Gas-Condensate Cassia Field, Offshore Trinidad • G.B. Alison and P. Farfan, Amoco Production Co.
- Influence of Depositional Facies and Structure on Waterflood Performance, Granite Point Field, Cook Inlet, Alaska • R.S. Tucker, W.J. Sercombe, and J.F. Flint, Amoco Production Co.

##### Drilling Technology & Equipment

- Drilling Equipment and Techniques for Ultradeep Water Drilling: A New Look • N. Brammer and M. Katner, Vetco Gray U.K. Ltd.
- The Proposed Extended Reach Drilling Project • R.D. Turner and P.A. Boyd, Conoco Inc.; K.L. Smith, Conoco Norway Inc.; and R.G. Goldsmith, Goldsmith Engineering
- North Sea Experience With Aluminum Drillpipe • B.A. Tarr, Mobil E&P Services Inc., and I.A. Graham, Mobil North Sea Ltd.
- Use of Dynamic Drilling Simulator for RPM and Bottomhole Assembly Optimization • A. Judzis and V.A. Dunayevsky, BP Research Intl.

- Drilling Operations Planning and Drill Deck Strengthening for Extended Reach Wells From an Existing Platform • R. Lemons and M.J.K. Craig, Unocal
- Optimizing Oil Muds for Offshore Drilling and Lower Environmental Impact • R. Jachnik and D. Marshall, Milpark Drilling Fluids

##### Concrete Structures & Technology

- Numerical Analysis of Arctic Calson Response to Ice Loads • S.J. Lacy, Rutgers U.
- Model Testing and Hydrodynamic Analysis of the Ekofisk 2/4 Tank Protective Barrier • R.L. Davies, Phillips Petroleum Co. Norway, and H. Hjelde, Peconor Ekofisk A.S.
- Detailed Design and Installation Aspects of the Protective Barrier To Surround the Ekofisk 2/4 Storage Tank • P. Broughton and C. Koenekoop, Phillips Petroleum Co. Norway
- The Concrete Gravity Base Structure of the Gullfaks C Platform—Examples of Applied Technical Development • B. Svensvik and B. Kepp, Norwegian Contractors a.s.
- A Basis for Material Selection for Large Volume Applications of Offshore Grout and Concrete • B.L. Smith and P. Forsyth, Wimpey Offshore
- New Data on Grouted Connections With Large Grout Dimensions • B.L. Smith and I.E. Tebbett, Wimpey Offshore

##### Platform Installation Dynamics

- Installation Model Tests of a Gulf of Mexico Compliant Tower • G.M. Monopolis and M.A. Danarozko, Exxon Production Research Co.
- Evaluation of Wear in Compliant Tower Pile Systems • G.S. Johnson, PMB Engineering Inc., and E. Hasle, Aker Engineering A/S
- Load Transfer Mechanism to Offshore Jackets During Pile Driving • S.Y. Hanna, Conoco Inc.
- Nonlinear Response of a Jacket Type Structure During Template Mating Operations • R.Y. Edwards, Arctic Offshore Corp.
- Prediction of Jacket to Template Docking and Mooring Forces During Installation • F.A. Ramzan and R.W. Robinson, Brown & Root Vickers Ltd.
- Design and Analysis for the Lift Installation of the Vestrekk Jacket • C.W. Austin and K. Eriksen, Aker/John Brown A/S; M. Baerheim, Statoil; and A.P. Crowle, Aker/John Brown A/S
- Weight Optimization of the Vestrekk Jacket • M. Baerheim and T.I. Fossan, Statoil, and D. Grimm, Unocal

##### Subsea Control Technologies

- Comparison of Response Time Tests With Computer Simulations for Control Hoses in Subsea Production Service • W.S. Manuel, J.E. Hall, and J.P. McAdams, Manual Designs Inc.
- Development of Composite Fiber Optic, Electric Power, and Hydraulic Riser Umbilical and Connector • M. Yamaguchi and T. Hagihara, Sumitomo Electric Industries Ltd., and S. Yato, Japan Natl. Oil Corp.
- Subsea Matable High Power Electric and Fiber-Optic Connector • O.A. Hegdhal, Kvaerner Engineering A/S
- A Downhole Electrical Wet-Connector System for Delivery and Retrieval of Monitoring Instruments by Wireline • M.A. Schnatzmeyer and D. Connick, Otis Engineering Corp.
- Subsea Separator—An Answer for Marginal Field Development • B.W. Songhurst and W.G. Edwards, British Offshore Engineering Technology

#### Monday, May 1 • 2:00-5:00 p.m.

##### South China Sea Projects

- An Overview of Potential Major Hydrocarbon-Rich Provinces Offshore China • Z. Gong, S. Wang, and X. Tian, China Natl. Offshore Oil Corp.
- Discovery and Development of the SZ36-1 Field in the Liao Dong Bay • B. Ti, Bohai Oil Corp.
- ACT-OG/NHEOC South China Sea Development Innovations • H. Wang, Nanhai East Oil Corp.
- Extended Horizontal Test Interpretation and Evaluation of Slant and Drilling Holes in the South China Sea • X.R. Wu, Nanhai East Oil Corp.

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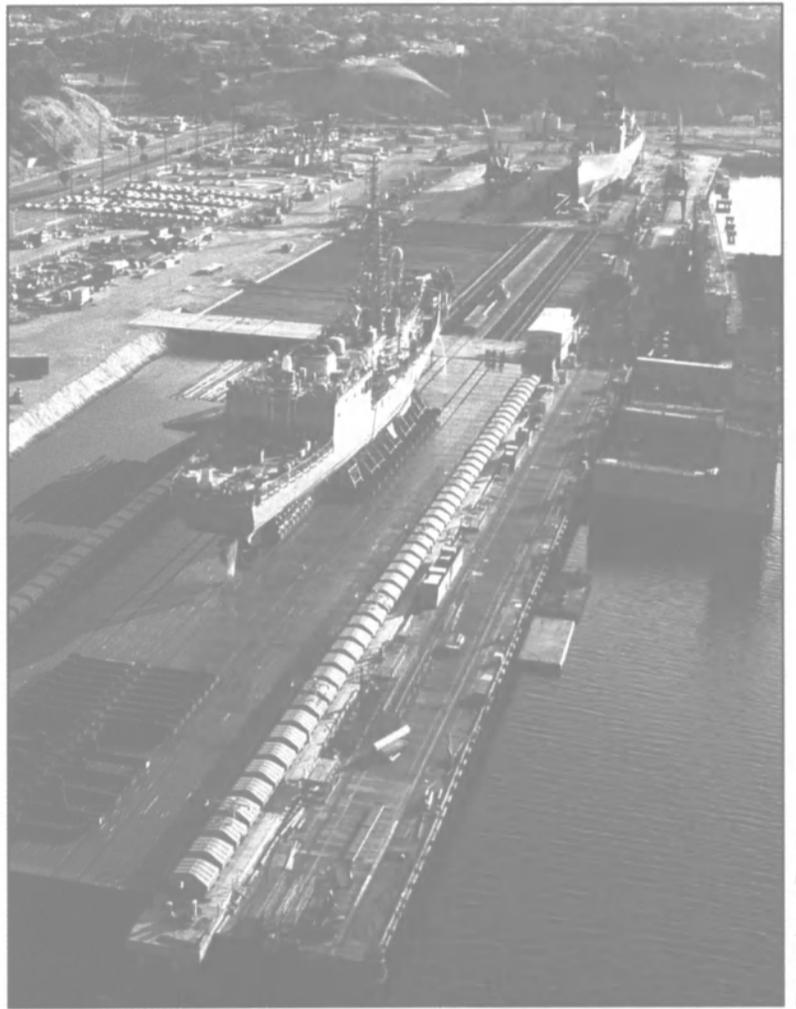


Photo by Joseph Ernest



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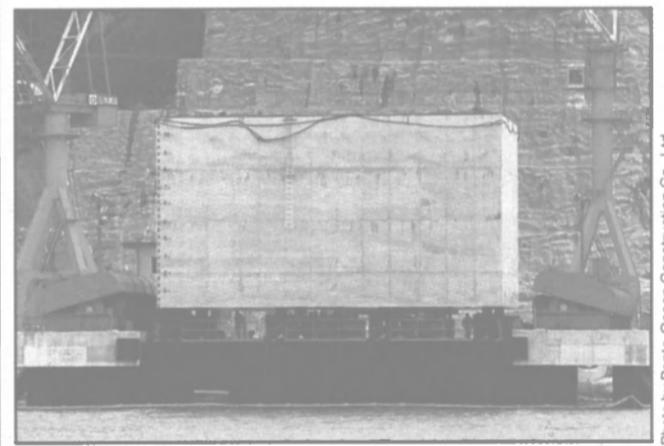


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## OTC '89 Preview

(continued)

of Tubular Joints: A Nonlinear Numerical Treatment • M. Lalani, The Steel Construction Inst.; S. Gholkar, Chevron Petroleum U.K. Ltd.; and J.K. Ward, The Steel Construction Inst.

• A Comparative Study of the Design Basis for Complex Tubular Joints • S.Y.A. Ma, Wimpey Offshore; J.V. Sharp, Harwell Laboratory; and I.E. Tebbett, Wimpey Offshore

• Stress Concentration Factor Analysis of Large Diameter Stiffened Nodes • W.F. Krieger and D.M. Mangin, Chevron Cor., and S. Gholkar, Chevron Petroleum U.K. Ltd.

• Some Observations and Recommendations Concerning Node Design and Fabrication for Offshore Steel Structures • J.A. Hollowell and W.D. Harteil, Marathon Oil U.K. Ltd.

• A Rational and Economical Approach to the Calculation of K-Factors • C.P. Earl and M.J. Teer, Earl and Wright Ltd.

• Background for the New Design Equation for Grouted Connections in the DnV Draft Rules for Fixed Offshore Structures • A. Sele and H. Kjeoy, Det norske Veritas

### Flexible Pipe & Riser Systems

• Design and Application of a Dynamic Flexible Pipe Array for Placid's GC 29 FPS • P.F. Espinasse, Cofexip & Services Inc.; D.A. Schnitker, Placid Oil Co.; and L.A. Sturdevant, Cofexip & Services Inc.

• On the Prediction of the Endurance Strength of Flexible Pipe • J.M.M. Out, Koninklijke/Shell E&P Laboratorium

• Development of High Pressure Seal and Bearing for Reliable Multipath Swivel • R. Hidaka, Japan Natl. Oil Co., and O. Saeki, S. Ishibashi, and Y. Murayama, Mitsubishi Heavy Industries Ltd.

• Multipass Swivels Based on Flexible Pipes • K. Haslum, Marotec A/S

• The Behavior of Flexible Risers in Waves • A.W. van Elsacker, Maritime Research Inst. Netherlands

• Three-Dimensional Dynamic Analysis of a Production Riser Group for a Deepwater Floating Production System • K.K.

Song and H.M. Rich, Ocean Drilling & Exploration Co.

• Design and Installation of the Oseberg Flowline Bundles • S. Sævik, A.R. Reinertsen Consulting Engr., and G. Eriksen and O.J. Johansen, Norsk Hydro a.s.

### Structural Response & Monitoring

• Seismic Evaluation of Platform Cranes • J.R. Long, Stress Engineering Services Inc.; D. Watmough, Weatherford American Aero Cranes; and M. Effenberger, Stress Engineering Services Inc.

• Measurement of Earthquake Ground Acceleration and Structural Response of a Fixed Offshore Platform • J. Chen, A.B. Mason, and R.R. Ullmann, Chevron Oil Field Research Co.

• Field Measurement of Jacket Member Structural Properties • S.P. Koch, Exxon Production Research Co.

• A Solution for Wind-Induced Vibrations of the Harmony and Heritage Platforms During Transoceanic Tow • B.L. Grundmeier, Exxon Co. U.S.A., and R.B. Campbell and B.D. Wesselink, Exxon Production Research Co.

• Monitoring a Jacket Transport: Use of System and Data Evaluation • D.J. Wisch, Texaco, and S.C. Das, Tulane U.

• Monitoring a Jacket Docking Over a Template • K. Hirata and S. da Silva, IPT, and P.J. Barusco and J.A. Galarza, Petrobrás

### Design & Analysis of Floating Structures

• Effect of Current Drag Forces on Two Large Bodies in Close Proximity • L.C. Kwok, Arctec Offshore Corp.

• Statistics of High and Low Frequency Motions of a Moored Tanker • J.A. Pinkster, Maritime Research Inst. Netherlands

• Nonlinear Analysis of Pipe String for Deep Ocean Mining • C. Ganapathy and S. Panda, Indian Inst. of Technology

• Combined Effect of Waves and Current on the Motion Behavior and Tether Forces of a Deepwater Tension Leg Platform • J.N. Dekker and R.H.M. Huijsmans, Maritime Research Inst. Netherlands

• Motion Response Predictions for a Deepwater Floating Production System Based on a Coupled Dynamic Time Domain Simulation • L.G. Chabot and T.D. Petty, Ocean Drilling & Exploration Co.

• Nonlinear Effects in Predicting the Motion Response of Intact and Damaged Mobile Platforms • M. Soyilemez and A. Incecik, U. of Glasgow

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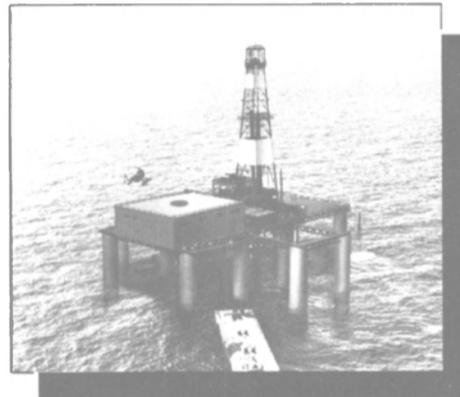
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AGE INSTRUMENTS INC.  
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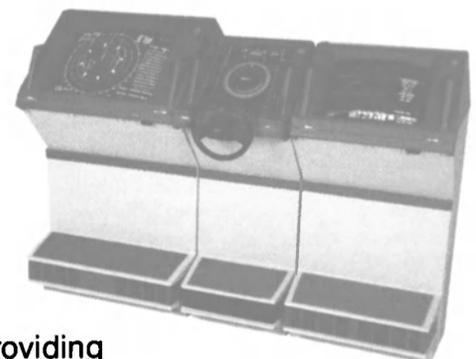
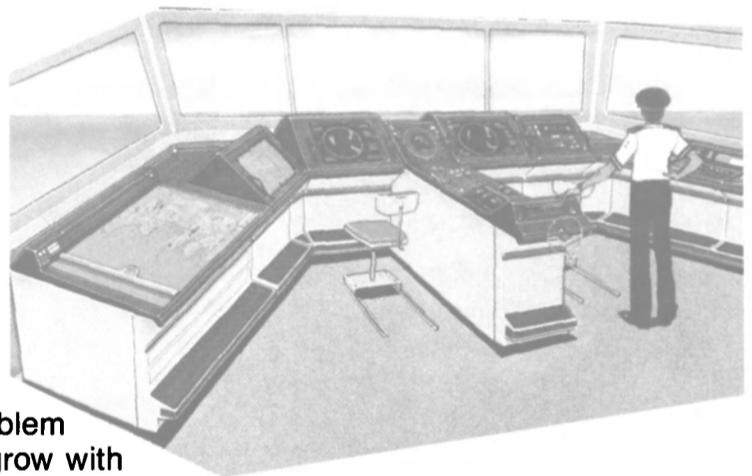
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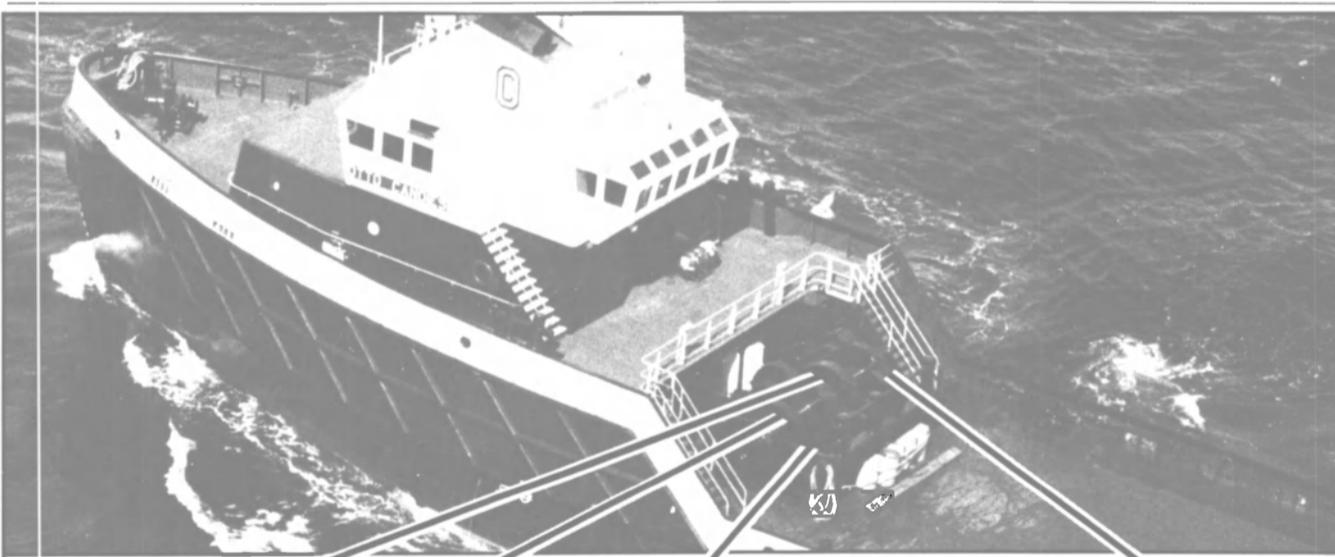
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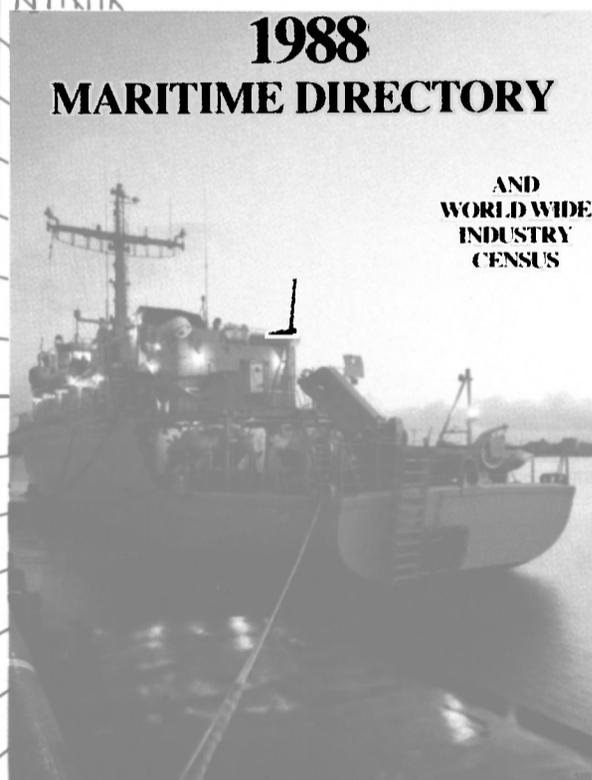
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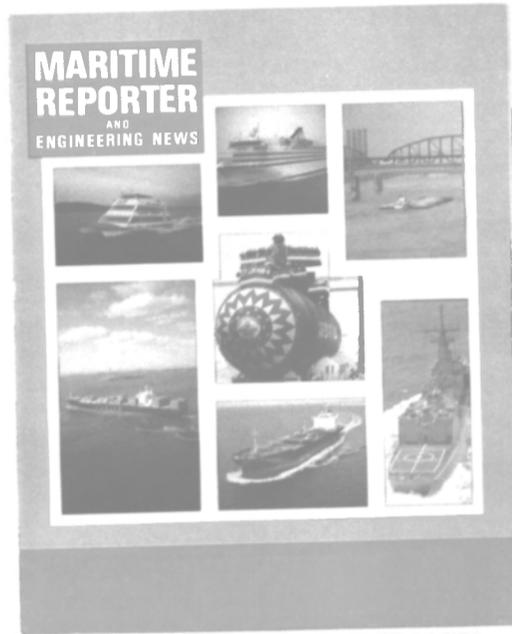
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- **U.S. CIRCULATION** THOUSANDS LARGER THAN ANY OTHER MARINE MAGAZINE
- **THOUSANDS** MORE BUYING INFLUENCE READERS
- **THOUSANDS** MORE U.S. NAVY BUYERS
- **"NAVAL TECHNOLOGY & SHIPBUILDING"** SIX SPECIAL PULL-OUT MAGAZINE SUPPLEMENTS
- **100% REQUESTED CIRCULATION** . . . in writing . . . by each individual reader
- **100% ADDRESSED TO INDIVIDUAL PEOPLE** . . . by name and title
- **BEST READ AND MOST WANTED**—MR is asked for, requested, by thousands more marine industry readers than any other marine magazine in the world.
- **UNEQUALLED PASS-ALONG READERSHIP** . . . 5.5 readers per copy . . . over 140,000 monthly readership.
- **MOST SALES LEADS FOR ADVERTISERS**—more than any other marine magazine

**MARITIME  
REPORTER**  
AND  
**ENGINEERING NEWS**

**MARITIME REPORTER/Engineering News**  
118 East 25th Street, New York, NY 10010  
(212) 477-6700

**THE ADVERTISING LEADER** in 1988, a larger number of advertisers placed more pages of advertising in Maritime Reporter than in the No. 2 magazine.

**MOST SALES LEADS  
FOR ADVERTISERS**

Advertisers report MARITIME REPORTER produces more sales leads than any other marine magazine in the entire world . . . two times to five times more sales leads than the next nearest marine publication.

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## OTC '89 Preview

(continued)

KEYSTONE ENGINEERING  
KENCO ENGINEERING CO.  
KEPNER PLASTICS FABRICATORS, INC.  
THE KERITE CO., A SUB. OF HUBBELL INC.  
KEYSTONE STEEL & WIRE  
KEYWAY INTERNATIONAL, INC.  
J.C. KINLEY CO.  
KINTEC INC.  
KLEIN ASSOCIATES, INC.  
KLEPO B.V.  
KREMCO, INC.  
KRUPP ATLAS ELEKTRONIK GMBH

L-M MANAGEMENT CO., INC.  
L-M LIMITED PARTNERSHIP  
LAND AND MARINE ENGINEERING LTD.  
LANZAGORTA INTERNATIONAL, INC.  
CONJUNTO MANUFACTURED MARINE DIV.  
CONJUNTO MANUFACTURED EQUIPMENT DIV.  
FIP, INC.  
FIP, S.A. DE C.V.  
WALWORTH CO.  
LARSON FOUNDRIES  
LERWICK HARBOUR  
LEUTERT INSTRUMENTS, INC.  
THE LINCOLN ELECTRIC CO.  
LINEAR MEASUREMENTS, INC.  
LOGIC CONTROLS  
LONE STAR SCREW CO., OF HOUSTON, INC.

LORENZ & SON MANUFACTURING LTD.  
LYNN INTERNATIONAL

M.A.C. INSTRUMENT, INC.  
M.I. GREAT BRITAIN LTD.  
MAGNAVOX MARINE & SURVEY SYSTEMS  
MAHER LTD. SUPERALLOYS DIV.  
MALONEY STEEL  
MAMMOET TRANSPORT B.V.  
MAMMOET STOOFF B.V.  
MAMMOET TRANSPORT U.S.A. INC.  
MAMMOET WESTERN INC.  
WALTER WRIGHT MAMMOET PTE. LTD.  
MAMPAEY OFFSHORE INDUSTRIES B.V.  
INTERNATIONAL MARINE SPECIALTY SUPPLY, INC.  
MAMPAEY INDUSTRIES

MAMPAEY INTERNATIONAL INC.  
MAMPAEY INTERNATIONAL B.V.  
MAMPAEY MARINE TECHNOLOGY B.V.  
MANCHESTER TANK & EQUIP. CO.  
MANIFOLD SYSTEMS, INC. (MSI)  
MARATHON LETOURNEAU MARINE CO.  
MARATHON LETOURNEAU CO., GULF MARINE DIV.  
MARATHON LETOURNEAU CO., MARINE DIV.  
MARIN  
MARINE CONTRACTOR SERVICES, INC.  
BUE HYDRA-LOK  
LYNN INTERNATIONAL  
MCS HYDRA-LOK  
MARINE INDUSTRIAL CABLE CORP.  
MARINE INDUSTRIES LTD.  
MARINE RESEARCH FACILITY  
MARINE TECHNOLOGY SOCIETY  
MARINE/OCEAN INDUSTRY SECTOR  
MARIOFF  
MASTER PUMPS & EQUIPMENT CORP.  
MAXIM EVAPORATOR PRODUCTS,  
A DIV. OF BEAIRD INDUSTRIES  
MAXIM SILENCER PRODUCTS,  
A DIV. OF BEAIRD INDUSTRIES  
MBB HELICOPTER CORP.  
MCDANIEL CONTROLS, INC.  
MCDERMOTT SCOTLAND  
MCS, HYDRA-LOK  
MDL, MTI  
MECON GMBH  
MEGA METALS  
MELCO BLOWOUT PREVENTER SPECIALTIES  
MENCK  
MERICO ABATEMENT CONTRACTORS, INC.  
GREGG INDUSTRIAL INSULATORS, INC.  
METROX, INC.  
METSASERLA GROUP  
MICOPERI S.P.A.  
MICRO GAGE INC.  
MICROMOTION  
THE MIL GROUP  
MILPARK DRILLING FLUIDS  
MISSION TUBULAR SALES OF LA., INC.  
MONTREAL  
LEE C. MOORE CORP.  
MSI DATA CORP.  
MULTI METALS DIV., OF VERMONT AMERICAN CORP.  
FRANK W. MURPHY MFR.

N S PIPE TECHNOLOGY, INC.  
N.R. MFG.  
NAO, INC. (PART OF THE NATIONAL AIROIL GROUP)  
NATIONAL ENGINEERING LABORATORY  
NATIONAL RESEARCH COUNCIL CANADA  
DIV. OF MECHANICAL ENGINEERING  
NAUTRONIX  
NAVAL OCEAN RESEARCH & DEVELOPMENT ACTIVITY  
OFFICE OF CHIEF OF NAVAL RESEARCH  
NAVIGATION DIV.  
NDT SYSTEMS, INC.  
NELES LOKOMO  
NEMATRON  
NETHERLANDS COUNCIL FOR TRADE PROMOTION  
CROON ELEKTROTECHNIEK B.V.  
DE HOOP GROENPOL INDUSTRIE B.V.  
GROOTINT B.V.  
GROOTCON (U.K.) LTD.  
K/S KALDNES DE GROOT OFFSHORE A/S  
K/S KALDNES DE GROOT A/S  
I.C.E.  
AFT (ADVANCED FOUNDATION TECHNOLOGY)  
GEVEKE MOTOREN B.V.  
T.N.O.  
IHC HYDROHAMMER  
KLEPO B.V.  
MAMMOET TRANSPORT B.V.  
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SCHOTTEL-LIPS B.V.  
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SMIT INT. (AMERICAS) INC.  
SMIT OFFSHORE CONTRACTORS  
SMIT TAK  
SMIT-LLOYD  
VAN SEUMEREN TRADING B.V.  
VOLKER STEVIN OFFSHORE B.V.  
VOLKER STEVIN OFFSHORE B.V. (HOUSTON)  
VOLKER STEVIN OFFSHORE (U.K.) LTD.  
VRIJHOF ANKERS B.V.  
BEL GRAPNEL  
VRIJHOF ANCHORS U.S.A.  
NEWFOUNDLAND AND LABRADOR GOVERNMENT  
MARINE/OCEAN INDUSTRY SECTOR  
OFFSHORE BUSINESS GROUP  
NKF KABEL B.V.  
NORRISEAL CONTROLS DIV. DOVER RESOURCES  
FERGUSON BEAUREGARD, INC.  
LOGIC CONTROLS  
NORRIS O'BANNON SALES  
NORRISEAL CONTROLS  
NORTHEAST SCOTLAND DEVELOPMENT AUTHORITY  
NORTHERN DEVELOPMENT CO.  
NORTHERN TELCOM LTD.  
EXPORT COUNCIL OF NORWAY



# Think Of What Could Be Wood.

Uses for Warvel custom molded and curved plywood components are limitless. Especially for the curved designs of modern interiors.

Look: No sharp corners. Curved structural and load-bearing components in an endless array of shapes, diameters and lengths. Unfinished cabinet doors, end caps and countertops. Even decorative components for seating, tables and trim.

For over 40 years, our veneers have come from the highest quality hardwoods, including teak. For new construction, retrofits, refurbishing and refurnishing, let your imagination run free. With curved, molded plywood components from Warvel.

For more information, call 414/855-2194, or fax 414/855-2914.

## THE LEMVIG LIFT AIR DOES IT ALL!

The Most Simple Yet Technically  
Advanced Lift System Available.



Twenty Minutes To Lift A 300 Ton Vessel

- **Low Maintenance:** No pumps, cables, or rails. Compressor and tractor does it all!
- **Quick Turnaround:** Lift is always available.
- **Cost Effective:** Installation Costs are competitive with traditional lifts.
- **Increased Workspace:** Every square foot of the yard can be utilized.
- **Safe:** Absence of cable and other moving parts assure a safe workplace, thus, lower liability exposure.
- **Lift Sizes:** from 30 to 3000 tons and up.

A proven system...  
The first Lemvig lift  
has worked around the  
clock in Denmark since  
1983 with no down time  
for repairs!



**OFFSHORE INDUSTRIES, INC.**

144 Railroad Ave., Suite 206  
Edmonds, WA 98020, USA  
Tel: 206-672-9350 Telefax: 206-776-7421

Circle 278 on Reader Service Card

### FOWL WEATHER GOT YOU DOWN?



WHY NOT TRY SUNNY CURACAO.

THE BEST WEATHER.  
THE BEST DRYDOCK.  
THE BEST CHOICE.

ANY OTHER DRYDOCK  
IS FOR THE BIRDS.

### CURACAO DRYDOCK CO.

YARD:  
P.O. BOX 3012  
CURACAO,  
NETHERLANDS ANTILLES

U.S./CANADIAN AGENT:  
CURACAO DRYDOCK (USA) INC.  
26 BROADWAY  
NEW YORK, N.Y. 10004

## \$2.2-Million Conversion Contract Completed For Indian Firm By Keppel

Keppel Shipyard, a major operating division of Keppel Corporation Limited, has completed a \$2.2-million

conversion contract for a car/passenger ferry, was converted to a full passenger-class vessel for service between Cochin on the West Coast of India and Lakshadweep Islands, a distance of about 200 nautical miles.

Major conversion work involved the construction of a new deck in

vide a new galley, mess rooms and offices. Additional cabins for the owner and the crew were also built in the upper and lower decks.

Hydraulically operated doors and embarkation doors were also designed and installed. The fire alarm system was modified and

ranging from general cargo ships to specialized vessels. Its modern facilities can accommodate vessels in excess of 400,000 dwt.

For free literature giving complete information on the facilities and capabilities of Keppel Ship-

WITH YOUR ADVERTISING IN . . .

TIME REPORTER'S

# 1989 THE WORLD YEARBOOK

THE INDUSTRY'S

BEST, DATA-FILLED YEARBOOK

AND REFER TO . . . ALL YEAR LONG

The 1989 JUNE WORLD YEARBOOK of MARITIME REPORTER is bound to generate maximum reader interest among MARITIME REPORTER'S unequalled audience of over 25,000 of the world's leading navy/marine/off-shore decision makers.

This will be a true YEARBOOK issue . . . filled with market data from leading marine industry experts on activities in all areas of the commercial maritime/offshore industry. Among the contents planned for this ANNUAL WORLD YEARBOOK issue are . . .

- **WORLDWIDE SHIPBUILDING** — Ship construction levels in leading yards worldwide.
- **U.S. NAVY SHIPBUILDING REPORT**
- **U.S. SHIPBUILDING REPORT**
- **U.S. FLAG OCEANGOING FLEET**
- **TUG, TOWBOAT AND OFFSHORE SUPPORT FLEET**
- **OFFSHORE DRILLING RIGS**  
AND
- **FUTURE U.S. NAVY SHIPBUILDING & REPAIR — A SPECIAL REPORT** — Latest changes and details affecting sales opportunities in the current \$200 Billion 5 Year Navy program.

**Tremendous Reader Interest This June Yearbook Will Generate.**

Advertising copy closing date for the Annual June World Yearbook issue is MAY 4th.

April, 1989

## ONLY MARITIME REPORTER GIVES YOUR ADVERTISING THESE POWERFUL SALES-BUILDING ADVANTAGES

- **WORLD'S LARGEST** TOTAL MARINE INDUSTRY CIRCULATION
- **U.S. CIRCULATION** THOUSANDS LARGER THAN ANY OTHER MARINE MAGAZINE
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- **MOST SALES LEADS FOR ADVERTISERS**—more than any other marine magazine

**MARITIME  
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AND  
ENGINEERING NEWS

**MARITIME REPORTER/Engineering News**  
118 East 25th Street, New York, NY 10010  
(212) 477-6700

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Advertisers report MARITIME REPORTER produces more sales leads than any other marine magazine in the entire world . . . two times to five times more sales leads than the next nearest marine publication.

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KLEIN ASSOCIATES, INC.  
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KREMCO, INC.  
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LEUTERT INSTRUMENTS, INC.  
THE LINCOLN ELECTRIC CO.  
LINEAR MEASUREMENTS, INC.  
LOGIC CONTROLS  
LONE STAR SCREW CO., OF HOUSTON, INC.

LORENZ & SON MANUFACTURING LTD.  
LYNN INTERNATIONAL

M

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M.I. GREAT BRITAIN LTD.  
MAGNAVOX MARINE & SURVEY SYSTEMS  
MAHER LTD. SUPERALLOYS DIV.  
MALONEY STEEL  
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MCS HYDRA-LOK  
MARINE INDUSTRIAL CABLE CORP.  
MARINE INDUSTRIES LTD.  
MARINE RESEARCH FACILITY  
MARINE TECHNOLOGY SOCIETY  
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METROX, INC.  
METSASERLA GROUP  
MICOPERI S.P.A.  
MICRO GAGE INC.  
MICROMOTION  
THE MIL GROUP  
MILPARK DRILLING FLUIDS  
MISSION TUBULAR SALES OF LA., INC.  
MONTREAL  
LEE C. MOORE CORP.  
MSI DATA CORP.  
MULTI METALS DIV., OF VERMONT AMERICAN CORP.  
FRANK W. MURPHY MFR.

N

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NATIONAL RESEARCH COUNCIL CANADA  
DIV. OF MECHANICAL ENGINEERING  
NAUTRONIX  
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OFFICE OF CHIEF OF NAVAL RESEARCH  
NAVIGATION DIV.  
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GROOTCON (U.K.) LTD.  
K/S KALDNES DE GROOT OFFSHORE A/S  
K/S KALDNES DE GROOT A/S  
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AFT (ADVANCED FOUNDATION TECHNOLOGY)  
GEVEKE MOTOREN B.V.  
T.N.O.  
IHC HYDROHAMMER  
KLEPO B.V.  
MAMMOET TRANSPORT B.V.  
MAMMOET STOOF B.V.  
MAMMOET TRANSPORT U.S.A. INC.  
MAMMOET WESTERN INC.  
WALTER WRIGHT MAMMOET PTE LTD.  
MARIN  
NEDDRILL NEDERLAND B.V.  
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NKF KABEL B.V.  
SAS GOUDA B.V.  
CRC-EVANS PIPELINE INT.  
R & H APPLIED TECHNOLOGY INC.  
VAN RIETSCHOTEN & HOUWENS B.V.  
SCHOTTEL-LIPS B.V.  
SMIT INTERNATIONALE  
SMIT INT. (AMERICAS) INC.  
SMIT OFFSHORE CONTRACTORS  
SMIT TAK  
SMIT-LLOYD  
VAN SEUMEREN TRADING B.V.  
VOLKER STEVIN OFFSHORE B.V.  
VOLKER STEVIN OFFSHORE B.V. (HOUSTON)  
VOLKER STEVIN OFFSHORE (U.K.) LTD.  
VRIJHOF ANKERS B.V.  
BEL GRAPNEL  
VRIJHOF ANCHORS U.S.A.  
NEWFOUNDLAND AND LABRADOR GOVERNMENT  
MARINE/OCEAN INDUSTRY SECTOR  
OFFSHORE BUSINESS GROUP  
NKF KABEL B.V.  
NORRISEAL CONTROLS DIV. DOVER RESOURCES  
FERGUSON BEAUREGARD, INC.  
LOGIC CONTROLS  
NORRIS O'BANNON SALES  
NORRISEAL CONTROLS  
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NORTHERN DEVELOPMENT CO.  
NORTHERN TELCOM LTD.  
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AKER ENGINEERING A/S  
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NORWEGIAN PETROLEUM CONSULTANTS A/S  
SIMRAD-GROUP  
SKEIEGRUPPEN A/S

## THE LEMVIG LIFT AIR DOES IT ALL!

The Most Simple Yet Technically  
Advanced Lift System Available.



Twenty Minutes To Lift A 300 Ton Vessel

A proven system...  
The first Lemvig lift  
has worked around the  
clock in Denmark since  
1983 with no down time  
for repairs!

- **Low Maintenance:** No pumps, cables, or rails. Compressor and tractor does it all!
- **Quick Turnaround:** Lift is always available.
- **Cost Effective:** Installation Costs are competitive with traditional lifts.
- **Increased Workspace:** Every square foot of the yard can be utilized.
- **Safe:** Absence of cable and other moving parts assure a safe workplace, thus, lower liability exposure.
- **Lift Sizes:** from 30 to 3000 tons and up.



**OFFSHORE INDUSTRIES, INC.**  
144 Railroad Ave., Suite 206  
Edmonds, WA 98020, USA  
Tel: 206-672-9350 Telefax: 206-776-7421

Circle 278 on Reader Service Card

## 'FOWL' WEATHER GOT YOU DOWN?



WHY NOT TRY SUNNY CURACAO.

THE BEST WEATHER.  
THE BEST DRYDOCK.  
THE BEST CHOICE.

ANY OTHER DRYDOCK  
IS FOR THE BIRDS.

## CURACAO DRYDOCK CO.

YARD:	U.S./CANADIAN AGENT:
P.O. BOX 3012	CURACAO DRYDOCK (USA) INC.
CURACAO,	26 BROADWAY
NETHERLANDS ANTILLES	NEW YORK, N.Y. 10004
TEL: (599-9) 78333	TEL: (212) 943-0122
TLX: 1107, 3443 CDM NA	TLX: 420355, 640394
FAX: (599-9) 79950	FAX: (212) 422-1102

Circle 229 on Reader Service Card

# Think Of What Could Be Wood.

Uses for Warvel custom molded and curved plywood components are limitless. Especially for the curved designs of modern interiors.

Look: No sharp corners. Curved structural and load-bearing components in an endless array of shapes, diameters and lengths. Unfinished cabinet doors, end caps and countertops. Even decorative components for seating, tables and trim.

For over 40 years, our veneers have come from the highest quality hardwoods, including teak. For new construction, retrofits, refurbishing and refurnishing, let your imagination run free. With curved, molded plywood components from Warvel.

For more information, call 414/855-2194,  
or fax 414/855-2914.

**WARVEL PRODUCTS INC.**

160 Park Street P.O. Box 290 Gillett, WI 54124

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Circle 321 on Reader Service Card



STEEL PRODUCTS OFFSHORE A/S  
NOVA SCOTIA DEPT. OF DEVELOPMENT  
NOVACORP INTERNATIONAL  
NOWCAM SERVICES, A DIV. OF CAMCO  
NOWSCO WELL SERVICE LTD.  
NUOVO PIGNONE (ENI GROUP)  
NUPRO CO. A SWAGelok CO.  
NUTRON MANUFACTURING LTD.

O

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O.I.L. LTD.  
OBR OILFIELD PRODUCTS, INC.  
OCEAN DRILLING & EXPLORATION CO. (ODECO)  
SUBSEA INTERNATIONAL  
OCEAN INDUSTRY  
OCEAN OIL WEEKLY REPORT  
OCEANRUTES CANADA, INC.  
OCEANTEC  
OEM COMPONENTS, INC.  
OFFSHORE BUSINESS GROUP OFFSHORE CRANE  
OFFSHORE ENGINEER  
OFFSHORE INCORPORATING THE OILMAN  
OFFSHORE MAGAZINE  
OFFSHORE RIG AND PIPELINE DIV.  
OFFSHORE SUPPLIES OFFICE  
OIL & GAS JOURNAL  
THE OIL AND GAS DIRECTORY  
OIL CENTER RESEARCH, INC.  
THE OIL DAILY CO.  
OIL, GAS & PETROCHEM EQUIPMENT  
OIL STATES INDUSTRIES/LTV ENERGY  
OIL, GAS & PETROCHEMICALS ABROAD  
OILMOP, INC.  
OLYMPUS CORP./INDUSTRIAL FIBEROPTICS DIV.  
GOVERNMENT OF ONTARIO CANADA  
ONTARIO MINISTRY OF INDUSTRY,  
TRADE, & TECHNOLOGY  
THE OREGON PORTS GROUP  
OSPREY ELECTRONICS LTD.  
OTIS ENGINEERING CORP., A HALLIBURTON CO.

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OCEAN OIL WEEKLY REPORT  
OFFSHORE INCORPORATING THE OILMAN  
OFFSHORE MAGAZINE  
OIL & GAS JOURNAL  
OIL, GAS & PETROCHEM EQUIPMENT  
PENNWELL BOOK DIV. OF PENNWELL PUBLISHING  
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PERMA-LINK FITTING, INC.  
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PETROLEUM EXTENSION SERVICE (PETEX)  
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PLIDCO INTERNATIONAL, INC.  
PIPE LINE INDUSTRY  
PIPELINE & GAS JOURNAL  
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PLIDCO INTERNATIONAL, INC.  
PORTA-TEST, INC.  
PORTER COATINGS  
POSITECT DRILLING CONTROLS LTD.  
POSITION CONTROLS DIV.  
OF B E I MOTION SYSTEMS CO.  
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POWER UP INC.  
PPG INDUSTRIES, INC.  
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BOONDOCK INTERNATIONAL  
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PROTECTORS, A DIV. OF CAMCO  
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SALZGITTER STAHL GMBH  
SAS GOUDA B.V.  
CRC-EVANS PIPELINE INT.  
R & H APPLIED TECHNOLOGY INC.  
VAN RIETSCHOTEN & HOUWENS B.V.  
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SCHLUMBERGER INC., INSTRUMENTS DIV  
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# Building On A Proud Tradition

Colonna's Shipyard, founded in 1875, is the oldest family-owned private shipyard in the United States. Today, Colonna's is a forward-looking full-service ship repair facility with a 17,200-ton steel drydock, three marine railways and complete shop and pier facilities. The company's reputation is built on a long tradition of quality workmanship, on-time completions and solid business management.



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SIMRAD GROUP  
THE SIMTRAN CORP.  
SIOUX STEAM CLEANER CORP.  
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SKELEGRUPPEN A/S  
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SMITH INTERNATIONAL, INC.  
DATADRIL  
DRILCO  
DYNA-DRILL  
SERVCO  
SMITH DIAMOND  
SMITH TOOL  
SNAM  
SNAMPROGETTI (ENI GROUP)  
SNAP-ON TOLLS CORP.  
INDUSTRIAL DIV.  
SNO-TRIK CO., A SWAGELOK CO.  
SOCIETY OF EXPLORATION GEOPHYSICISTS  
SOCIETY OF MINING ENGINEERS  
SOCIETY OF NAVAL ARCHITECTS AND  
MARINE ENGINEERS  
SOCIETY OF PETROLEUM ENGINEERS  
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AIDS TO NAVIGATION DIV.  
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ST JOHN SHIPBUILDING  
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STARFIX DIV.  
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EG & G GEOMETRICS  
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### Soundcoat Introduces Quilted Barrier Absorber —Literature Available

Soundcoat Company of Deer Park, N.Y., now offers Quilted Barrier Absorber (QBA), a combination of materials specifically designed to provide durability and excellent acoustical properties.

It is a composite of limp mass sandwiched between two layers of quilted absorber glass fiber blanket with aluminum vinyl coated glass fiber reinforced cloth facing on both sides. According to the manufacturer, these features provide excellent sound absorption and transmission loss characteristics ideal for many industrial and architectural applications.

Soundcoat's in-house capability to custom-cut shapes, provide grommets and various facings make QBA a cost-effective approach to many Q.E.M. requirements.

The Soundcoat Company, with laboratories and manufacturing facilities in New York and California, is involved in noise control research and development and manufacturing damping, barrier, absorption, gasketing and soundglass materials. The company has provided noise control solutions and materials for all types of equipment in every industry from ships to aerospace to office machinery, proven in the field and in the laboratory.

For additional information detailed in Bulletin No. 727 from Soundcoat,

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 NUPRO CO.  
 SNO-TRIK CO.  
 WHITEY CO.  
 SWECO OILFIELD SERVICES  
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### Soundcoat Introduces Quilted Barrier Absorber —Literature Available

Soundcoat Company of Deer Park, N.Y., now offers Quilted Barrier Absorber (QBA), a combination of materials specifically designed to provide durability and excellent acoustical properties.

It is a composite of limp mass sandwiched between two layers of quilted absorber glass fiber blanket with aluminum vinyl coated glass fiber reinforced cloth facing on both sides. According to the manufacturer, these features provide excellent sound absorption and transmission loss characteristics ideal for many industrial and architectural applications.

Soundcoat's in-house capability to custom-cut shapes, provide grommets and various facings make QBA a cost-effective approach to many Q.E.M. requirements.

The Soundcoat Company, with laboratories and manufacturing facilities in New York and California, is involved in noise control research and development and manufacturing damping, barrier, absorption, gasketing and soundglass materials. The company has provided noise control solutions and materials for all types of equipment in every industry from ships to aerospace to office machinery, proven in the field and in the laboratory.

For additional information detailed in Bulletin No. 727 from Soundcoat,

Circle 37 on Reader Service Card

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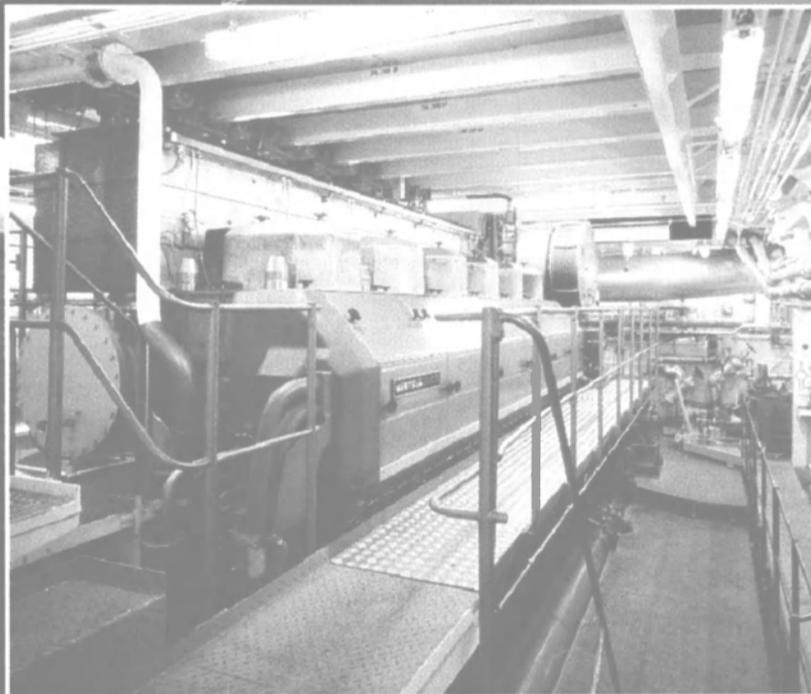
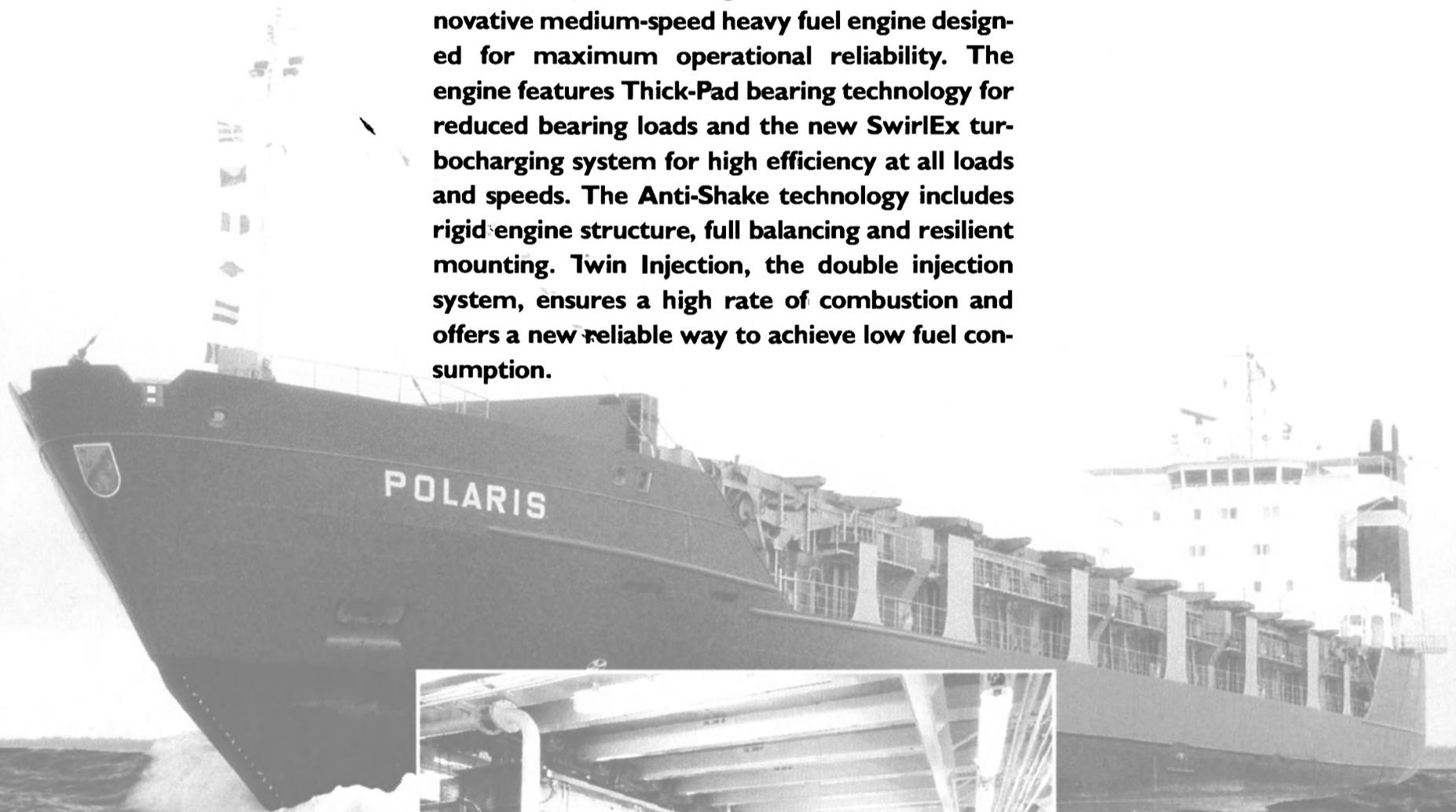
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# POWERED

## BY THE REALLY RELIABLE ENGINE

**T**he ro-ro vessel MS Polaris is equipped with one 6-cylinder Wärtsilä Vasa 46 main engine with an output of 5,430 kW at 450 rpm.

The Really Reliable engine, the Vasa 46 is an innovative medium-speed heavy fuel engine designed for maximum operational reliability. The engine features Thick-Pad bearing technology for reduced bearing loads and the new SwirlEx turbocharging system for high efficiency at all loads and speeds. The Anti-Shake technology includes rigid engine structure, full balancing and resilient mounting. Twin Injection, the double injection system, ensures a high rate of combustion and offers a new reliable way to achieve low fuel consumption.



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## \$2.2-Million Conversion Contract Completed For Indian Firm By Keppel

Keppel Shipyard, a major operating division of Keppel Corporation Limited, has completed a S\$4.3-million (about US\$2.2-million) conversion contract for the Shipping Corporation of India Ltd.

The M/V Santorini, a RO/RO

car/passenger ferry, was converted to a full passenger-class vessel for service between Cochin on the West Coast of India and Lakshadweep Islands, a distance of about 200 nautical miles.

Major conversion work involved the construction of a new deck in the previous vehicle space to take in 400 special trade passengers and some 80 crew. On the main deck, new partitions were put up to pro-

vide a new galley, mess rooms and offices. Additional cabins for the owner and the crew were also built in the upper and lower decks.

Hydraulically operated doors and embarkation doors were also designed and installed. The fire alarm system was modified and a new satellite communication was fitted.

Besides conversions, Keppel Shipyard also has extensive experience in repair of all types of vessels

ranging from general cargo ships to specialized vessels. Its modern facilities can accommodate vessels in excess of 400,000 dwt.

For free literature giving complete information on the facilities and capabilities of Keppel Shipyard,

Circle 35 on Reader Service Card



## The Queen Wouldn't Be Where She Is Today Without It.

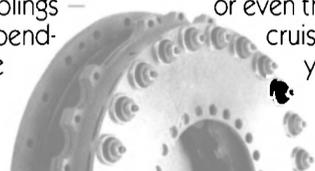
THE WORLD'S MOST FAMOUS CRUISE SHIP DEPENDS ON THE WORLD'S MOST FAMOUS COUPLING. THE RATO. The Queen Elizabeth 2 got where she is (and gets where she's going) with RATO couplings — designed for quiet, dependable, low-maintenance operation. Four basic

series offer three standard torsional stiffness ratings at each size, covering a wide range of horsepower requirements. Whether it's a work boat or pleasure craft, tug boat or freighter — or even the world's most famous cruise ship — you get where you're going with a RATO coupling.

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Circle 212 on Reader Service Card

## Banck Named President, TANO Marine Systems



Robert A. Banck

**Robert A. Banck** has been named president of TANO Marine Systems, Inc., New Orleans, La., which designs and builds computer-based electronic systems for industrial and defense applications.

The appointment was announced by **James J. Reiss Jr.**, president of TANO Corporation, parent company of TANO Marine Systems.

**Mr. Banck** comes to TANO with more than 15 years of diverse executive experience ranging from industrial manufacturing to retail food services. He has served in a variety of capacities, including general manager, chief financial officer and treasurer.

Prior to his appointment, **Mr. Banck** was president of Robert A. Banck & Associates, a financial services and business management consulting firm based in Covington, La.

TANO Marine Automation Systems have been installed on more than 240 ships for the U.S. Navy, Coast Guard, Military Sealift Command and U.S. Merchant Marine.

## Grace Offshore Buys Three Jack-Up Rigs

Grace Offshore, a U.S. drilling company, recently purchased three jack-up rigs from the Den norske Creditbank for future employment in the Gulf of Mexico.

Formerly operated by Nordrill, the three rigs, Nordrill Oiler, Nordrill Falcon and Nordrill Steeler, will undergo refurbishment before being employed.

All three rigs were built by Bethlehem Steel, two at Bethlehem Singapore in 1982, and the other at Bethlehem Steel-Sparrows Point in Maryland. The mat-cantilever-designed rigs are capable of operating in water depths of up to 200 feet and drilling to 25,000 feet.

**Red Fox Offers Free  
20-Page Brochure On  
Marine Sanitation Systems**

Red Fox Industries, Inc., New Iberia, La., is offering a free 20-page color brochure on the marine sanitation systems marketed by the company.

The sewage treatment division of

Red Fox Industries manufactures flow-through discharge-type sewage treatment units designed for use on wetlands, docks, platforms, drilling rigs, islands, ships or small vessels. They can be built to accommodate crews from two people to several hundred.

The Red Fox product line offers four different models designed especially to meet the needs of marine users: the Standard MSD, which is a

large-capacity, ruggedly constructed unit; the Little Fox, which weighs less and takes up less room than conventional steel MSDs; the Fox Pac, which the company claims is both smaller and less costly than other models; and the Offshore, a system designed by Red Fox engineers to satisfy the oil industry's need to conform to international disposal regulations.

Each of the four models is dis-

cussed in separate chapters in the brochure, along with an explanation of how each works.

Also included is a map showing current locations in Red Fox's worldwide sales, service and licensee network.

For more information and a free copy of the 20-page color brochure from Red Fox Industries,

Circle 26 on Reader Service Card

# Announcing: 419 Ton Lift with TWIN-PATH® EXTRA!

**TWIN-PATH® EXTRA  
Lifting Slings ...**

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Strong

EXTRA  
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EXTRA  
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Photos courtesy of Detroit Wire Rope Splicing

These TWIN-PATH® EXTRA Slings are truly amazing and they have one element in common. An incredible material that provides lightweight strength and long term performance. That material is KEVLAR® from DuPont. Southern Industrial uses SLINGMAX® technology to save time and money on a rigging contract. The three TWIN-PATH® EXTRA Slings were sold by Detroit Wire Rope Splicing to lift this 400 ton ship. Each TWIN-PATH® EXTRA Sling was 72' long and weighed 250 lbs. An equal wire rope sling would weigh 1400 lbs.

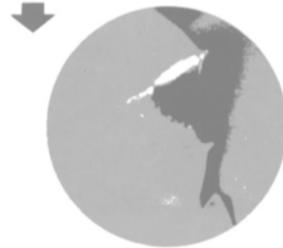
When your rigging job calls for the strongest and lightest sling in the world, call your local SLINGMAX® dealer and find out what lightning service is all about. Put the strength of KEVLAR®, the strength of DuPONT, and the strength of your SLINGMAX® dealer to work for you.

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**MADE OF  
DU PONT  
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**TWIN-PATH® EXTRA plus early warning  
and back-up protection.**

We don't recommend the abuse shown in this picture but if this damage happened to TWIN-PATH® EXTRA Lifting Slings, chances are good that you could still maintain control of the load.



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BP's professional team is there to navigate you through the stormy passages of lubricant supply and equipment reliability. Without the best technical service *before* leaving port, your next voyage could be more than just stormy. However, BP Marine is on all three U.S. coasts. So put your worries to rest.

BP Marine Lubricants has a long history of providing a complete lubrication service with matching technical expertise worldwide. We have consistently offered the highest quality oils and

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Its development has resulted in the latest in state-of-the-art technical service, the BP Oil Test Kit. It's a comprehensive onboard portable lab, designed specifically for analyzing lubricating oils and pinpointing problem areas. Developed by research chemists and practical seagoing engineers, it's an easy-to-handle system which can locate potential problems, reduce the risk of engine failure and monitor lubricant performance instantly. It

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Circle 21 on Reader Service Card

## Meyer Werft Books Order To Convert Car Carrier Into Livestock Carrier

The Meyer Werft of Papenburg, West Germany, a leader in the conversion of cargo vessels and tankers into livestock carriers, recently received an order from the Dutch

shipowner Vroon B.V., Breskens, to convert the car carrier Mediterranean Highway into a sheep/cattle carrier to be named Cormo Express. For Meyer Werft this is not only the 25th conversion into a livestock carrier but also the 20th order from Vroon/Livestock Express.

Upon completion in the autumn of 1989, the 577.5-foot-long by 87-foot-wide livestock carrier will be

capable of carrying 70,000 sheep, or 61,000 sheep and 1,500 cattle, respectively, on 11 decks. The vessel, which has a speed of 20 knots, will be operated on the Australia/Middle East route.

For free literature giving full details on the facilities and capabilities of Meyer Werft,

Circle 29 on Reader Service Card

## Check And Relief Valves With Kalrez Seals Now Available From Nupro

Check and relief valves with Kalrez elastomer seals, which resist thermal and chemical degradation, are now available from Nupro Company, Willoughby, Ohio.

Kalrez outlasts many other sealing materials under severe service conditions. The material combines the resilience and sealing force of rubber with the broad chemical inertness of TFE.

When a check or relief valve is closed, the elastomer seals against the poppet to provide leak-tight shutoff. The valves have a temperature rating of -10 degrees to 375 degrees F (-23 degrees to 191 degrees C).

Check and relief valves with Kalrez seals are available in a wide range of nominal cracking pressures, sizes, and end connections.

For more information and free literature from Nupro Company,

Circle 32 on Reader Service Card

## Bender Inc. Offers Literature On Electrical Safety Monitoring Systems

Bender Inc., Paoli, Pa., a worldwide manufacturer of electrical safety monitoring devices, offers a complete and comprehensive line of insulation monitoring and ground fault location equipment.

Insulation monitors are specifically designed for either the continuous active monitoring of ungrounded, floating power systems and control circuits, or the passive monitoring of idle or standby equipment. Insulation monitoring, from the Mega ohm range down, provides useful predictive maintenance information and reduces ground fault detection to a simple task. Portable, automatic and semi-automatic ground fault location equipment quickly pinpoints potential ground fault conditions, typically 50 k ohms and below.

Bender Inc. offers such passive insulation monitoring devices as the IREH150P, which continually monitors the insulation resistance to ground of connected equipment when in the idle, or switched-off state. The IREH150P continuously monitors the insulation value of electrical standby equipment. When the insulation value declines to an unacceptable level, due to moisture ingress, excessive dust, cable damage, or carbon build-up, the IREH150P will alarm. It is suitable for one or three-phase systems, up to 66V, 50-400 Hz. There are two response levels of 500K or 100 Mega ohm. The LED lamp will automatically alarm on fault detection. It is a compact unit and needs no external wiring or cabling.

For free literature completely describing the marine applications of Bender, Inc., products,

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SeaArk Marine has built a national reputation for consistently producing superior quality workboats for use throughout the world. With more than 30 years of experience, SeaArk has grown to become the largest producer of small and intermediate aluminum workboats in the U.S.

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Our new Protector Series offers the same tough, quality construction and versatile design you'll find in all SeaArk workboats. Plus, our durable boats offer even greater value because they're made with aluminum. Aluminum offers strength, durability, economy of operation and low maintenance.

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With a Protector, you get both strength and high speed maneuverability that gives you the edge in rough waters.

Isn't it time you put the world class standards of a Protector on your side? For in-depth information on SeaArk's Protectors, call (501) 367-9755 for our new color catalog.

*One of ten 4013-V Protectors built for the El Salvador Navy is used for 24-hour patrol missions.*

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ZF marine transmissions redefine the meaning of options; features include trolling valves, trailing pumps, PTO's, cast iron or light alloy housings, diagonal offset shafts, single & double reduction designs, identical performance in forward or reverse, mounting brackets, & transmission lube oil filters.

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Artist's conception of the Seabulk America after her reconstruction at a U.S. shipyard.

## Hvide Shipping Requests Bids From 14 U.S. Shipyards For Tanker Reconstruction

Hvide Shipping, Inc., Ft. Lauderdale, Fla., recently announced that it has requested bids for the construction of a 41,000-dwt U.S.-flag chemical tanker, the M/V Seabulk America, from 14 major U.S. shipyards.

The construction would involve

the rebuilding of the wrecked tanker M/V Fuji, utilizing the forebody of the Barge 4102 (the Oxy Producer, built by Avondale Shipyards in 1981). Reconstruction work necessary to bring the M/V Fuji up to first class U.S.-flag standards will be accomplished, including all new

crews' quarters, unattended engine room, and up-to-date electronics systems. Major modifications to the barge's existing cargo systems will result in a state-of-the-art U.S.-flag chemical tanker offering capability of transporting a wide variety of products.

According to Hvide Shipping, after reconstruction, the Seabulk America will have an overall length of 685 feet, maximum molded beam of 99 feet and design draft of 36 feet 6 inches. She will be powered by a Mitsubishi-built Sulzer 7RND68 diesel engine, rated at 11,550 at 150 rpm.

With her cargo tank area subdivided into 18 tanks (including three for slops), the Seabulk America will have a capacity of 137,000 barrels in her stainless steel center cargo tanks and an additional 161,000 barrels of capacity in her inorganic zinc-coated wing tanks. Each tank will be served by its own hydraulically operated cargo pump and line, thereby enabling the vessel to carry virtually any liquid petroleum or chemical cargo. Her cargo-handling equipment will include Frank Mohn (Framo) deepwell hydraulic pumps.

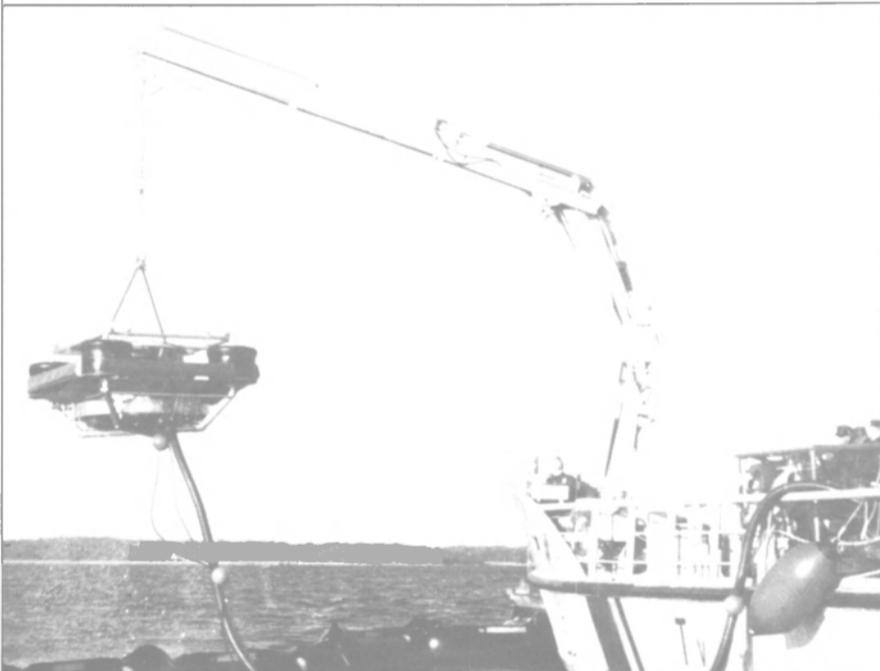
To be classed by the American

Bureau of Shipping, 1 E "Chemical Carrier," "Oil Carrier" and MS, ACCU, the Seabulk America will be manned by a complement of 18. The design of the vessel has been developed in coordination with C.R. Cushing & Co., Inc., naval architects and marine engineers, New York, N.Y., with delivery of the reconstructed vessel scheduled for the latter part of this year.

Hvide Shipping believes that the Seabulk America construction order is the first commercial tanker order placed with a U.S. shipyard since 1984. Hvide expects that the completed Seabulk America will be eligible for Jones Act trading privileges under the provisions of the wrecked vessel statute.

J. Erik Hvide, president and chief operating officer of Hvide Shipping, stated that the Seabulk America would join Hvide's Seabulk Magnachem in transporting a wide variety of chemicals in the U.S. coastwise trade. Hvide's affiliate, Seabulk Ocean Systems Corporation, Houston, Texas, will utilize the Seabulk America and Seabulk Magnachem and other chartered tonnage.

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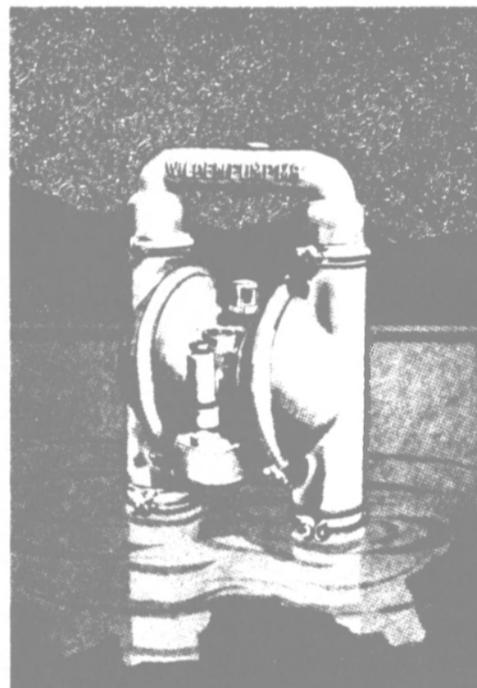
Hiab models include: 23, 31, 60, 80, 120, 180, and 200 Seacranes.

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\*patent pending

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Up to 90% solids and over 250' heads are no problem for the WILDEN PUMP. Our double diaphragm design cuts velocity in pump to half total discharge velocity. The most abrasive slurries are handled with ease since there are no seals and no metal to metal contact.

Volume is infinitely variable by controlling air flow to pump, from a few gallons per minute to over 14,000 gallons per hour. No pressure relief valve is required and the pump can run dry indefinitely.

Wilden pumps are available with wetted parts in aluminum, cast iron, stainless steel, and Hastelloy C. Non-wetted parts in aluminum or cast iron. Elastomers in Neoprene, Buna N, Nordel, Viton<sup>®</sup>, and Teflon<sup>®</sup>.

### WILDEN AIR OPERATED DOUBLE DIAPHRAGM PUMPS offer

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Maritime Reporter/Engineering News

## Furuno Introduces New 14-Inch Weatherfax



Furuno's new 14-inch Weatherfax.

Furuno's new FAX-214 is not only one of the most advanced weatherfax receivers now on the market, but it is also capable of being a fully functional NAVTEX system with the addition of an optional built-in receiver/processor.

As a fax receiver, the FAX-214 produces high-quality and very high resolution weather charts and satellite images with eight gray-scale levels on high contrast 14-inch white thermal recording paper. There is no unpleasant carbon dust, nor do you have to deal with crinkled wet paper readouts. The FAX-214 has a built-in synthesized receiver that covers all known 80-160 kHz and 2-25 MHz fax frequencies in 100-Hz steps, and offers microprocessor controlled scanning for any station or combination you may desire to program into the unit. Other standard features include keep-alive batteries to protect data in memory and a timer so that the unit may be activated at preprogrammed times.

In the NAVTEX mode, the FAX-214 will automatically store normal incoming messages for printout after the fax traffic is complete. For urgent messages, however, the unit automatically overrides the fax mode and prints the messages immediately.

An optional active antenna coupler is available that covers standard fax as well as the 518-kHz NAVTEX transmissions.

Operation is from a 10-40 VDC universal power supply, drawing just 15 W on standby and 27 W operating.

For more information and free literature on the new 14-inch Weatherfax from Furuno,

Circle 48 on Reader Service Card

## Free StartMaster Literature Describes User Benefits Of Air Starting Systems

StartMaster of Marion, Ohio, is offering free literature describing their air starting systems which, according to the manufacturer, provide dependable starting for heavy trucks, buses, mining machinery, oil and gas drilling equipment, marine

engines, compressor packages, generator sets, and off-highway vehicles.

The literature discusses the major advantages air starters offer over electric starters, viz: twice the cranking power; superior performance in cold weather; better "hot start" capability; spark-free operation; fewer batteries, less maintenance; and longer starter life.

Also pointed out is that all StartMaster models are available as "SuperStarters," a new, friction-resistant configuration that adds even more durability and service life and eliminates the need for lubrication to the air motor, thus eliminating all maintenance costs associated with in-line and automatic lubricators. SuperStarters are readily available from production. To order merely

add the letter "L" after the standard part number.

Photographs, cutaway and dimensional drawings complement the text, and a model selection list, complete with part numbers, is included.

For further information and free copies of the literature on air starting systems from StartMaster,

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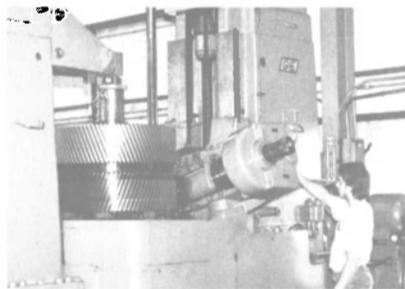
# Gear Up With The Company That Won't Let You Down In A Clutch.

## HALEY GEARS

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At **MARINE GEARS, INC.**, our gears are designed, engineered, and fabricated by a team of dedicated professionals.

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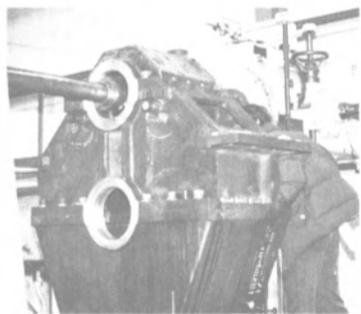


**MARINE GEARS, INC.** manufactures several series of gears, including gear mounted clutch, hydraulic clutch, and flywheel mounted clutch. Our engineers stand ready to design a gear from the ground up to

meet your pre-existing foundation requirements. Gears are available in the 1000-4500 HP range.

Outstanding service and parts departments back up every sale. Our service crews have traveled the world and solved

every possible problem you may encounter. We know gears from the inside out and our service crews are available wherever and whenever you need help.



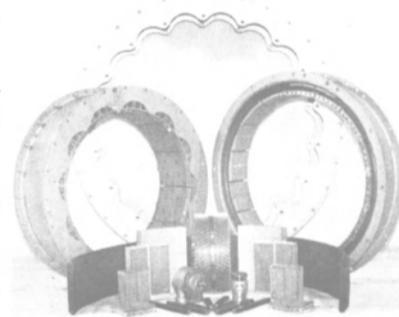
## HALEY CLUTCHES

HALEY Clutches are available in two series:

TR Series are dimensionally interchangeable with all pneumatic marine clutches. They are precision balanced and feature an 8-ply torsionally resilient air gland tube. The rim and tube combination provides perfect friction shoe positioning for clutch engagement. TR Series Clutches and Drums are in stock for immediate delivery — new or remanufactured in 26", 30", 35", 40", and 48" sizes. The TR Series Clutches are available in 10 sizes (singles & duals) from 800 HP to 6250 HP.

TB Series Clutches are designed to meet the needs of exceptional high-torqued applications and are dimensionally interchangeable with all torque bar series marine clutches. The hard rubber coated torque bars and induction hardened torque bar side plate holes reduce maintenance. The TB Series is available in new or remanufactured sizes 20TB60 through 42TB65, 14TB10 through 32TB10. Replacement parts for 1200 Series also available.

All HALEY Clutches feature aluminum shoes for reduced weight and higher strength. Rubber materials of outstanding quality are supplied by the **ARMSTRONG RUBBER CO.** Any HALEY Clutch is available with asbestos free friction materials.



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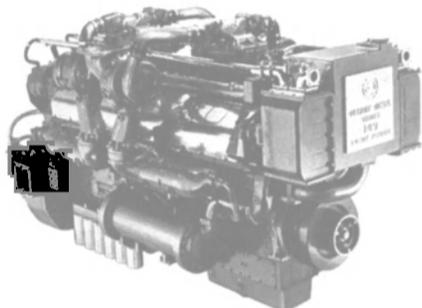
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# PROPULSION UPDATE

## Detroit Diesel Introduces Three New High-Speed Engines

—Free Brochures Available—

Detroit Diesel Corporation recently introduced three new generation high-speed engines for the passenger boat, pleasure craft and marine market—the 16V-149TI, 6-71TI and 3000 Series.



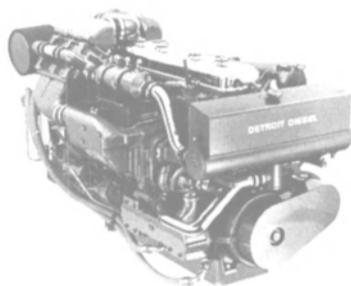
Detroit Diesel Marine 16V-149TI

The 16V-149TI is a 16-cylinder, 149-cubic-inch-per-cylinder engine capable of producing 2,200 bhp at 2,100 rpm.

The 149 engine was first introduced in 1967. Over 15,000 Series 149 engines are in service in generator sets, and marine and other applications.

The engine is designed with a twin-section, wet-lined cylinder block, two-piece overhead camshaft, a unit fuel-injection system, individual cylinder heads, iron crosshead pistons, crankcase access plates, a

two-piece crankshaft and quad water-cooled exhaust manifolds and turbochargers.



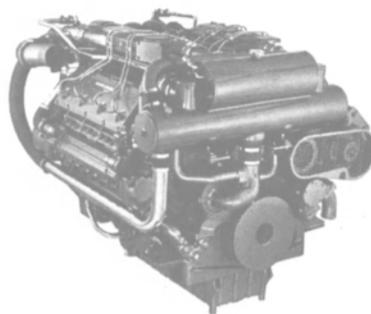
Detroit Diesel Marine 6-71TI

The new 6-71 is a six-cylinder, 71-cubic-inch-per-cylinder engine available in ratings of 485 bhp at 2,500 rpm and 450 bhp at 2,500 rpm.

Introduced in 1938, the new re-engineered marine 6-71 engine incorporates design input from Detroit Diesel distributors servicing the marine industry. The marinized engine consists of over 80 newly designed components with a total investment of \$800,000.

The turbocharged and intercooled engine is designed to be compact, and features a high capacity 24-plate oil cooler, water-cooled ex-

haust system, a maxi-bypass blower, a new cooling system, crankcase breather collection system, a unit fuel injection system and engine controls, and low-speed performance enhancements.



Detroit Diesel Marine 3000 Series

The 3000 Series marine engine represents the first product offered from the joint collaboration between Detroit Diesel Corporation and Perkins Engine Company, Ltd. The 3000 Series is a pre-production marine engine which will be available in limited quantities beginning this fall.

The 3000 Series is a direct injection, four-cycle, eight-cylinder Vee configuration engine and is rated at 800 bhp at 2,400 rpm. The engine fits into the Detroit Diesel marine engine line-up, thus strengthening DDC's marine engine offering.

Turbocharged and intercooled, the engine has a freshwater heat exchanger, freshwater cooled exhaust manifolds and seawater charge cooling. Oil is freshwater cooled and the engine's filters are "spin-on" for ease of maintenance.

Furthermore, DDC also announced it would market a full line of marine gears for all Detroit Diesel pleasure craft engines. The gears will be manufactured for DDC under an agreement with Twin Disc Corporation.

Headquartered in Racine, Wis.,

Twin Disc is a leading independent designer and manufacturer of heavy-duty off-highway power transmission equipment. Founded in 1918 to manufacture farm tractor clutches, now Twin Disc's product line consists of hydraulic torque converters; power-shift transmissions; marine transmissions; universal joints; gas turbine starting drives; power take-offs; mechanical, hydraulic and pneumatic clutches; fluid couplings; planetary gear reduction equipment and control systems.

The new marine gear and engine program will provide benefits to both boatbuilders and boat owners.

Working together with Twin Disc, Detroit Diesel will now be able to offer the boatbuilder a complete power package that provides the optimum match of engine and gear suited to the particular application. The match will optimize performance, durability and reliability and gives the boatbuilder a cost-effective package.

The boat owner will be able to obtain service for either the engine or the marine gear at the same service location. All authorized Detroit Diesel Corporation distributors and marine dealers will have the technical training and replacement parts necessary to perform marine gear maintenance and repairs.

The agreement provides a two-year parts and labor warranty administered entirely by Detroit Diesel Corporation. Extended service coverage will also be available. Traditionally, gear and engine manufacturers administer their own warranty, with varying terms of duration and coverage.

For free brochures detailing the new DDC engines and new marine gear/engine package offered by Detroit Diesel,

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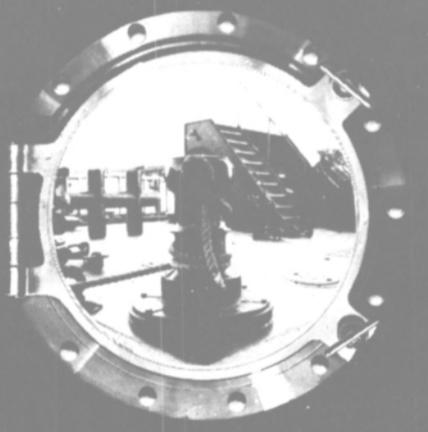
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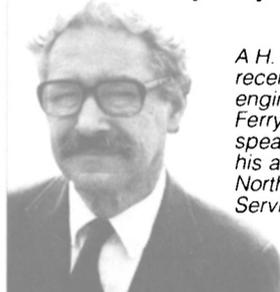
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## ASNE DAY '89

### 'Naval Engineering Into The Next Century'

May 4-5, Washington, D.C.

ASNE Day, the annual event consisting of a technical program and exhibition of the American Society of Engineers (ASNE), will be held at the Omni Shoreham Hotel, Washington, D.C., on May 4-5.

The theme of the event is "Naval Engineering into the Next Century." The subjects of the first session, which will set the theme for the event, will include the changing maritime strategy, the Navy's role in space, emerging command and control in combined forces, and a forward look into sealift and maritime strategy. ASNE has structured the initial events this year during the first morning session to allow

focus on crucial matters confronting the nation and the sea services while subsequently retaining traditional sessions, as well, which present a diversity of fine technical papers.

The society, which was formed in 1888 to publish a professional journal and provide a forum for exploring and exchanging new ideas and technology while sharing experiences in naval engineering, represents over 8,500 military and civilian naval engineers. About 200 exhibitors will be on hand to demonstrate their products and services.

Traditionally the best-attended annual Navy show, ASNE Day primarily focuses on naval vessels—

ship design, ship machinery, equipment and engineering advances.

The topical issues addressed on Thursday morning, May 4, will command the attention of those actively engaged in the formation, implementation and operation of seagoing forces.

At Thursday's luncheon in the Regency Ballroom of the Omni Shoreham Hotel, the "Jimmie" Hamilton Award and Solberg Award will be presented to their respective recipients.

The "Jimmie" Hamilton Award is presented annually to the author(s) of the original technical paper of the greatest value and significance to

naval engineering and published in the Naval Engineers Journal during the year.

The Solberg Award is given to the U.S. citizen who has made the most significant contribution to naval engineering through personal research carried out during or culminating in the three-year period ending in the year of consideration.

Following Friday morning's sessions, Dr. **Edward Teller**, will give the Isherwood Lecture in the Regency Ballroom from 11-11:45 a.m. on "An Unsinkable Navy."

At 2 p.m. on May 5, ASNE's annual business meeting for all

members will be held in the Palladian Room. Later that evening, the annual banquet will be held in the Regency Ballroom. The event will be presided over by Dr. Alfred Skolnick, president of the society.

For further information about attending ASNE Day '89, contact: ASNE, 1452 Duke Street, Alexandria, Va. 22314; telephone: (703) 836-6727; and fax: (703) 836-7491.

### Call for Papers For ASNE Day '90

Papers on all naval engineering-related subjects are welcome for submission for ASNE Day '90. Possible topics include battle force engineering; combat systems; automated logistics; acquisition management; maintenance; quality assurance; configuration control; aviation and space systems; artificial intelligence; communications; ship construction practices; directed energy effects; propulsion innovations; ship design; auxiliary systems; high performance craft; CAD/CAM; electronics design/production; electromagnetic engineering and marine engineering.

A one-page abstract should be submitted prior to July 1, 1989. Drafts are due prior to September 1, 1989. All abstracts or questions concerning papers for ASNE Day '90 should be directed to: ASNE Day Papers 1990, Capt. James E. Grabb, USCG (Ret.), Naval Engineers Journal, 1452 Duke Street, Alexandria, Va. 22314; telephone: (703) 836-6727; and fax: (703) 836-7491.

### ASNE DAY TECHNICAL PROGRAM

Thursday, May 4

#### Session 1

9 a.m.—This opening session will deal in topical issues facing the Navy, the American Society of Naval Engineers and the naval engineering profession.

Moderators: Rear Adm. Wayne E. Meyer, USN (Ret.) and Capt. George P. Nanos Jr., USN assistant.

#### Technical Keynote

Capt. Clark Graham, USN.

The subjects will include the changing maritime strategy, Navy's role in space, emerging command and control in combined forces, and a forward look into sealift and the marine industry. The speakers will be the nation's leaders in these dynamic, rapidly changing subjects. This session will set the theme of Naval Engineering Into the Next Century for ASNE Day 1989.

#### Reception

Noon-12:30 p.m.—Luncheon for ticket holders in Regency Ballroom and Regency Gallery.

12:30-2:15 p.m.—Presentation of Jimmie Hamilton and Solberg Awards in the Regency Ballroom.

Luncheon address by Vice Adm. Peter M. Hekman, USN, Commander, Naval Sea Systems Command.

#### Palladian Room-Session 2A

Moderators: Rear Adm. Robert L. Johnson, USCG, and Capt. James W. Kehoe, USN (Ret.), assistant.

2:30 p.m.—"Review and Analysis of Ship Maneuverability Criteria," by Volf Asinovsky.

3:15 p.m.—"The Airwake of a DD-963 Class Destroyer," Lt. Cmdr. Michael K. Johns, USN, and J. Val. Healy.

4 p.m.—"Ship Roll Stabilization in the

U.S. Navy," by A. Erich Baitis and Louis V. Schmidt.

#### Diplomat Room—Session 2B

Moderators: Robert P. Fulton and Lt. Cmdr. John G. Tuttle, USCG, assistant.

2:30 p.m.—"Calculating Operational Availability of Intermittent-Use Ship Systems," by Daniel H. Conway and Adam R. Poh.

3:15 p.m.—"Technical Documentation Management in the Era of the Paperless Ship," by John Chickering and Williams B. Quails

4 p.m.—"The Surface Ship Maintenance Challenge," by Kenneth S. Jacobs and Ber-

tram D. Smith Jr.

#### Blue Room—Session 2C

Moderators: Rear Adm. Roger B. Horne Jr., USN, and James L. Corder, assistant.

2:30 p.m.—"Central Power Generation System for U.S. Coast Guard Polar Icebreakers," by Larry Wilkerson and Clayton W. Davis.

3:15 p.m.—"Integrated Ship Machinery Systems Revisited," by William J. Levedahl.

4 p.m.—"The Evolution of Gas Turbine Control Systems Aboard U.S. Navy Ships," by Cmdr. John H. Preisel, USN.

5-6 p.m.—Cocktail party for all registrants

in the Exhibit Hall and Ambassador Room.

Friday, May 5

#### Palladian Room—Session 3A

Moderators: Rear Adm. John T. Hood, USN, and James F. Horton, assistant.

8:30 a.m.—"Small Craft Survivability Enhancement through the Use of Smoke," by John R. Kennedy, Michael Ringwald, Carl W. Lohkamp and Lt. Cmdr. James R. Schonberger, USN.

9:15 a.m.—"Clear: An AI System Developed to Assist Equipment Arrangements on Warships," by H. Harry Zhou, Barry G. Silverman and Joel Sinkol.



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## ASNE Day Preview

(continued)

**10 a.m.**—"Control of the Topside Electromagnetic Environment," by **Charles J. Gallagher**.

### Diplomat Room—Session 3B

Moderators: **Harlan T. Haller** and **Allen G. Ford**, assistant.

**8:30 a.m.**—"SFS—The 55-Knot Sealift Ship," by **John O. Bowden** and **Gerald D. Embry**.

**9:15 a.m.**—"Estimation of Structural Service Life of Ships," by **Bilal M. Ayyub**, **Gregory J. White** and **Edward S. Purcell**.

**10 a.m.**—"Comparative Assessment of U.S. and Foreign Buoy Tenders," by **Capt. James W. Kehoe**, USN (Ret.), **Kenneth S. Brower** and Lt. Cmdr. **John G. Tuttle**, USCG.

### Blue Room—Session 3C

Moderators: **William B. Morgan** and **Bruce H. Barber**, assistant.

**8:30 a.m.**—"Full Scale Trials of Pre-Swirl Vanes and Modified Propellers," by **Robert D. Sedat**, **Edward S. Purcell**, and **Carol L. Hervey**.

**9:15 a.m.**—"Hydrodynamic Evaluation of Hull Forms with Popped Propellers," by **Bill Cheng**, **Janet S. Dean**, **Ronald W. Miller** and **William L. Cave III**.

**10 a.m.**—"The Navy, Industry and Diesel Propulsion for Submarines, 1914-1940," by **Gary E. Weir**.

**11-11:45 a.m.**—ISHERWOOD LECTURE, **Regency Ballroom**

"An Unsinkable Navy," by **Dr. Edward Teller**.

**2 p.m.**—Annual Business Meeting, **Palladian Room**, for all members.

### Palladian Room-Session 4A

Moderators: Rear Adm. **Malcolm MacKinnon III**, USN and **Gary L. Jayne**, assistant.

**2:45 p.m.**—"Risk Management in Repair Work Decision Making," by **Bertram D. Smith Jr.**

**3:30 p.m.**—"Standard Hardware Acquisition and Reliability Program," by **Larry W. Weaver**.

### Diplomat Room—Session 4B

Moderators: **William N. Sweet** and **Philip Covich**, assistant.

**2:45 p.m.**—"Technology Gaming," by **Dale K. Pace** and **David D. Moran**.

**3:30 p.m.**—"A Methodology for Quantifying Interoperability," by **Dennis R. Mensh**, **Robert S. Kite** and **Paul H. Darby**.

### Blue Room—Session 4C

Moderators: Rear Adm. **William C. Wyatt**, USN (Ret.) and **Charles M. Atchison**, assistant.

**2:45 p.m.**—"Naval Lithium Battery Safety Program," by **Stanley C. Shuler** and **John W. Moranski**.

**3:30 p.m.**—"Current-Limiting Protector for Low-Voltage High-Current Applications," by **Franklin T. Emery** and **Jiing L. Wu**.

### Blue Room

**7-8 p.m.**—ASNE RECEPTION—for banquet ticket holders.

### Regency Ballroom

**8 p.m.**—Banquet—presided over by **Dr. Alfred Skolnick**, president, ASNE. Black tie or dinner dress uniform required. Presentation of awards.

### ASNE 89 Exhibitors

Company	Booth
Acurex	S4
AD TECH	49
Aeronav Labs	43
Aeroquip	229
Alco Power	137
Alcoa/Tre	167
Allison Gas Turbine	244
Alpha Laval Separator	215
American Bureau of Shipping	50
American Management Systems	250
Appleton Marine	13
Aqua-Chem	59
Avon/Imtra	140
Bath Iron Works	112
BMT International	247
CACI-Federal	98
Carleton Technologies	71
Casde	246
Caterpillar	125
CDI Marine	51
Centrico	232
Cincinnati Gear	34
Cla-val	67
CMB Industries-Bailey	131
Colt Industries-	
Fairbanks Morse	55
Combination Pump Valve	15
Combustion Engineering	108
Computervision	177
CISCO	6
Contromatics	176
Crane Resistoflex	153
CTI Industries	174
Cummins Engine	118
Cunningham Marine Hydraulics	111
David Taylor NSRDC	192
Dayton Brown	142
Deere	87
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Navales	58
Diversified Technologies	242
Doane, L.C.	210
Dresser Pump/Worthington	16
Dresser-Rand	218
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Dynabrade	—
EES/Eltech	—
EG&G Sealol	72
Envirovac	65
ENVISIONS	73
Falk	239
Federal Resources	21
Fire Tech Rep	94
Flagg, Stanley G.	117
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AND LINES . . .

COSTING YOU  
MONEY?



### THIS IS THE SOLUTION!

- The principle that enables the SternGuard Propeller-mounted Line Cutter to cut so effectively is the "screw action" created as the propeller turns—winding line or nets into the blades, instantly cutting before allowing entanglement.
- Extensive engineering and testing have gone into the development of the SternGuard Line Cutter, assuring trouble-free performance.
- The SternGuard Line Cutter will cut ahead or astern and will be manufactured to fit your propeller.
- Eliminates oil seal damage caused by fouled nets and lines.
- No loss of speed or efficiency.
- Reduce loss of hire due to net and line fouled propeller.
- Shaft mounted cutters also available for 7/8" to 8" diameter shafts.

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**Airframe/Aerospace Wire and Cable**  
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ASNE Booth # 102-103  
Circle 293 on Reader Service Card

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## ASNE '89

### EXHIBITION GUIDE

The following is a brief overview of the companies that will be exhibiting at the ASNE '89 exhibition as of press time. A short description of the products and services each firm will have on display is included along with the booth where they will be appearing.

For further information on

any of the companies included in the this guide, circle the reader service number under the company's name.

#### ABS

##### Circle 128 on Reader Service Card

The American Bureau of Shipping (ABS) classifies all types of vessels and marine structures. In addition, ABS offers certification of equipment and systems, marine survey and consultancy services and structural, mechanical and electrical analyses. The classification society will display at **Booth 50**.

#### AD TECH

##### Circle 129 on Reader Service Card

Exhibiting at **Booth 49**, Advanced Technology (AD TECH) offers professional services support to the Navy, including engineering, computer, management and logistics services.

#### AERONAV

##### Circle 110 on Reader Service Card

Aero Nav Laboratories, Inc., displaying at **Booth 43**, conducts structure-borne noise, shock, explosion-proof and vibration testing in air and marine applications. The company also has the facilities to conduct acceleration force simulations, RFI/EMI interfer-

ence testing and climatic environment simulations.

#### AEROQUIP

##### Circle 130 on Reader Service Card

Aeroquip Corporation has over 40 years' experience designing and producing NAV-SEA-approved marine and MIL-Spec hose lines, fittings, couplings, adapters and other fluid power products and stores tie-downs. Aeroquip will exhibit at **Booth 229**.

#### ALCO POWER

##### Circle 131 on Reader Service Card

Alco Power supplied Paxman Valenta diesel engines for the U.S. Coast Guard's new

# MAXIM<sup>®</sup>



### DESALINATORS FOR THE ENTIRE MARINE AND OFFSHORE INDUSTRY.

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wide range of standard designs or let MAXIM design a unit to meet your specific requirements. Also available are reliable MAXIM heat exchangers and deaerators.

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Fax 318-868-1701.

Circle 222 on Reader Service Card

Nuclear submarine equipped with Maxim desalinator  
General Dynamics Photo

## Beard

INDUSTRIES, INC.

See us at OTC, May 1-4, 1989  
Houston, TX, Booth #6012

## ASNE Day Preview

(continued)

Island Class patrol boats. The company will exhibit at **Booth 137**.

### ALLISON GAS TURBINE

#### Circle 198 on Reader Service Card

Allison Gas Turbine manufactures marine gas turbine engines for naval and commercial marine applications. The company will exhibit at **Booth 244**.

### AMS

#### Circle 199 on Reader Service Card

American Management Systems (AMS) provides life-cycle planning and support to the U.S. Navy. AMS will display at **Booth 250**.

### APPLETON MARINE

#### Circle 168 on Reader Service Card

At **Booth 13**, Appleton Marine, Inc. will display its full line of deck machinery including cranes, mooring, constant tension, towing, underway replenishment and anchor windlasses and capstans.

### AQUA-CHEM

#### Circle 132 on Reader Service Card

Designers and manufacturers of Navy desalting systems. The firm will exhibit at **Booth 59**. Aqua-Chem offers reverse-osmosis, vapor compression, flash type and plate or submerged tube varieties.

### AVON

#### Circle 133 on Reader Service Card

Avon Rubber Ltd., a leading manufacturer and developer of the Rigid Inflatable Boat (RIB) for military and commercial applications, will exhibit at **Booth 140**.

### BAILEY

#### Circle 169 on Reader Service Card

Bailey offers a full line of control valves, strainers and polyjets for marine and industrial applications. The firm will exhibit at **Booth 131**.

### BATH IRON WORKS

#### Circle 170 on Reader Service Card

The lead shipyard for the design and construction of the Arleigh Burke Class (DDG-51) destroyer, Bath Iron Works, with yards in Bath and Portland, Maine, will exhibit at **Booth 112**.

### CARLETON

#### Circle 171 on Reader Service Card

On display at **Booth 71** will be designed, manufactured and supplied by Carleton Technologies Inc. Carleton offers pneumatic and life support components to military standards and specifications.

### CASDE

#### Circle 134 on Reader Service Card

Casde Corporation, a naval architecture and marine engineering firm, will exhibit at **Booth 246**.

### CATERPILLAR

#### Circle 135 on Reader Service Card

At **Booth 125**, Caterpillar will exhibit information on the 3600 family of marine diesel engines. Caterpillar diesel engines have a power range of 75 to 6,655 hp and in generation set configurations, 50 to 5,250 kw.

### CDI MARINE

#### Circle 136 on Reader Service Card

CDI Marine Company has provided engineering and design services to the marine industry since 1973. Supports both Navy and commercial shipbuilders from nationwide offices. They will exhibit at **Booth 51**.

### CENTRICO

#### Circle 172 on Reader Service Card

Westfalia Separator, Centrico, Inc., offers Westfalia Oil-Purifying Centrifuges, available in both automatic self-cleaning and non-automatic designs. Products from the company will be displayed at **Booth 232**.

### CINCINNATI GEAR

#### Circle 111 on Reader Service Card

The Cincinnati Gear Company, exhibiting at **Booth 34**, produces large Carburized, Hardened and Precision Ground (CHG) gears designed and manufactured to AGMA class 15 level. The firm reports that CHG gears in a large marine drive can result in a quieter gearbox that is 35 percent smaller and lighter than one of conventional through-hardened design.

### CISCO

#### Circle 112 on Reader Service Card

Consolidated Industrial Skills Corporation (CISCO) will be located at **Booth 6**. The firm is able to provide a skilled workforce where needed, including shipfitters, pipefitters, welders, electricians, outside and inside machinists, etc.

### CLA-VAL

#### Circle 137 on Reader Service Card

CLA-VAL, displaying at **Booth 67**, offers a full line of valves for fluid applications, from salt-water to lube oil.

### COLT-FAIRBANKS MORSE

#### Circle 138 on Reader Service Card

Colt Industries, Fairbanks Morse Engine Division, features Fairbanks Morse opposed piston and Colt-Pielstick diesel engines for ship propulsion and power generation applications. Colt-Pielstick engines are featured on T-AO-187 Class Navy oilers and LSD Class ships. The company will exhibit at **Booth 55**.

### COMBINATION PUMP VALVE

#### Circle 114 on Reader Service Card

Located at **Booth 15**, Combination Pump Valve will exhibit its soft-seated valves with interchangeable cartridges, relief valves for 1,000-6,000 PSI service, and flat-faced, O-ring sealed fittings for 3,000 and 6,000 PSI service.

### COMBUSTION ENGINEERING

#### Circle 173 on Reader Service Card

Will display at **Booth 108**. Combustion Engineering is a leading manufacturer of marine steam generating equipment which includes main propulsion boilers, auxiliary boilers and waste heat boilers.

# Only Westfalia's On-Demand Purifying System Removes All the Dirt and Water from your 1010 fuel.

Whether your fuel oil is heavier or lighter than water, only Westfalia's two-stage Unitrol/Secutrol system assures maximum purity even under widely varying feed conditions. Here's why.

## On-demand vs timer-controlled de-sludging.

Other oil purification systems are timer-controlled, which means they de-sludge only at pre-set intervals. If heavy seas stir-up the "muck" in your fuel tanks, the intervals may be too far apart. Result: dirt gets into your day tank and fuel lines, causing disastrous engine wear... In the Westfalia system, a unique sensor continuously monitors de-sludging intervals, discharging dirt and water only when the sediment-holding compartment is full. So there's no chance for dirt to get into your fuel because of too few de-sludgings — or fuel wastage from too-frequent de-sludgings.

And either stage can be operated independently, thus adding even more flexibility.

## No water in fuel lines.

With Westfalia's unique design, there's no way water can enter the clean fuel line. With other systems, this is a distinct possibility.

## Reliable purification.

No matter how wide the variations in density or feed characteristics, you get the most efficient, reliable purification. Automatically, with no need for gravity disc changes.

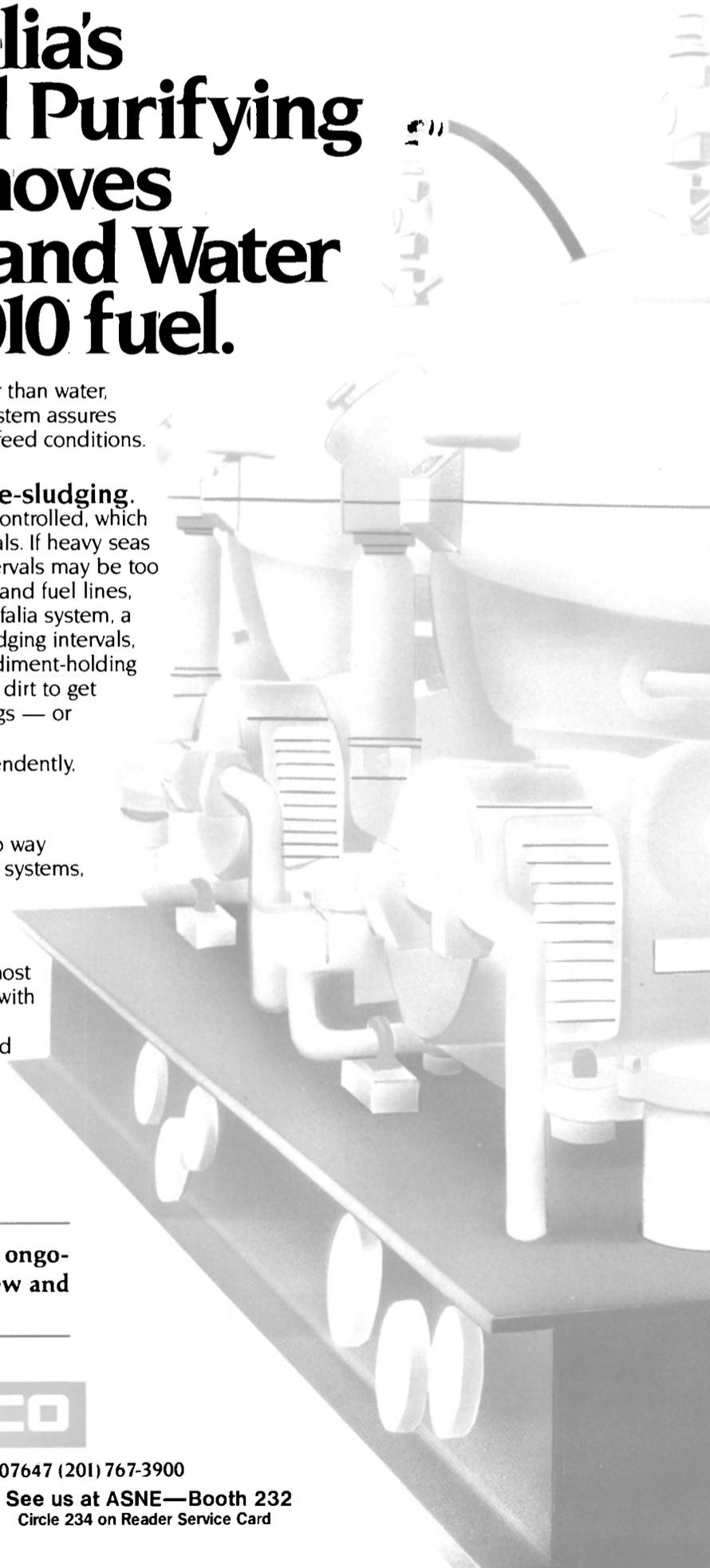
For maximum reliability we've substituted simplicity for complex electronics and intricate circuitry. Thus Westfalia purifiers are more dependable and much less likely to break down than other separators. Contact Centrico for the Westfalia system you need.

Westfalia is proud to be part of the ongoing construction program of the new and growing U.S. Navy.



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See us at ASNE—Booth 232  
Circle 234 on Reader Service Card



#### CRANE

##### Circle 139 on Reader Service Card

Crane Resistoflex Defense and Specialty Systems will display at **Booth 153**. Some of the products offered by the company include teflon hose assemblies, Dynatube fittings, Stress-Free fittings, gear-powered unions and self-aligning fittings.

#### CUMMINS ENGINE

##### Circle 140 on Reader Service Card

At **Booth 118**, Cummins Engine will display its latest diesel engines for marine applications. The company offers a wide range of propulsion engines from 76 to 9,000 hp, and auxiliary generator sets ranging from 30 to 6,600 kw.

#### CUNNINGHAM

##### Circle 200 on Reader Service Card

At **Booth 111**, Cunningham Marine Hydraulics will display Tenfjord steering gears and Hele-Shaw pumps. Besides manufacturing these products, Cunningham also overhauls and services them.

#### CTI INDUSTRIES

##### Circle 100 on Reader Service Card

CTI Industries, in **Booth 174**, will offer information on its complete condenser, heat exchanger and coating services.

#### DAYTON T. BROWN

##### Circle 141 on Reader Service Card

At **Booth 142**, Dayton T. Brown will offer information on its standardization, performance and environmental testing, quality assurance and inspection and test facility design services.

#### DEERE

##### Circle 174 on Reader Service Card

John Deere is the developer of the Stratified Charge Omnivorous Rotary Engine (SCORE). Information on the SCORE power plant and its maritime applications will be available at **Booth 87**.

#### DESIGNERS & PLANNERS

##### Circle 142 on Reader Service Card

The marine engineering and naval architectural firm of Designers & Planners, Inc. will display at **Booth 149**.

#### DEUTSCH METAL

##### Circle 175 on Reader Service Card

At **Booth 128**, Deutsch Metal Components will display pyplok®, an innovative, cost-reducing method for joining shipboard piping.

#### DIVERSIFIED TECHNOLOGIES

##### Circle 143 on Reader Service Card

The naval architecture and marine engineering firm of Diversified Technologies will exhibit at **Booth 242**.

#### DYNABRADE

##### Circle 101 on Reader Service Card

Dynabrade, Inc., will exhibit its air-powered, abrasive belt machine, Dynaflex®, along with its other abrasive power tools.

#### EG&G SEALOL

##### Circle 113 on Reader Service Card

Will be exhibiting at **Booth 72**. Products offered by EG&G Sealol include water or oil-lubricated stern tube seals for surface ships; pump seals; boiler feed pump seals (bellows type); welded metal bellows seals and devices; and in-line high-pressure check valves for nuclear submarines.

#### ENVIROVAC

##### Circle 145 on Reader Service Card

Will display at **Booth 65**. Envirovac offers Coast Guard-certified vacuum sewage systems and ORCA sewage treatment systems.

#### ENVISIONS

##### Circle 176 on Reader Service Card

Engineering Visions, Inc. (ENVISIONS) supplies technical services for military and commercial ship alteration support. The firm will display at **Booth 73**.

#### FALK

##### Circle 144 on Reader Service Card

Falk Corporation offers marine propulsion gears, power take-off drives, high-quality steel castings, continuous slip clutches and gear monitoring equipment. Falk will exhibit at **Booth 239**.

#### FMC-NAVAL SYSTEMS

##### Circle 115 on Reader Service Card

Located at **Booth 33**, FMC's Northern Ordnance Division is the producer of the MK 41 Vertical Launching System and MK 45 Lightweight Gun, both AEGIS weapon systems. FMC also supports the U.S. Navy with Digital Communications Networks, the Surface Warfare Overhaul and Repair Depot (SWORD) facility and Submarine Combat Systems.

#### GE

##### Circle 146 on Reader Service Card

General Electric will exhibit its capabilities in naval propulsion, ship service and control systems at **Booths 224-229, 230-235**. GE has worked with the U.S. Navy propelling and powering its ships for over 100 years.

#### GE-RCA AEROSPACE

##### & DEFENSE

##### Circle 116 on Reader Service Card

RCA Electronic Systems Department, located at **Booth 27**, is the producer of the AEGIS weapon system and is the AEGIS Combat System Engineering Agent for both the CG-47 Class cruiser and the DDG-51 Class destroyer ships. RCA performs system analysis, advanced development, design, software development, manufacturing, test logistics planning and support, training and operation maintenance.

#### GIBBS & COX

##### Circle 178 on Reader Service Card

A leading naval architecture and marine engineer for the Navy, Gibbs & Cox has prepared detail design drawings of over 40

classes of surface ships in its 60-year history. The company will display at **Booth 113**.

#### HEMISPHERE DEVELOPMENT

##### Circle 179 on Reader Service Card

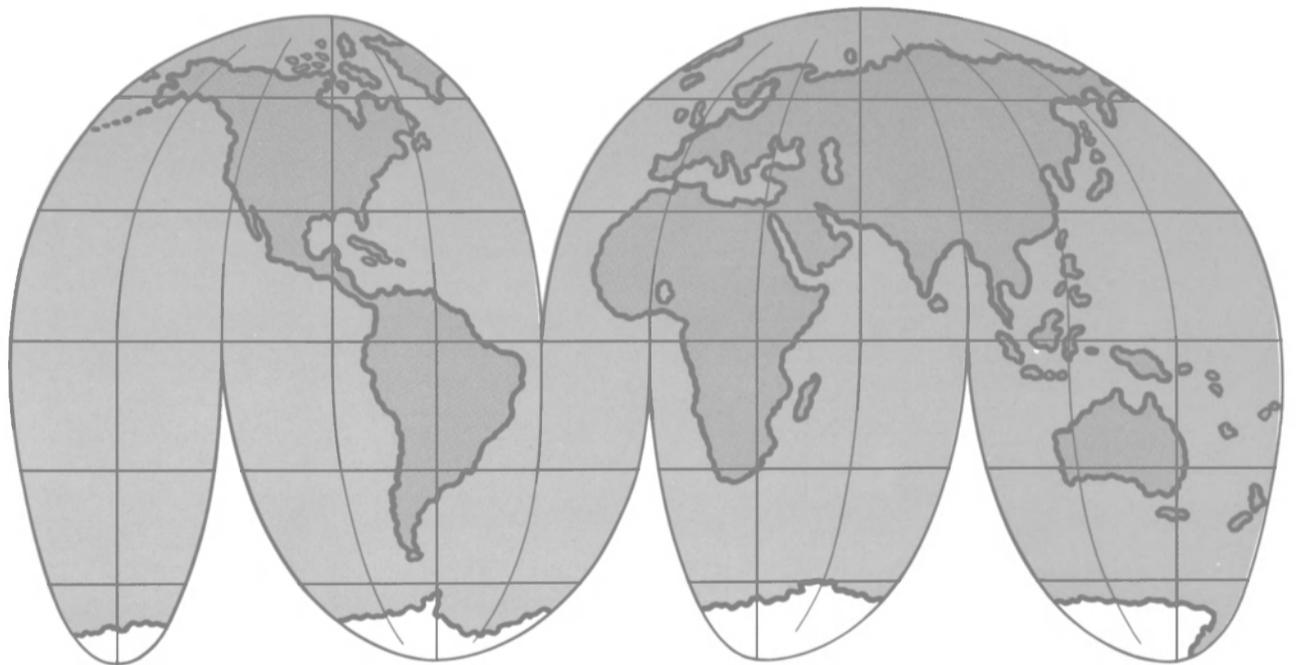
Hemisphere Development Services, Inc., is a technical representative for marine, port and material handling systems. The company will display at **Booth 127**.

#### HENSCHEL

##### Circle 147 on Reader Service Card

Henschel, a unit of General Signal, offers ship control, interior communication and monitoring systems. Henschel will exhibit at **Booth 63**.

# ALLISON MARINE ENGINES HAVE BEEN PROVEN ONLY IN THE AREAS CAREFULLY MARKED IN BLUE.



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aviation and industrial experience. Our engines also have high maintainability plus worldwide support from our extensive parts and service network.

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See us at ASNE Booth 244  
Circle 321 on Reader Service Card

## ASNE Day Preview

(continued)

### HEXCEL

#### Circle 148 on Reader Service Card

Hexcel, manufacturers of joiner bulkhead panels, false deck panels, composite materials and structures, radar componentry and welded or brazed Honeycomb structures, will display its products at **Booth 220**.

### HI-TEST LABS

#### Circle 180 on Reader Service Card

On display at **Booth 103**, will be the services of Hi-Test Laboratories, Inc. The firm specializes in high-impact shock testing, environmental vibration testing, structure-borne noise testing, etc.

### IMO DELAVAL

#### Circle 117 on Reader Service Card

Located at **Booth 8**, Imo Delaval Inc., has been a leading supplier of systems and components to the U.S. Navy for more than 50 years. Products offered by the company and its divisions include level and flow instrumentation, screw pumps for fuel, hydraulic and transfer service, electronic and mechanical controls, propulsion turbines and gears, surface condensers for marine applications, original equipment parts, repair and service, and spectrometers and optical night-vision instruments.

### INDAL TECHNOLOGIES

#### Circle 181 on Reader Service Card

At **Booth 81**, Indal Technologies Inc. will display some of its products that have made it a leading designer and manufacturer of shipborne helicopter support systems.

### INGALLS SHIPBUILDING

#### Circle 182 on Reader Service Card

Ingalls Shipbuilding, Inc., has been designing and building ships for the U.S. Navy for over 40 years. The firm will display its capabilities at **Booth 133**.

### JERED BROWN BROTHERS

#### Circle 102 on Reader Service Card

Jered Brown Brothers offers a full line of motion control and material-handling equipment. Jered Brown Bros. equipment has been utilized on such U.S. Navy ships as FFG, T-AO, LHD, LSD, MCM, CVN and CG classes. The company will exhibit at **Booth 85**.

### JJH

#### Circle 183 on Reader Service Card

JJH, Inc., a naval architecture and marine engineering firm, will exhibit at **Booth 108**.

### J.J. MCMULLEN

#### Circle 150 on Reader Service Card

John J. McMullen Associates, naval architects, marine engineers and transportation consultants, will be exhibiting at **Booth 219**.

### KEYSTONE VALVE

#### Circle 149 on Reader Service Card

Valve manufacturer Keystone Valve will have materials on display at **Booth 146**.

### KINGSBURY

#### Circle 118 on Reader Service Card

Kingsbury, Inc., located at **Booth 7**, are designers and manufacturers of fluid film thrust, journal, and magnetic bearing systems. The company has been manufacturing bearings since 1912.

### LQ MOFFITT

#### Circle 187 on Reader Service Card

L.Q. Moffitt, Inc., markets BFGoodrich Cutless\* marine bearings. A subsidiary of BFGoodrich, LQ Moffitt will exhibit at **Booth 123**.

### LUBRIQUIP

#### Circle 119 on Reader Service Card

Lubriquip will be exhibiting at **Booth 14**. The company offers automatic centralized lube systems. The firm is currently involved in such U.S. Navy programs as SSN-688 and SSN-616 Class submarines, DDG-51 Class destroyers, CVN-63 Class carriers and AOE-6 Class support ships.

### MAGNETEK ALS

#### Circle 185 on Reader Service Card

Magnetek ALS, at **Booth 135**, will display some of its latest products including the ALS standard family of Pulse-synthesized, Advanced Conversion Equipment (PACE) and ALS Fault Isolation Unit (FIU).

### MAROTTA SCIENTIFIC

#### Circle 186 on Reader Service Card

Marotta Scientific Controls, Inc., Montville, N.J., offers conformance, support and

service in specialty valves and systems for precise fluid control. The company will be exhibiting at **Booth 75**.

### MMA

#### Circle 103 on Reader Service Card

The Marine Machinery Association is a nonprofit, tax-exempt trade organization serving suppliers of machinery and equipment to the U.S. Navy. The association will be displaying at **Booth 243**.

### MSA

#### Circle 151 on Reader Service Card

Mine Safety Appliances Company (MSA), exhibiting at **Booth 46**, offers a wide variety of breathing apparatus and instruments.

### MTU

#### Circle 152 on Reader Service Card

MTU of North America, at **Booth 151**, will display information on its marine diesel engines, which range in power from 600 to 10,000 hp for ship propulsion and auxiliary applications aboard frigates, corvettes, submarines, patrol boats, etc.

### MURDOCK ENGINEERING

#### Circle 120 on Reader Service Card

Located at **Booth 1**, Offers Murdock Lockseal Rubber Insert Sound Isolation Couplings, used aboard SSN-688 and Trident submarines. Murdock Lockseal RISIC units have been used by the U.S. Navy since 1974.

### NELSON ELECTRIC

#### Circle 153 on Reader Service Card

Nelson Electric will exhibit at **Booth 52**. The company offers cost-saving Multi-Cable Transit Multi-Plugs, approved by the U.S. Navy and Coast Guard for maritime usage. The units allow passage of cable or pipe through bulkheads and decks while providing fire, water, air-tight integrity.

### NEWPORT NEWS SHIPBUILDING

#### Circle 188 on Reader Service Card

Newport News Shipbuilding & Drydock Co., Newport News, Va., is a leading U.S. shipbuilder and ship-repairer. The yard is currently constructing Nimitz CVN-68 Class aircraft carriers and SSN-688 Class attack submarines for the U.S. Navy. The company will display its capabilities at **Booth 83**.

### NKF ENGINEERING

#### Circle 154 on Reader Service Card

At **Booth 154**, NKF Engineering, Inc. will offer information on its research and engineering services for naval and commercial marine customers.

### NORTHWEST MARINE SERVICES

#### Circle 104 on Reader Service Card

Northwest Marine Services, located in **Booth 159**, offers sales and service on Liaen propellers, Hamilton Jet propulsion units, Appleton Marine cranes and deck machinery, Panish controls products, and NW Marine marine controls.

### OMNITHRUSTER

#### Circle 121 on Reader Service Card

Located at **Booth 16**, Omnithruster Inc. offers the modular thruster system. Omnithruster ship control systems utilize individual module thrusters of up to 3,000 hp in any combination to produce desired forward or lateral net thrust. The firm's 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.

### ORI GROUP

#### Circle 122 on Reader Service Card

Located at **Booth 10**, The ORI Group, an Atlantic Research Company, offers support for efforts related to all aspects of U.S. warfare systems.

### PARKER HANNIFIN

#### Circle 155 on Reader Service Card

Marine products offered by the Parker Hannifin Corporation include Parker Hydra-Power rotary actuators, Parker filters for pressure, suction and return line applications and Parker Seal-Lok O-ring face seal hose and fittings. Parker will display its products at **Booth 68**.

### PAXMAN DIESEL

#### Circle 105 on Reader Service Card

Paxman Diesels Limited will exhibit its die-

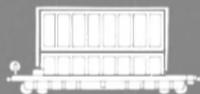
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Circle 216 on Reader Service Card

sel engines, ranging in power from 892 to 2,112 kw in 12- and 16-cylinder models, at **Booth 165**.

#### PPG INDUSTRIES

##### Circle 156 on Reader Service Card

PPG Industries, Inc., offers Pitt-Char® 200 fire protective cable coating. The company will be exhibiting at **Booth 48**.

#### PRC

##### Circle 189 on Reader Service Card

Products, Research & Chemical Corporation (PRC) is a leading manufacturer of coatings, sealants and adhesives for the marine industry. The firm will display at **Booth 121**.

#### PSRY

##### Circle 157 on Reader Service Card

Portland Ship Repair Yard (PSRY) is one of the largest, most modern facilities on the West Coast. The yard has the capabilities for both naval and commercial work. PSRY will offer information at **Booth 143**.

#### RAYCHEM

##### Circle 123 on Reader Service Card

Raychem will be exhibiting at **Booth 8**. The firm is a leader in conductive polymer technology, and heat-shrinkable plastics and metals.

#### RESOURCE CONSULTANTS

##### Circle 158 on Reader Service Card

Located at **Booth 45**, Resource Consultants, Inc. (RCI), offers engineering, acquisition management, and technical service to Navy clients.

#### ROLLS-ROYCE

##### Circle 190 on Reader Service Card

Rolls-Royce will display information on its marine diesel engines for Navy and commercial applications at **Booth 100**.

#### M. ROSENBLATT

##### Circle 159 on Reader Service Card

M. Rosenblatt & Son, Inc., is a leading naval architecture and marine engineering firm. The company will display at **Booth 61**.

#### SAI

##### Circle 160 on Reader Service Card

SAI Technology, a division of Science Applications International Corporation, is a leader in the design, manufacture and integration of Mil-Spec displays in command and control systems for shipboard and submarine missile launch systems, shipboard machinery and submarine reactor plant control systems for cruise missile launch systems. The company will exhibit at **Booth 240**.

#### SCIENTIFIC MANAGEMENT ASSOCIATES

##### Circle 161 on Reader Service Card

At **Booth 227**, Scientific Management Associates will offer information on its capabilities in naval ship design and development.

#### SEACOAST ELECTRIC

##### Circle 191 on Reader Service Card

Will display at **Booth 96**. Seacoast Electric offers military wire, cable and electrical supplies. Some of its products include shipboard cable, terminal and stuffing boxes, circuit breakers and motor controllers.

#### SEACOR

##### Circle 192 on Reader Service Card

Systems Engineering Associates Corporation (SEACOR), on display at **Booth 213**, offers management, training, technical support, ILS and marine engineering services.

#### SIFCO

##### Circle 124 on Reader Service Card

Located at **Booth 3**, SIFCO Selective Plating, a division of SIFCO Industries, Inc., offers its Dalic Process of Selective (Brush) Electroplating for naval/marine applications.

#### SOLAR TURBINES

##### Circle 162 on Reader Service Card

Solar Turbines Inc., a subsidiary of Caterpillar, Inc., supplies high-efficiency gas turbine generator sets and propulsion units. The company has been working with the U.S. Navy for over 50 years. Solar Turbines will exhibit at **Booth 147**.

#### SPD TECHNOLOGIES

##### Circle 125 on Reader Service Card

SPD Technologies, exhibiting at **Booth 31**, is one of the largest producers of military circuit breakers, and a prominent supplier of other electronic controls for electrical systems protection in the U.S. and abroad.

#### SPERRY MARINE

##### Circle 193 on Reader Service Card

Sperry Marine, Inc., a subsidiary of Newport News Shipbuilding, is a world leader in marine systems technology. Sperry Marine products will be on exhibit at **Booth 77**.

#### SSS CLUTCH

##### Circle 163 on Reader Service Card

SSS Clutch Company supplies the SSS-Tosi Reversing System for the new U.S.

Navy AOE-6 ship program. The company will display at **Booth 156**.

#### STANLEY G. FLAGG

##### Circle 177 on Reader Service Card

A subsidiary of Amcast Industrial Corporation, Stanley G. Flagg & Co., Inc., offers a complete line of fittings, flanges and unions to commercial and naval specifications for marine applications. Pressure classes range from 200 to 3,000 pounds.

On exhibit at **Booth 117**, will be literature and displays of the complete Flagg-Flow product line. Flagg Marine Division managers will be available to answer technical questions and discuss commercial and naval applications. The firm's "Successful Braz-

ing with Flagg-Flow" videotape will also be available for viewing.

#### STEWART & STEVENSON

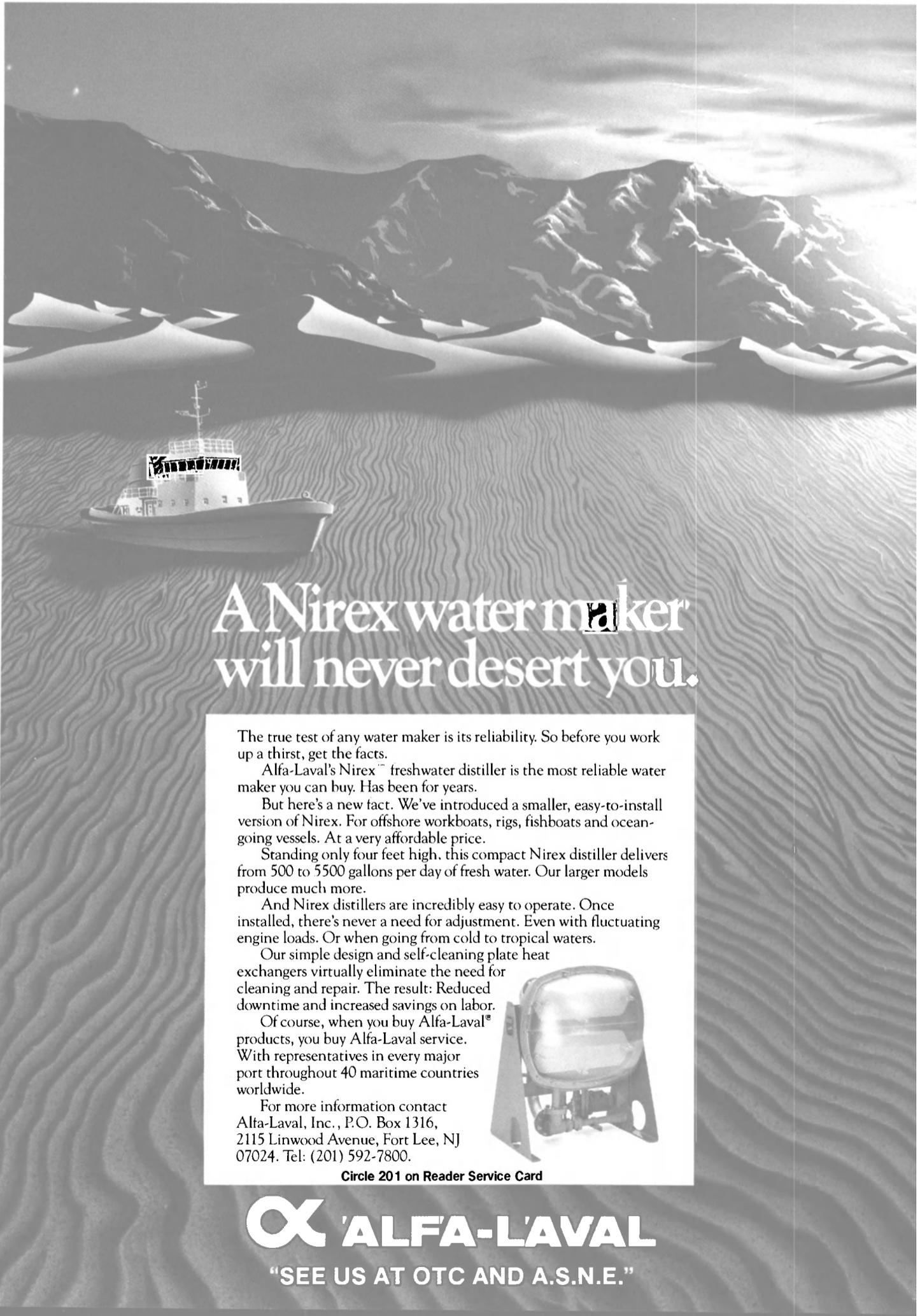
##### Circle 194 on Reader Service Card

Stewart & Stevenson Services, Inc., offers the Local Operator Control Panel (LO-COP), designed to reduce the need for operator involvement in the normal operation of the ship service gas turbine generator. The company will provide information on its products at **Booth 106**.

#### TANO MARINE

##### Circle 106 on Reader Service Card

Tano Marine Systems, Inc., offers shipboard monitoring and control. Tano Marine will display in **Booth 211**.



**A Nirex water maker  
will never desert you.**

The true test of any water maker is its reliability. So before you work up a thirst, get the facts.

Alfa-Laval's Nirex™ freshwater distiller is the most reliable water maker you can buy. Has been for years.

But here's a new fact. We've introduced a smaller, easy-to-install version of Nirex. For offshore workboats, rigs, fishboats and ocean-going vessels. At a very affordable price.

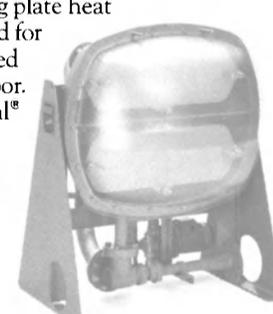
Standing only four feet high, this compact Nirex distiller delivers from 500 to 5500 gallons per day of fresh water. Our larger models produce much more.

And Nirex distillers are incredibly easy to operate. Once installed, there's never a need for adjustment. Even with fluctuating engine loads. Or when going from cold to tropical waters.

Our simple design and self-cleaning plate heat exchangers virtually eliminate the need for cleaning and repair. The result: Reduced downtime and increased savings on labor.

Of course, when you buy Alfa-Laval® products, you buy Alfa-Laval service. With representatives in every major port throughout 40 maritime countries worldwide.

For more information contact Alfa-Laval, Inc., P.O. Box 1316, 2115 Linwood Avenue, Fort Lee, NJ 07024. Tel: (201) 592-7800.



**Circle 201 on Reader Service Card**

**ALFA-LAVAL**

**"SEE US AT OTC AND A.S.N.E."**

## ASNE Day Preview

(continued)

### TECHNICAL PRODUCTS

#### Circle 164 on Reader Service Card

Exhibiting at **Booth 60**, Technical Products & Precision Manufacturing Company offers Tech-O-Seal valves and fittings. Tech-O-Seal valves are soft-seated, low-torque and leak-proof, for a wide variety of fluid and gas uses. Tech-O-Seal fittings are available in a wide range of end connections.

### TELEFLEX

#### Circle 195 on Reader Service Card

Teleflex Inc. will be exhibiting at **Booth 79**. The company offers the Motorized Remote Valve Actuator, which has been approved for U.S. Naval surface ships.

### UNIFIED INDUSTRIES

#### Circle 165 on Reader Service Card

Unified Industries Incorporated offers a wide variety of engineering, technical and management support to the U.S. Navy. The company will be exhibiting at **Booth 124**.

### VERNITRON CONTROLS

#### Circle 126 on Reader Service Card

Located at **Booth 30**, Vernitron Controls, a division of Vernitron Corporation, designs and produces standard QPL synchros.

### VITRO

#### Circle 166 on Reader Service Card

A leader in systems and software engineering, Vitro Corporation will display its capabilities at **Booth 231**.

### WALTER KIDDE

#### Circle 184 on Reader Service Card

Walter Kidde, a leading manufacturer of

Navy Halon fire extinguishing systems, will exhibit at **Booth 108**.

### WAUKESHA BEARINGS

#### Circle 196 on Reader Service Card

Waukesha Bearings supplies oil and water lubricated tailshaft bearings and seals, line-shaft bearings, thrust bearings, propeller installation and removal systems and stern tube and seal lubrication system components. The company will exhibit at **Booth 102**.

### WORTHINGTON

#### Circle 127 on Reader Service Card

Worthington Pumps will be exhibiting at **Booth 16**. The company offers a broad line of centrifugal, rotary and reciprocating pumps for the marine industry. Pumps for cargo-handling, circulating, ballasting, dry-dock dewatering, main feed and engine room auxiliaries.

### XOMOX

#### Circle 167 on Reader Service Card

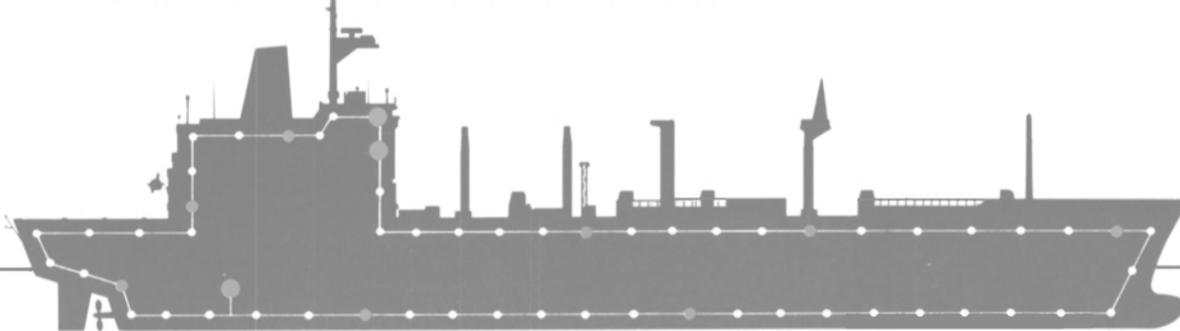
At **Booth 214**, Xomox Corporation will display its Turline ball, plug and butterfly valves, Pliaxseal high performance butterfly valves and Matryx actuators.

### ZURN

#### Circle 197 on Reader Service Card

Information on high performance couplings and clutches for marine propulsion applications offered by Zurn Industries, Inc., will be available at **Booth 92**.

# WELL-CONNECTED.



## THE RELIABLE CONNECTION FOR SHIPBOARD AUTOMATION.

TANO. It's the name that means reliability in shipboard monitoring and control systems. For nearly 25 years, TANO has been a leader in designing and manufacturing marine automation systems, as well as providing worldwide field service.

Systems from TANO are at work on more than 240 ships — including Navy assault ships and frigates, military and commercial tankers and Coast Guard cutters. Soon, futuristic TANO systems based on Ada software will sail aboard Coast Guard Icebreakers.

From the machinery plant to the bridge, from cargo control to damage control, stay in control with TANO. The reliable connection for shipboard automation.



MARINE SYSTEMS, INC.

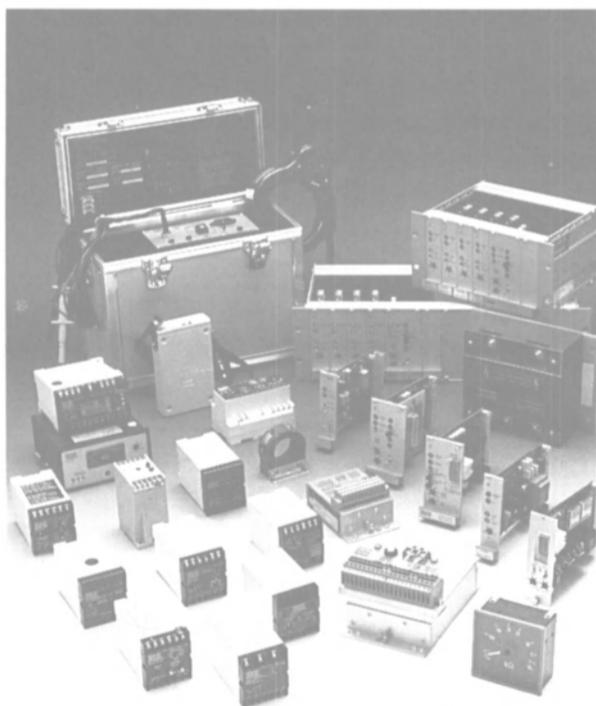
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Visit the TANO booth at ASNE — #211-212

Circle 335 on Reader Service Card

## THE LATEST CONCEPT IN EARLY GROUND FAULT DETECTION:

# INSULATION MONITORING



**BENDER INCORPORATED** introduces the most comprehensive line of insulation monitoring and ground fault location equipment available in the US. Ground faults pose serious threats to sophisticated electrical systems and their equipment. Bender insulation monitors and ground fault location equipment offer an early and effective means of locating impending ground faults.

**BENDER** monitors are used for the continuous active monitoring of grounded, ungrounded and high-resistance-grounded power systems. They may also be used for the passive monitoring of idle and/or standby equipment. These units operate by continuously monitoring the insulation level from the Megohm ranges down. Metered output of ohmic readings and adjustable alarm levels ensure that any ground leakage current is automatically indicated.

**BENDER** offers a wide range of device selection depending upon the application. Insulation monitors can operate on AC 1PH/3PH systems, pure DC systems, and AC networks with large DC components, 50-400Hz, 24V, 48V, 110V, 220V, 660V, all the way up to 10,000V.

**BENDER** monitors provide essential predictive maintenance information and reduce ground fault location to a simple task.....**Bender finds faults before systems fail!**

19 East Central Avenue  
Paoli, PA 19301 (800) 356-4266



Visit us at OTC '89...Booth 5036

Circle 221 on Reader Service Card

## \$360,129 Contract Awarded To Bender For NOAA Ship Repair

Bender Shipbuilding & Repair Co., Inc., Mobile, Ala., was recently awarded a contract worth \$360,129 for the drydocking and repair of the National Oceanic and Atmospheric Administration (NOAA) ship Oregon II, a 170-foot by 34-foot fisheries research vessel based in Pascagoula, Miss.

For free literature detailing the full service yard of Bender Shipbuilding,

Circle 99 on Reader Service Card

## INTERCON To Build Cranes For U.S. Navy's T-ACS Crane Ship Program

Intercontinental Engineering-Manufacturing Corporation (INTERCON) of Kansas City, Mo., has been awarded additional options for the manufacture of pedestal type, twin-cargo cranes for the U.S. Navy's Auxiliary Crane Ship (T-ACS) program. This contract covers a lot of four cranes for installation aboard crane ships T-ACS-9 and -10. The cranes will be delivered to Norfolk Shipbuilding & Drydock Corporation (NORSHIPCO), Norfolk, Va., for incorporation in the containership conversion effort.

INTERCON completed its contract for six of these twin cranes in late 1988 for T-ACS-7 and -8. Tampa Shipyards, Tampa, Fla., is handling the conversion and reactivation of the ships.

The Model TG3637 Twin Cargo Crane consists of two cranes on a single pedestal. Each crane is rated 30 long tons at 121-foot outreach. Hoisting capacity, in dual mode operation, is 60 long tons at 121-foot outreach. All functions of the cranes are electro-hydraulically powered.

For free literature detailing the cranes offered by INTERCON,

Circle 83 on Reader Service Card

Maritime Reporter/Engineering News



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1/2	*	*							
5/8	*	*	*						
3/4	*	*	*	*	*				
7/8	*	*	*		*				
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1 3/4	*	*	*	*	*	*	*		
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4 1/2						*	*		
5						*	*	*	*
5 1/2						*	*		
6						*	*	*	*
FINISH NUTS	*	*	*	*	*	*	*	*	*
THREADED ROD	*	*	*	*	*	*	*	*	*
FLAT WASHERS	*	*	*	*	*	*	*	*	*
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Circle 280 on Reader Service Card

## Free Pamphlet Details How To Buy DoD Surplus Personal Property

A free 50-page pamphlet entitled "How To Buy Surplus Personal Property from the United States Department of Defense" is being offered free by the Defense Reutilization and Marketing Service.

The pamphlet assists individuals, or businesses desiring to buy sur-

plus personal property of the Department of Defense. It answers questions concerning such property, and how it may be purchased.

The pamphlet is divided into three main sections. The first section contains such information as the locations of Defense Reutilization and Marketing Offices, conditions of sale, methods of sale, successful bidders list, types of property sold, etc. The second section, "Classes of Property Sold," briefly

describes the recyclable materials and usable property available. Along with the brief description, a class number is assigned to each item.

Some of the recyclable materials available range from waste oil to bullet and projectile metals.

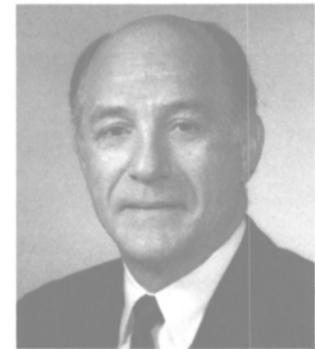
Items of particular interest to the marine industry described in the usable property section include: fire control equipment, aircraft carriers, battleships, cruisers, destroyers and

submarines (all for scrapping only), landing ships, minesweepers, transport and passenger vessels, ferries, tugs, repair ships, lighters and barges, and small craft, ship and boat propulsion components, deck machinery and other miscellaneous ship, marine and commercial fishing equipment, as well as diesel and steam engines and gas and steam turbine engines.

For a free copy of the pamphlet from the Defense Reutilization and Marketing Service,

Circle 91 on Reader Service Card

## JJH Names John Dachos To Management Staff Of Cherry Hill, N.J., Office



Capt. John Dachos

**Richard R. Hopkins**, president of JJH Inc., recently announced the appointment of Capt. **John Dachos**, USN (ret.), to the management staff of the Cherry Hill, N.J., office.

Prior to joining JJH Inc., Capt. **Dachos** was the commanding officer of the Naval Ship Systems Engineering Station, the Navy's principal test and evaluation and in-service engineering center for hull, mechanical and electrical systems located in Philadelphia, Pa., where he was responsible for the successful testing and evaluation of major ship systems. Capt. **Dachos** also held the position of principal assistant to NavSea Ship Directorate, where he played a major role in establishing organization to manage major ship acquisition of amphibious, auxiliaries, mine warfare and Military Sea Lift Command vessels and their life cycle support.

Capt. **Dachos** will interface with JJH Inc.'s various offices located in Cherry Hill, Crystal City, Va., Portsmouth, Va., and Bath, Maine.

## St. Louis Area River Traffic High Despite 1988 Drought

Despite the 1988 drought and resulting low water, cargo tonnages passing through the St. Louis area came within 2 million tons (MT) of setting a new all-time record. Statistics compiled by the U.S. Army Corps of Engineers show 79.2 MT passing through Locks 27, at Granite City, in 1988. This is just 1.6 MT below the record of 80.8 MT, set in 1983.

# Good as Gold?

# Better.



Our 'gold' Caprolan industrial nylon was very, very good.

Our 'white' Caprolan 2000 nylon is even better. The high strength and super versatility make Caprolan 2000 ideal for marine ropes.

And our special proprietary treatment -- SeaGard™ offers optimum wet strength for fishing, docking, anchoring, towing and mooring lines.

In fact, Caprolan 2000 is so good that Allied Fibers is switching over *all* industrial nylon production from 'gold' to 'white'.

Caprolan 2000 nylon -- not good as gold -- better!

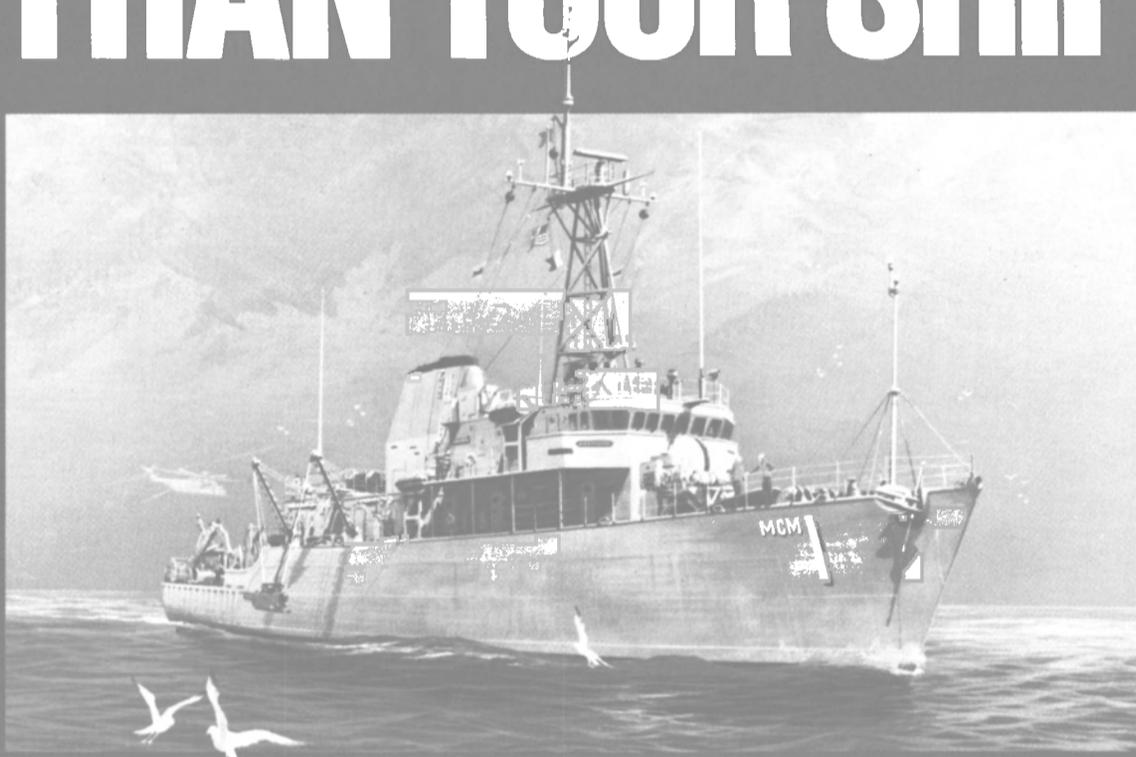
For more information on how Caprolan 2000 SeaGard can help you manufacture high strength, versatile marine ropes, contact: Mr. Earl B. Clark, Allied-Signal, Inc., 1411 Broadway, New York, NY 10018.

## Allied Fibers



Circle 205 on Reader Service Card

# THERE'S ONLY ONE THING THAT WORKS HARDER THAN YOUR SHIP



There's one name in the Marine Industry you can definitely count on. Action Threaded Products.

At Action, you'll find an extremely service-oriented group of marine specialists with over 30,000 stainless steel and non-corrosive fasteners IN STOCK! And not just the easy stuff either! We inventory all the tougher, hard-to-find items you need...long bolts, lag screws and many many more. While others talk, Action delivers. With fully computerized facilities in Illinois, Georgia, Minnesota and Wisconsin, you won't experience all that annoying "down" time while you wait

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Stainless Steel, Brass, Silicon Bronze, Nickel-Copper...we have them all! We can also custom manufacture our quality fasteners to suit your every need. And, of course, our Quality Assurance Procedures are in accordance with MIL-I-45208A.

So, for further information on a particular need, call us at (312) 599-9300 or fax us your drawings at (312) 735-4637. You'll wonder why you waited so long to take Action!

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Circle 203 on Reader Service Card

## Flagg Offers Catalog On Complete Line Of Fittings And Flanges

Stanley G. Flagg & Co. of Stowe, Penn., is offering a free catalog of its complete line of fittings and flanges for the marine industry.

Flagg-Flow fittings have been a

part of the Flagg product line for over 50 years. During that time, the company's engineers have developed a complete line of bronze fittings for brazed joints.

The Flagg-Flow family includes a complete line of straight size and reducing fittings; unions; flanges (commercial and Navy) and high pressure fittings. Many of the high pressure fittings are designed for

ultrasonic testing.

The fittings are used extensively by the naval shipbuilding and repair industry. They are currently used in many of the critical piping systems throughout the ship. They include water (salt and potable), air lines, refrigeration systems, oil lubrication and vacuum lines.

Nearly all of Flagg's fittings are designed in strict accordance with

military specifications.

The catalog lists part numbers and specifications for the entire line of Flagg-Flow fittings. Photographs and diagrams are also included.

In addition, Flagg offers an instructional video and booklet, "Successful Brazing with Flagg-Flow." These cover step-by-step techniques for every aspect of brazing, from proper fit and clearance to cooling and cleanup.

For more information on Flagg's complete line of fittings and flanges, and the instructional videotape,

Circle 44 on Reader Service Card

**Command Decisions  
in the Palm of  
Your Hand with  
Standard's  
Total Capability  
Marine Handhelds!**



6-Watt Horizon/Hand-Phone 6



5-Watt HX500 Series Intrinsic Safe

Standard's marine handhelds are the professional's choice where communications performance and reliability count. On the bridge, on deck, under tow—even in potentially explosive environments—there's a Horizon marine handheld suited to your exact need.

### **New Horizon Hand-Phone 6 Boasts 6 Watts of Talk Power**

The new Horizon Hand-Phone 6 is a portable shipboard communications center with 6 Watts transmit power, microprocessor function control and 65 U.S., International or Canadian channels with user-programmable high-speed scan—plus 10 expansion channels for use when they are allocated by the FCC. Other features include instant access of channel 16 and weather channels, large LCD backlit display, transmit light, and twist-off, rechargeable battery pack, and a complete line of accessories.

### **Choose the Intrinsic Safe HX500 Series for Potentially Hazardous Environments**

The HX500 Series handhelds, available in VHF and UHF, are rated intrinsically safe by Factory Mutual for use in most explosive environment applications. The versatile HX500 features transmit power output to 5 Watts, up to 6 channels, and a rechargeable battery pack.

More information on the complete line of Horizon marine handhelds is available from your authorized Standard Communications Marine Products dealer, or by contacting:

**Standard  
Communications**

P.O. Box 92151  
Los Angeles, CA 90009-2151  
213/532-5300

...the marine radio people

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VHF Marine Radios • Marine Instruments • Reverse Osmosis Desalinators

Circle 337 on Reader Service Card

## Si-Tex Names Nelson Vice President, Finance



Charles G. Nelson

Ted Hansford, president and CEO of Si-Tex Marine Electronics, Inc., recently announced that Charles G. Nelson has been named vice president of finance.

According to Mr. Hansford, Mr. Nelson will be responsible for all financial reporting to the parent corporation, annual budgets, financial statement preparation and governmental reporting.

Si-Tex is a major supplier of marine radars, depth sounders, lorans, satnavs, electronic charting systems, marine stereos and VHF radios. It is a wholly owned subsidiary of Koden Electronics Co., Ltd., Tokyo, Japan. Koden purchased the company in July of this year from Smith Industries, Ltd., London, England.

## Stanich New Marine Chartering Broker For QMC, Inc.

QMC, Inc., Houston, Texas, recently announced that Cliff R. Stanich, has joined the company as a marine chartering broker. Mr. Stanich is a business graduate from Texas A&M University and has worked in the mortgage lending industry prior to his appointment.

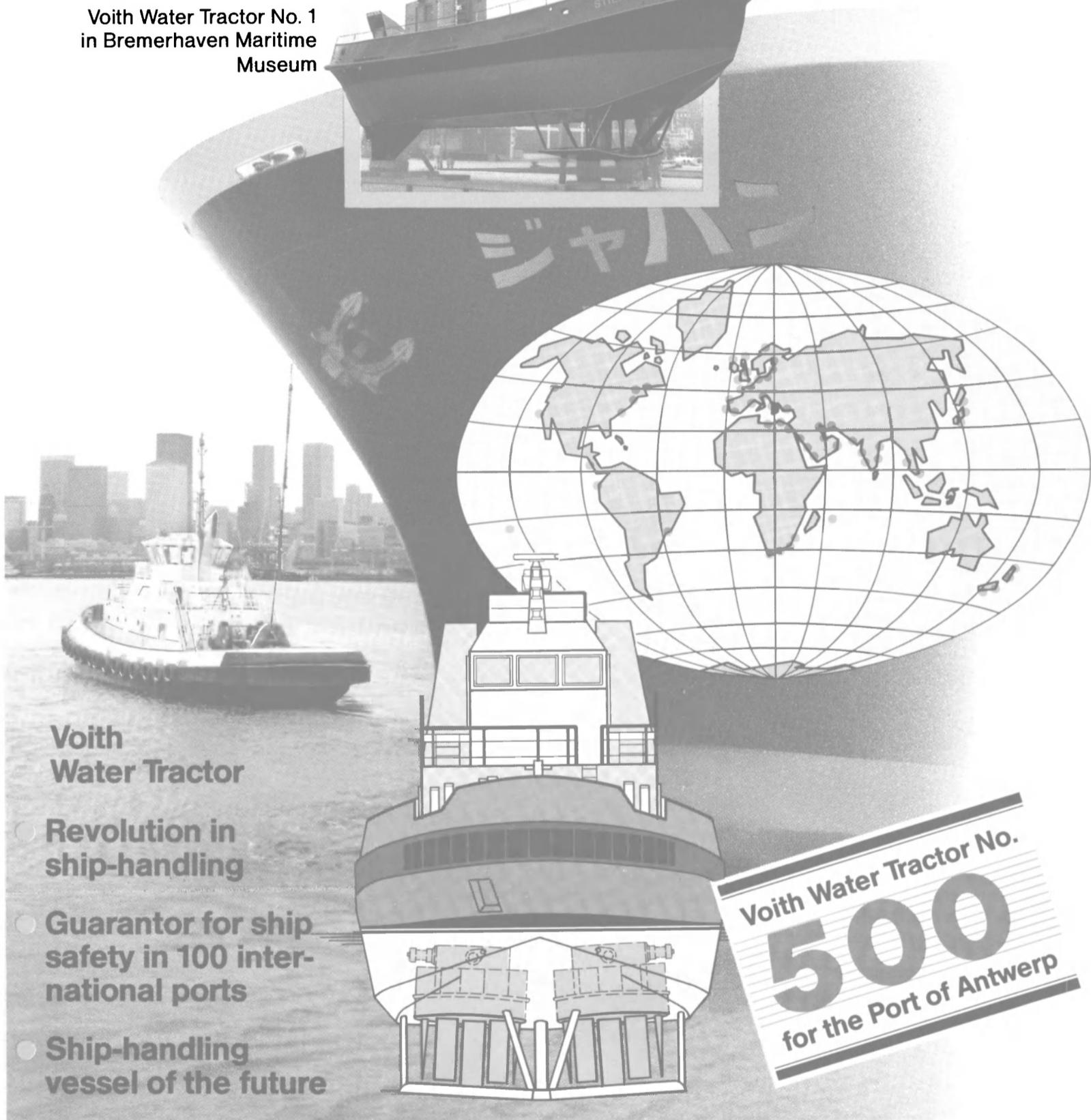
QMC, Inc., is a Houston-based company specializing in chartering of marine equipment for the transportation of crude oil, petroleum products, petrochemicals and other bulk liquids, both domestic and international.

Maritime Reporter/Engineering News

# The Safety Concept

proven • recognized • trend-setting

Voith Water Tractor No. 1  
in Bremerhaven Maritime  
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Water Tractor**

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ship-handling**
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Marine Engineering Division  
P.O. Box 1940, D-7920 Heidenheim  
Phone (0 73 21) 37-0, Tx. 714 799-60 VHD

## Jeffboat To Reopen Shipyard; Will Resume Construction Of Barges And Towboats

—Literature Available—

Jeffboat, a subsidiary of American Commercial Lines Inc., recently held a press conference to announce plans to reopen its towboat and barge construction facilities at the Jeffersonville shipyard during the third quarter of 1989.

"We are looking forward to resuming production at the Jeffboat facilities," said **Robert Greene**, president of the company. "We will proceed with a phased plan of production and anticipate that over the long term, we will experience a measured and steady growth in our operations.

"I am confident that the employees of this shipyard in 1989 will continue Jeffboat's tradition of producing high-quality, state-of-the-art vessels—and delivering them at competitive prices," said Mr. **Greene**. "Jeffboat's fine reputation was built this way over the last 50 years, and we intend to continue it."

Initially, production work will focus on hopper barges, tank barges and towboats for inland waterways barge industry.

Beginning about midyear, approximately 200 employees will be added to the Jeffboat work force. The company currently has 70 employees, who provide drydock and other repair services to the barging industry. Jeffboat plans to seek funds for employee training from the state of Indiana. In addition, the company will ask the Campaign for Greater Louisville to assist in the rehabilitation of the facility, where vessels have not been built since 1986.

The Campaign for Greater Louisville presented Mr. **Greene** with a letter of commitment for \$50,000 toward facility rehabilitation. The presentation was made by **John C. Ragland**, president of the Liberty National Bank of Southern Indiana and a director of the campaign.

Jeffboat began operations in 1938



From left to right: **John C. Ragland**, president, Liberty National Bank of Southern Indiana and a director of the Campaign for Greater Louisville; Jeffersonville Mayor **Dale Orem**; Jeffboat president **Robert W. Greene**; and Indiana Lt. Gov. **Frank L. O'Bannon**.

as Jeffersonville Boat and Machine Works. During World War II, the company built ships for the U.S. Navy, including 124 landing ships. Over 6,000 vessels have been launched by Jeffboat since its founding.

American Commercial Lines, a subsidiary of CSX Corporation, Richmond, Va., is one of the nation's largest inland marine transportation companies, with affiliates in barging, marine construction, re-

pair and communications. Besides, Jeffboat, its subsidiaries include Watercom and American Barge Line, which operates primarily along the Mississippi, Ohio, Illinois and Missouri rivers and tributaries to the Gulf Intracoastal Waterway.

For free literature detailing the vessel construction and repairing facilities of Jeffboat,

Circle 84 on Reader Service Card

# Cable With KAPTON<sup>®</sup> And Mica. Under Water. Or Under Fire.



# ELECTRONICS UPDATE

## Furuno Introduces New 6-Inch And 8-Inch Dual-Frequency Color Video Sounders

Furuno recently introduced two new dual-frequency color video sounders.

The FCV-663 is Furuno's most cost-effective dual-frequency color video sounder. It features a bright, high resolution 6-inch CRT that shows returning echoes in eight distinctive colors depending on target strength. This enables easy determination of fish schools, individual structures and, especially, targets lying on or near the bottom. Four display modes allow the user exceptional flexibility in viewing the underwater scene: high or low frequency picture can be shown either full screen or with bottom lock on the lower 35 percent of the CRT; simultaneous dual-frequency display shows 50 kHz on the upper half and 200 kHz on the lower half of the screen; either high or low frequency



The FCV-663 is Furuno's most cost-effective dual-frequency color video sounder.

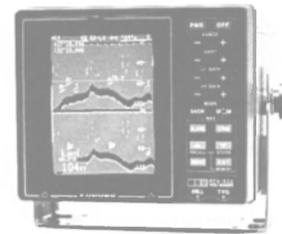
can be shown on the right half of the CRT, with zoomed display on the left; combined dual frequencies can be displayed on the right half of the CRT, with zoomed display on the left. In addition, the FCV-663 offers fish or bottom alarm, eight basic and phased ranges to 2,000 feet, eight zoom ranges, memory, 150 W output power and, with optional sensor inputs, display of vessel

speed, position and water temperature.

The FCV-663 is supplied with a single dual frequency transducer, or an optional four-way transducer including speed and temperature sensors is available.

The FCV-522 is Furuno's newest "big" color video sounder designed for sport as well as commercial fishermen. A bright 8-inch high-resolution CRT shows returning echoes in eight colors to a maximum depth of 2,000 feet. Eight basic and phased range scales permit easy viewing of any specific depth of interest, and 10 operating modes let users see various combinations high, low, or mixed frequencies, bottom lock, zoomed ranges, alarms, stored data, navigation information, or on-screen menu of operating parameters. In the NAV mode, with appropriate optional inputs, a full-screen alphanumeric presentation is made of depth, vessel speed, water temperature, vessel position in L/L, and alarm status. Also, a graphic plot of temperature may be shown on the lower 35 percent of the CRT.

Standard features include choice of background color, choice of bottom, fish or temperature alarm, 150 W output power, eight zoom ranges, depth phasing in 1-foot steps, automatic bottom tracking feature, selectable display advance rate, single dual-frequency transducer or optional four-way unit incorporating speed/temperature sensors, and



Furuno's newest "big" color video sounder, the FCV-522, is designed for sport as well as commercial fishermen.

universal 11-40 VDC power supply drawing less than 45 watts.

For further information and free literature on Furuno's new 6-inch dual-frequency color sounder,

Circle 04 on Reader Service Card

For free literature containing full information on Furuno's new 8-inch dual-frequency color sounder,

Circle 05 on Reader Service Card

## Navy Awards \$3-Million SRA Contract To Pacific Ship Repair

Pacific Ship Repair & Fabrication, Inc., San Diego, Calif., has been awarded a contract by the U.S. Navy worth \$2,950,000 for the Selected Restricted Availability of the frigate USS Meyerkord (FF-1058).

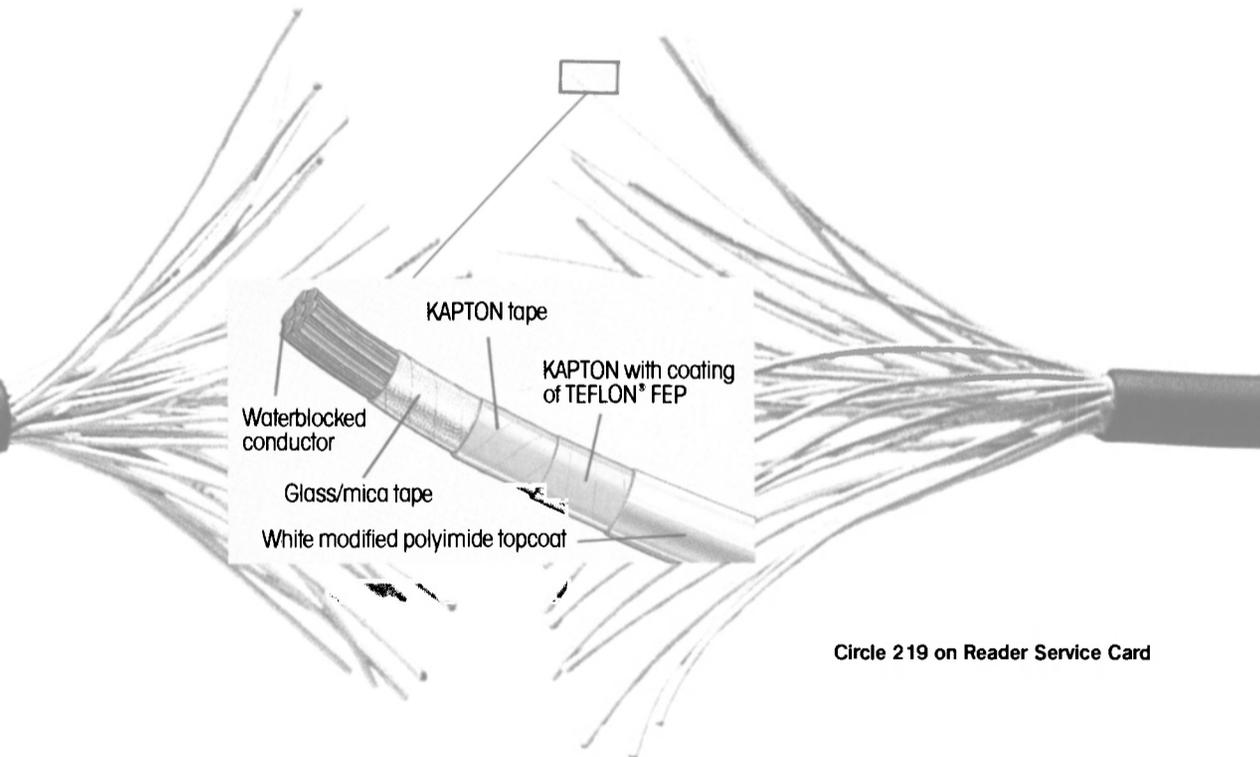
# Nothing Performs Better

To help ensure the survivability of your ship, you need high reliability cable made with Du Pont KAPTON™ polyimide film and mica, MIL-C-24640/19-24. Cable with KAPTON and mica is lightweight, compact, tough and watertight. It provides circuit integrity and is designed for low smoke generation.

MXCW - 30 - MIL - C - 24640/23

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To find out how cable with KAPTON and mica, MIL-C-24640/19-24, can improve the critical performance of your ships, write to us for our free brochure: Du Pont Company, Shipboard Cable, Room G-51549-MR, P.O. Box 80029, Wilmington, DE 19880-0029.



## Atlantic Marine To Lease ADDSCO Industries Ship Repair Yard In Mobile, Ala.

Atlantic Marine Holding Company's subsidiary Atlantic Marine, Inc. of Mobile, Ala., will lease the repair shipyard of ADDSCO Industries in Mobile.

The Alabama yard, which was

recently closed, was formed in 1916 and since that time has repaired and converted all types of floating equipment.

Atlantic Marine Mobile plans to recondition and repair the floating drydock, and to seek both Navy and commercial repair work.

Atlantic Marine Holding Company also announced that it has entered into a separate Memorandum

of Intent to take over the facilities and operations of ADDSCO subsidiary Alabama Maritime Corporation (AMC) and will continue AMC's current new construction operation on Pinto Island in Mobile Bay under the name of Alabama Shipyards, Inc.

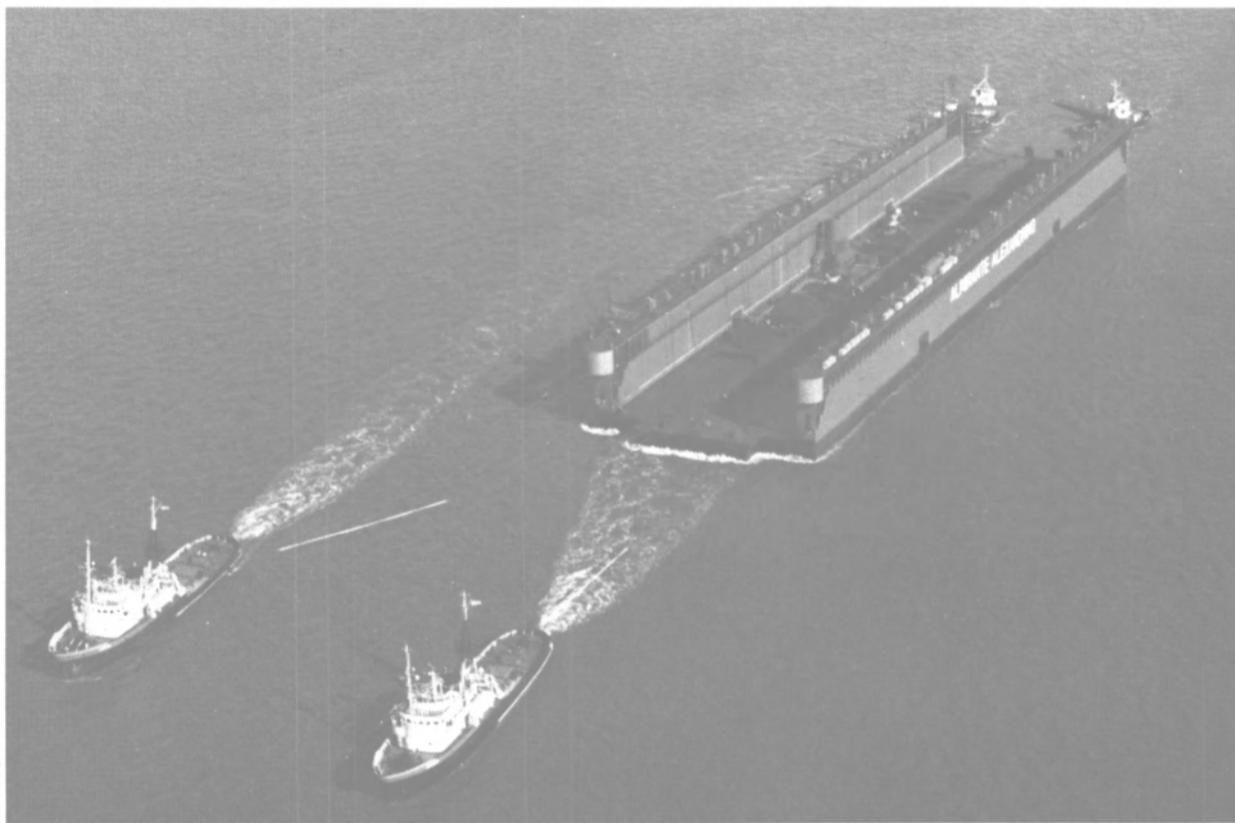
This acquisition will not affect Atlantic Marine's business in Jacksonville. The company is in the pro-

cess of expanding its facilities and capability to do work in Jacksonville and expects to continue to do so. The Mobile acquisition will enable Atlantic to obtain business opportunities in the Gulf of Mexico that are not available to Jacksonville area shipyards.

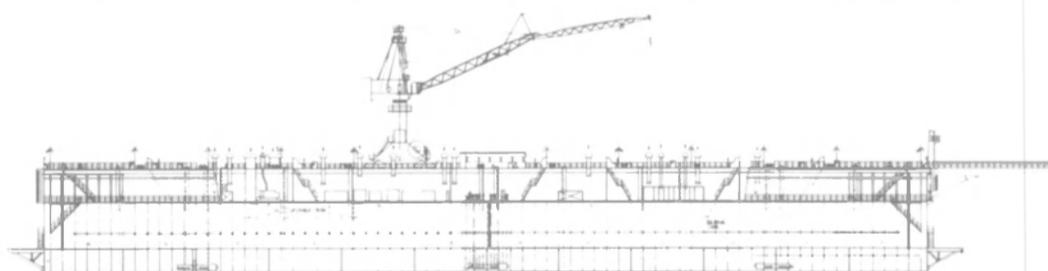
For free literature containing full information and the facilities and capabilities of Atlantic Marine,

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10,000-t dock for Saudi Arabia. From June 1982 until September 1983, two GHH floating docks were commissioned by our specialists at their final destination in the U.S.A., another two in Saudi Arabia, one in Indonesia, and one in Singapore.

Our dock construction yard is also fully equipped for building floating cranes, such as the three 200-t units delivered to Saudi Arabia in 1983. For further information we shall be pleased to send you our brochures.

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Telex: 8 56 691 ghh d

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50 Broadway  
New York, NY 10004 USA  
Phone: (212) 509-4545  
Telefax: (212) 269-2854  
Telex: 42 12 74 MAN CORP

Circle 33C on Reader Service Card



## New Cold Welding Repair Material Offered —Literature Available

American Durweld Sales, Inc., Scituate, Mass., manufacturer of the Velodur/Durmetal Coldwelding System™, recently introduced a new emergency repair material to the U.S. and Canadian markets.

Velodur's new "Super-Rapid CA/HD" (Chemical Aggression/Heavy Duty) is designed to satisfy several critical specifications by industrial and military users of Coldwelding Systems products.

Super-Rapid CA/HD is capable of application to wet, oily and greasy surfaces which are actively leaking. Much like Velodur's Rapid, which has gained wide acceptance, the new Super-Rapid CA/HD cures quickly, reaching its optimum strength characteristics in three to four minutes. Together with the Velodur Kevlar® Reinforcement Tape included in each repair kit, Super-Rapid CA/HD can be specified in applications requiring heavy chemical resistance.

Super-Rapid CA/HD does not require overcoating for optimum strength. A single application results in a fast, effective repair of optimum strength, which can then be tooled, machined and painted.

Velodur/Durmetal guarantees the technical test data for all its products as well as the indefinite shelf life of its kits.

For free brochures with additional details on the Velodur Super-Rapid CA/HD,

Circle 70 on Reader Service Card

## Hamburg-Sud Orders Two Containerships From Polish Yard

Hamburg-Sud recently ordered two 1,020-TEU containerships from Warski Shipyard in Szczecin for the West German company's shipping line subsidiary Deutsche Nah-Ost Linien.

The vessels will be powered by MAN B&W main diesel engines manufactured under license by Cegielski. Additionally, the vessels will be equipped with two 38-ton-capacity cranes.

Maritime Reporter/Engineering News



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The internationally recognized expertise of Avondale Industries, Inc. in the fabrication of commercial and combatant ships is being applied today to smaller craft. The Avondale Boat Division, capitalizing on the company's superior engineering and assembly technology, is capturing contracts to build state-of-the-art boats for demanding customers. Such as the high-speed, surface effect passenger ferries ordered recently by Tri-State Marine Transport, Inc.

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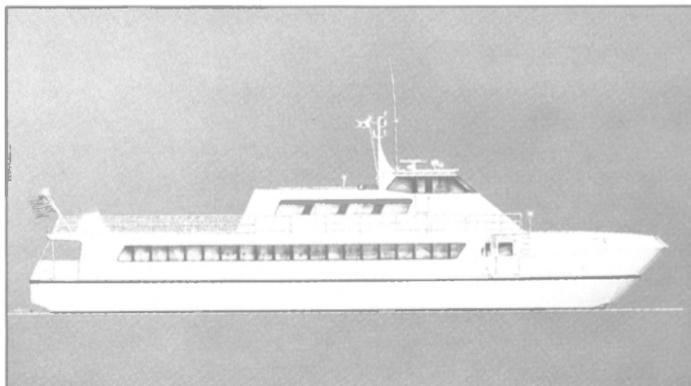


## Avondale

For details, Contact:  
Barry Heaps  
Avondale Boat Division  
Avondale Industries, Inc.  
P.O. Box 50280  
New Orleans, LA 70150-0280  
Telephone: (504) 366-7298

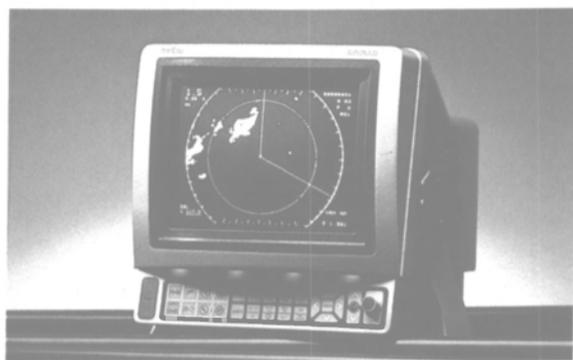
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designed by Air Ride Craft, Inc.



Circle 27 on Reader Service Card

## Simrad/Anritsu's New Radars Offer Outstanding Selection



All Simrad/Anritsu radars feature full function menus with self-test facilities, a high level of user programming ability, one-year parts and labor warranty, and the full support of Simrad's comprehensive dealer network.

Simrad/Anritsu's new radars offer an outstanding selection with superior short-range performance, and exceptional resolution and definition.

The RA720UA (0.25-60 NM, 5 kw) and RA721UA (0.25-96 NM, 10 kw) have 12-inch monochrome displays, outstanding performance and reliability, and are compact and affordable.

The RA711CA (0.25-60 NM, 5 kw) and RA712CA (0.25-96 NM, 10 kw) have 11-inch color displays which boast a superior level of performance.

The AR-C12A has a large 14-inch color display and a 10-kw transmitter combined with superior detection, extremely high resolution and definition.

For more information and free literature on Simrad/Anritsu's new radars,

Circle 53 on Reader Service Card

## Rados International Designing Cummins-Powered Fireboat For City Of Los Angeles

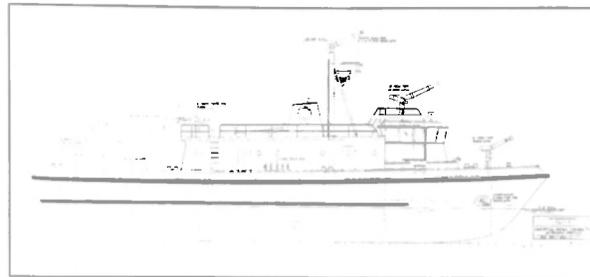
Rados International Corporation, naval architects and marine engineers of San Pedro, Calif., has been awarded a design contract by the City of Los Angeles for a new state-of-the-art fireboat.

The new vessel, designated as boat #6, is being planned to prepare for the harbor's continued growth and expansion, both in super-tanker and container operations as well as pier-side construction.

The new fireboat, of welded steel construction, will be 100 feet in length, 23 feet in breadth, have a draft of 7 feet, and a speed of approximately 13 knots. The completed design will incorporate a total pumping capacity of 15,000 gpm through seven monitors, and contain a fully automated engine room with new sophisticated electronic and hydraulic system designs. It will be equipped for patrol, search, and rescue missions and have a 7-10 minute response time to cover the vast area of the Los Angeles inner and outer harbors.

Designed to accommodate a maximum of five and a minimum of three firefighting personnel, the vessel will be propelled by twin Cummins KT-38 diesel engines, each rated to deliver 800 bhp at 1,800 rpm, driving fixed-pitch propellers through reverse reduction gears with a ratio of 3 to 1. The exhaust system will have a dry stack configuration.

The firefighting system will be composed of three main pumps with dedicated Cummins KT-38 engines producing 5,000 gpm each. Deck monitors provided by Stang Mfg Inc., one on the bow and four on the stern, with 3,000-gpm capacity, will be remotely controlled from the pilothouse, as will the pilothouse turret rated at



Profile drawing of the new Cummins-powered fireboat designed for the City of Los Angeles by Rados.

10,000 gpm with a 400-foot stream. Tow thru-hull underwharf nozzles with 2,000 gpm each will all be operated from the pilothouse. Twin reduced capacity deck-mounted turrets, mounted in the bow port and starboard, for pilothouse protection, will contain 500-gpm spray capacities. An elevated tower monitor will also provide a 350-foot stream from 3,000 gpm. A telescoping aerial platform will be incorporated for water rescues.

Foam firefighting capabilities will comprise 2,000 gallons of ATC foam which may be distributed proportionately from 3 percent to 6 percent.

Rados, in addition, will provide contract administration and construction inspection services for the port.

In addition to providing technical design and engineering services to the City of Los Angeles, Rados has also been contracted to provide services to the Port of Long Beach incidental to the upgrading, system redesign and crew training for two new 88-foot fireboats constructed at Moss Point in Mississippi.

For free literature on the full range of design services offered by Rados International,

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Circle 336 on Reader Service Card

Maritime Reporter/Engineering News

## Fairbanks Morse Receives \$48.1-Million Order For T-AO Class Engines

The Fairbanks Morse Engine Division of Colt Industries has received a \$48.1-million order from Avondale Industries, Inc., Avondale, La., for engines for the U.S. Navy T-AO-187 Henry J. Kaiser Class fleet oiler program.

The contract involves four ships, T-AO-198, -200, -202 and -204, each of which is powered by two 10-cylinder PC4.2 Colt-Pielstick diesel engines, each rated at 16,290 bhp.

The T-AO-187 Class ships, which are under construction at Avondale Industries' Shipyards Division, will have the capability to transport fuel from shore to forces underway and can also deliver water, cargo, mail and personnel on a limited basis.

Delivery of the engines to Avondale will commence in the second half of this year and are currently projected to extend through 1992.

For more information on the diesel engine line of Fairbanks Morse,

Circle 81 on Reader Service Card

## Seacoast Electric Offers Marine Cable And Service Brochures

Seacoast Electric Company, Rye, N.Y., is offering a number of free brochures and bulletins detailing its marine shipboard cables, "Just-In-Time" computerized inventory management and distribution system and other products and services. In addition, the company also is offering a detailed training manual, which provides users with a greater knowledge of shipboard cables, cord, tubing, and other marine electrical products and equipment.

The products detailed in the Seacoast Electric literature include the company's new advanced low-smoke, low-halogen marine cable, MIL-C-24643, which has been approved and qualified by the U.S. Navy for unshielded, shielded and all optimized braided shielded constructions. Also detailed is the Seacoast Electric advanced lightweight marine cable, MIL-C-24640.

Among the services offered by the company, Seacoast's "Just-In-Time" (J.I.T.) inventory management and distribution system is one of its most unique.

According to the company, J.I.T. allows a customer to have complete control and use of his inventory by means of on-line information via computer link-up between Seacoast's warehouse and the customer's office.

This system allows for easy inventory analysis as well as streamlined ordering, purchasing, invoicing and distribution geared to a customer's exact production needs. With the cost-efficient J.I.T. program, the company reports there is no expediting, more efficient communications, less need to stockpile inventory, less personnel involved in procurement, less time to execute or-

ders, less waste and less scrap. This adds up to higher productivity and profit on inventory investment.

Seacoast's detailed 54-page training manual provides an excellent comprehensive overview of shipboard and marine electrical equipment. The manual is divided into 13 sections, and includes such subjects as conductors, insulations, shields and armors, shipboard cable his-

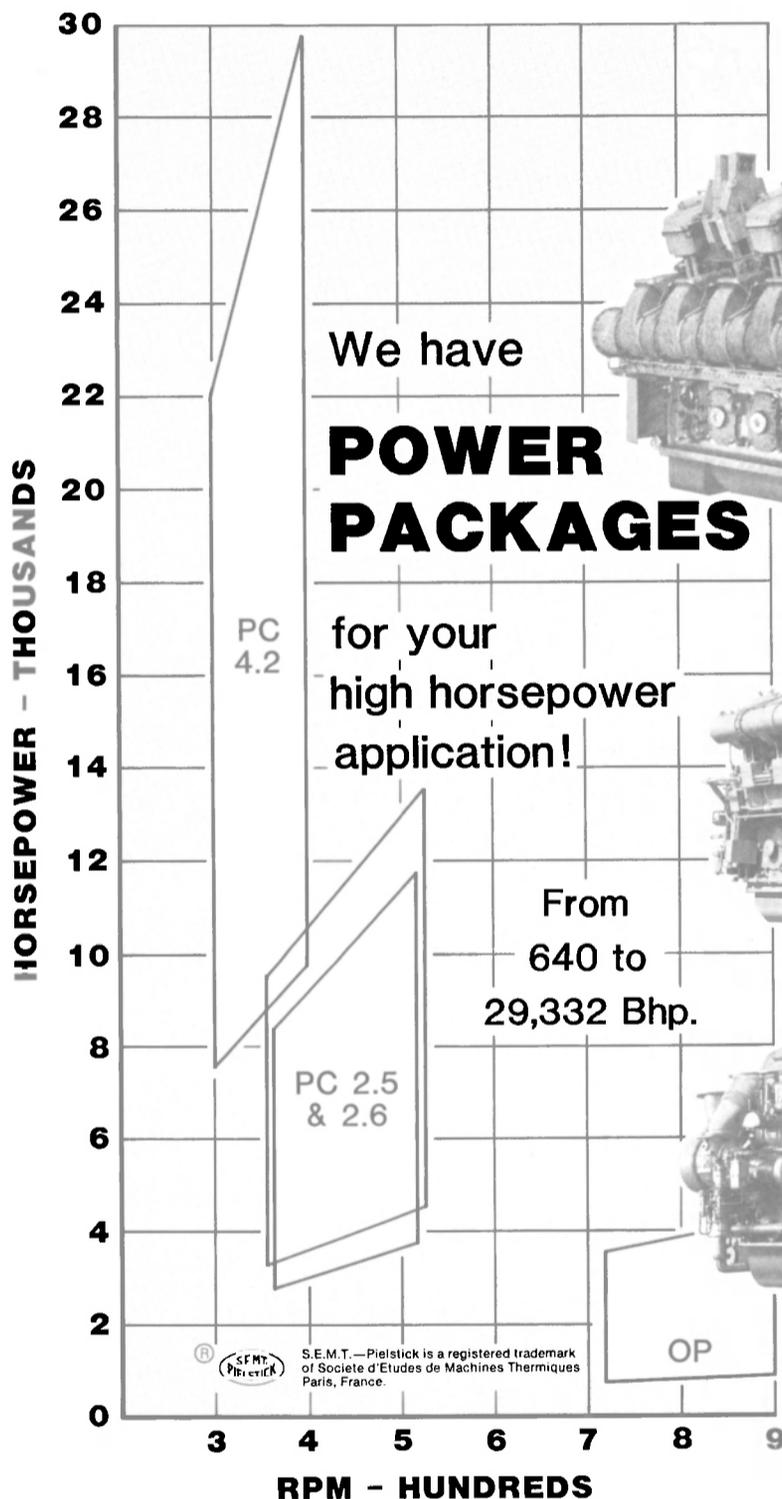
tory, U.S. Navy cable, terminal and stuffing tubes, etc.

In addition, Seacoast announced that its credit department has extended its hours and is now open from 8:30 a.m.-6:30 p.m. EST to provide customers with better service. Customers can reach the credit department by calling (914) 921-0400. After 5 p.m., call (914) 976-800 for service.

Claire Demmel, Michele Collins and Noreen McCarthy-Flores are Seacoast's credit representatives. They are able to assist customers with any questions regarding invoices, credits, return authorizations and credit status.

For free copies of the Seacoast Electric brochures and literature,

Circle 98 on Reader Service Card

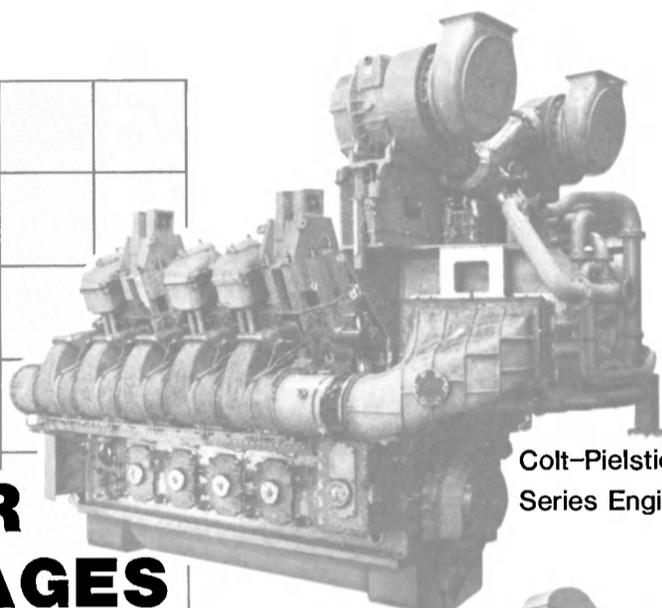


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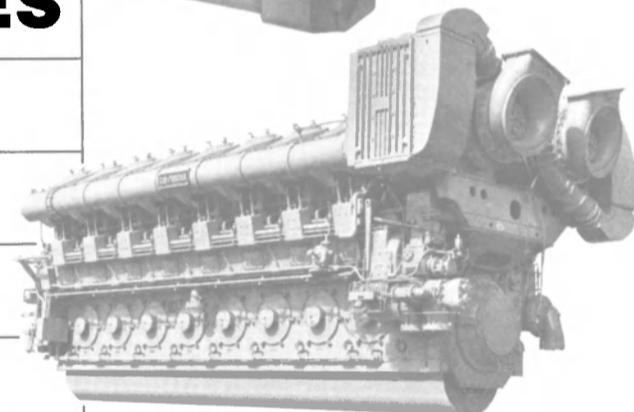
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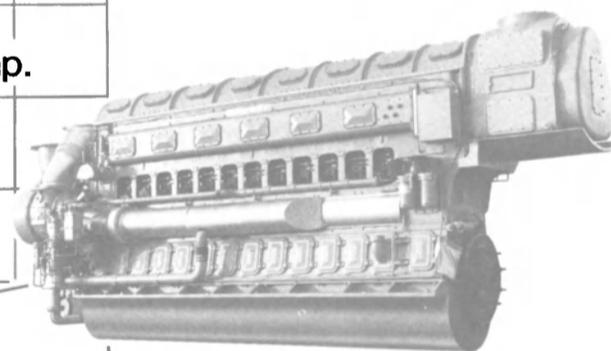
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Colt Industries



# Fairbanks Morse

Engine Division

Circle 225 on Reader Service Card

## SeaArk Marine Delivers First Five Patrol Boats Of Ten-Vessel Contract

SeaArk Marine, Inc., (formerly MonArk Boat Company) Little Rock, Ark., has delivered the first five high-speed patrol boats of a 10-vessel contract to El Salvador under a \$3.7-million contract, according to company vice president **John Smith**.

SeaArk personnel will provide training in boat and systems operations, safety procedures, boat care and maintenance, and electrical repairs and maintenance. The remaining boats were scheduled for delivery last month.

The contract was awarded in December 1987 by the Naval Sea Systems Command, Washington, D.C., and funded by the U.S. Military Assistance Program. SeaArk personnel determined the vessel requirements after visiting San Salvador and meeting U.S. and El Salvador Navy officers.

The multi-mission craft will be used for coastal, harbor and riverine protection against insurgencies and boundary violations. In addition, the craft will also perform Coast Guard, police and customs law enforcement.

Each patrol boat is 41 feet in length, 13 feet abeam, has a draft of 4 feet 3 inches and trial speed of 27 knots. Each is powered by a pair of Caterpillar 3208TA diesel engines, each rated at 345 hp, and Twin Disc MG507 gears.

The vessels are equipped with a full suite of electronics and two 50-caliber machine guns and two 7.62 mm machine guns.

The design of the patrol boat features a deep vee hull constructed of welded marine grade aluminum alloy 5086.

The superstructure houses berthing quarters for four and has galley facilities, allowing for 24-hour patrol missions.



One of 10 Caterpillar-powered patrol boats built by SeaArk Marine, Inc., Little, Rock, Ark., for the El Salvador Navy.

SeaArk Marine builds patrol boats, fire boats, survey vessels, personnel and passenger launches, and custom-built multipurpose workboats ranging from 17 feet to 50 feet in length.

More than 50 boats are currently under construction for the U.S. Navy, U.S. Marine Corps, U.S. Coast Guard, U.S. Army Corps of Engineers, U.S. Forest Service, three American universities, various state, county and municipal agencies, and two major oil companies, in addition to several international contracts.

For free literature detailing the boatbuilding capabilities of SeaArk,

Circle 89 on Reader Service Card

## Gems Flow Switch Available With Infinite Adjustability To Protect Expensive Equipment

Gems flow switch, FS-10798, provides extreme sensitivity to protect expensive equipment. It is adjustable for an infinite number of

actuation set points, and provides an adjustment range for liquids of 0.5 to 20 gpm; 3 to 160 scfm for gas.

According to Gems, this flow switch is ideal for use on machine tools to protect them from coolant flow failure, to protect bearings from loss of lubricant, or to insure proper air flow. It offers precise repeatability.

It is designed for use with gases or liquids to operate remote alarms, indicators or automatic controls, and withstands pressures to 1,000 psig.

It is supplied with a choice of three connection options: wire leads or 1/2-inch NPT conduit. A choice of materials is also available. The switches are in stock for immediate delivery.

For free literature giving full details on the Gems flow switch,

Circle 57 on Reader Service Card

## Midland Enterprises To Outfit Their Vessels With Complete Watercom Telephone Systems

Watercom has announced that Midland Enterprises, Inc., Cincinnati, Ohio, has agreed to outfit their vessels with complete Watercom telephone systems.

Watercom is a leader in the field of communications for vessels on America's inland waterways.

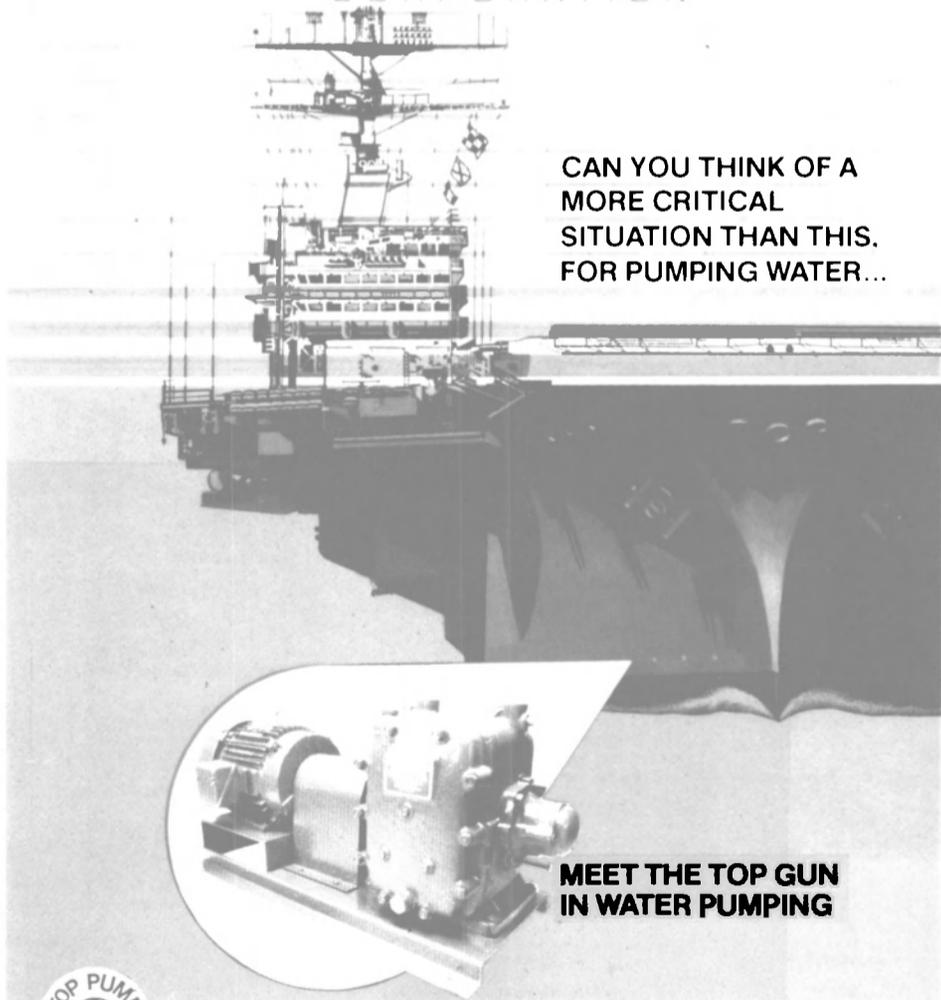
Watercom is a registered trademark of Waterway Communications System, Inc.

For more information and free literature on Watercom,

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Circle 217 on Reader Service Card

Maritime Reporter/Engineering News

## G. Marine Awarded \$2.5-Million Contract For Frigate Repairs

G. Marine Diesel Corporation, Shipyard Division, Brooklyn, N.Y., has been awarded a firm-fixed-price job order (N62794-89-R-7D09) for the topside repairs to the frigate USS Clifton Sprague (FFG-16). The award was worth \$2,532,535. The work which has commenced at the Philadelphia Naval Yard, is scheduled to be completed by May 16, 1989.

For free literature detailing the ship-repairing services of G. Marine,

Circle 97 on Reader Service Card

## Westwood Shipping Names Herb Winward President



Herb Winward

Herb Winward has been appointed president of Westwood Shipping Lines, a wholly owned Weyerhaeuser subsidiary offering containerized and breakbulk cargo services as an American independent carrier between the U.S./Canada West Coast and the Far East and North Europe.

Mr. Winward, a 36-year Weyerhaeuser veteran, assumed the office of president from Tom Luthy, left for another division of Weyerhaeuser after four years as head of Westwood.

## Newport News Reports 1988 Operating Earnings Of \$175 Million

Newport News Shipbuilding & Drydock Co., Newport News, Va., reported operating earnings of \$175 million during 1988, the same as operating results in 1987.

In the fourth quarter of 1988, operating income for the shipyard was \$49 million, up from \$37 million in the same quarter of 1987. This increase was due to the final settlement of several naval overhaul and repair contracts.

At present, the shipyard has a backlog of \$7.9 billion, up from \$4.2 billion year-end 1987, which should ensure strong operating results well into the 1990s.

For free literature detailing the shipbuilding services of Newport News,

Circle 63 on Reader Service Card

## Evergreen's \$1.2-Billion Order For Containerships May Go To Japanese

A \$1.2-billion order to build 22 containerships for Evergreen Marine Corp. (Taiwan), the largest such order ever to be placed, is like-

ly to go to Japanese shipyards, according to a recent report.

The vessels, each capable of carrying 4,000 twenty-foot containers (TEUs) are to be used by Evergreen in its round-the-world service. Construction of the 22 vessels is scheduled to begin this spring, with the first entering the trade by March 1991.

Details have not been released about where the construction will take place, but Onomichi Dockyard Co. of Kobe, Japan, has confirmed that they are negotiating with Evergreen for the order.

Evergreen operates a weekly eastbound as well as westbound round-the-world service, employing 24 vessels.

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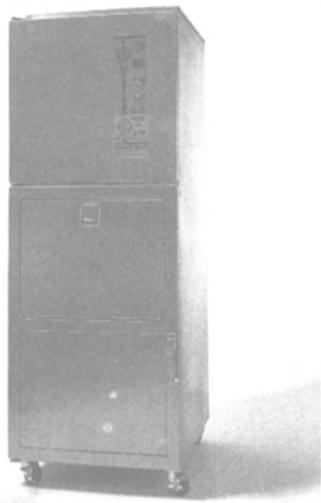
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Circle 148 on Reader Service Card

## International Compactor Offers High-Performance Trash Compactors

—Free Literature Available—



ICI's Multi-Pak units are currently used throughout the maritime industry onboard such vessels as cruise ships, steamships, ore/bulk carriers, etc. The MP 60 is the company's most popular model.

With the world focusing on the clean-up of the atmosphere, rivers and lakes and the implementation/enforcement of new Annex V-MARPOL 73/78 regulations, the maritime industry now faces a new challenge on how to handle its on-board trash and waste. The MARPOL 73/78 regulations prohibit the discharge of plastics, including plastic garbage bags, into the navigational waters of the U.S. or EEZ. The regulations also prohibit the discharge of certain types of garbage in designated waters.

International Compactor, Inc. (ICI) of Hilton Head Island, S.C., and Houston, Texas, offers a cost-efficient solution to this problem. Now available is a complete line of Multi-Pak, all stainless steel marine trash compactors which compact on-board trash into a disposable box or a removable cube. The Multi-Pak machines can compact biodegrada-

bles into a leak-proof, disposable, wax-lined box which eliminates the traditional problems of on-board wet waste (edibles excluded). Multi-Pak machines also bale cardboard, paper, and aluminum cans (subject to resale), and can bag plastics and other waste into plastic bags designed for the Multi-Pak equipment. The boxes, bags, or bales are set aside until they can be properly disposed of or off-loaded.

The Multi-Pak comes in three sizes (MP 40, MP 60 and MP 80) and in three choices of cabinets. All stainless steel (recommended for marine applications), mild steel, and a combination of the two are available. The compaction chamber, however, is always constructed of stainless steel in all Multi-Pak models.

The MP 60 is the most commonly used Multi-Pak trash compactor by the marine and offshore industries because of its durability, weight and size. It can compact a large volume of trash into one 6.2-cubic-foot disposable box or cube. The basic dimensions of the MP 60 are 76-1/4 inches high, 28-1/4 inches wide and 27-1/4 inches deep with a weight of about 850 pounds.

The unit carries a 10-year warranty on its solid-state electrical panel board and limited one-year protection on parts and labor.

The company reports ICI's Multi-Pak units are currently being used throughout the maritime industry. Some of the users include cruise ships, steamships, and ore/bulk container carriers.

For free literature detailing ICI-Multi-Pak trash compactor systems and accessories for the marine industry,

Circle 107 on Reader Service Card

### ENVISIONS Wins \$11-Million Navy Pact

ENVISIONS, Inc., San Diego, Calif., a naval architect marine engineering firm, was recently awarded a \$10,993,370 contract by the Navy Office of Planning and Engineering for Repairs and Alterations for maintenance availability planning work involving some 40 combat support ships homeported on the West Coast and deployed throughout the Pacific.



## WHY DOES THE U.S. NAVY CHOOSE EVERPURE BROMINATION SYSTEMS FOR DRINKING WATER?



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Non-Ferrous Bolt & Mfg. Co. specializes in producing standard and non-standard fasteners in high temperature and corrosion resistant metals. With 20 years of experience in the fastener industry, we have become one of the nation's foremost producers of domestically manufactured fastener "specials". We are capable of producing hex heads, nuts, sockets, slots, carriage bolts, T-head bolts, square heads, penta heads, special studs and many more styles from over 100 grades of stainless steel and exotic metals.



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Maritime Reporter/Engineering News

## Falk Disc Couplings Feature Fast Assembly, High Reliability

"Fit-em and forget-em" disc couplings, combining unitized disc-packs for fast assembly with the rugged reliability offered from all-steel components, are now available from The Falk Corporation.

The heart of a disc coupling is a series of stainless steel plates held together in a laminated pack with high-strength alloy steel bushings and washers. These components form a unitized discpack for faster assembly and the elimination of loose parts. Flexibility is achieved when the laminated discpack bends between the driving and driven bolts.

Falk disc couplings feature no wearing parts to replace and require no lubrication, making them virtually maintenance free. Since there is no grease or oil to deal with, the couplings are not sensitive to hot or cold environments, and there is no danger of fluid leakage or contamination.

All component parts of Falk disc couplings are phosphate coated to resist corrosion, further extending the life of the unit.

The Falk Corporation, Milwaukee-based subsidiary of Sundstrand Corporation, is a major manufacturer of industrial power transmission machinery, including standard and custom gear drives, flexible shaft couplings, backstops, fluid power drives, and fluid couplings.

For additional information on Falk disc couplings,

Circle 22 on Reader Service Card

## Magnavox Introduces Latest In Series Of GPS Data Outputs

The latest in Magnavox's growing line of GPS products is the MX 5400R, a "black-box" navigation receiver that provides GPS data outputs to a Magnavox MX 4102 OR MX 5102 transit satellite navigation receiver.

The MX 5400R is a two-channel C/A-Code GPS receiver that receives and processes signals from orbiting satellites in the new Global Positioning System (GPS). The satellite signals are used to calculate a vessel's position and speed with a high degree of accuracy. The MX 5400R has no operating controls, and can be tucked away in any out-of-the-way location. GPS-derived data is formatted and transmitted to the MX 4102 or MX 5102, which acts as the display/control panel for the system.

Although the GPS satellite network is not yet fully operational, Magnavox is already offering a variety of GPS user equipment, giving users an opportunity to get an early start with the new system. GPS satellite coverage is currently available for marine navigation up to 9-10

hours per day, using the six active prototype Block 1 satellites now in orbit. They will be supplemented, starting in early 1989, with additional Block 11 satellites, and the system will be providing continuous worldwide position fixing by mid-1990. Eventually, GPS will supersede and replace the older Transit satellite navigation network, which has been in service since the 1960s.

The MX 5400R navigation receiver

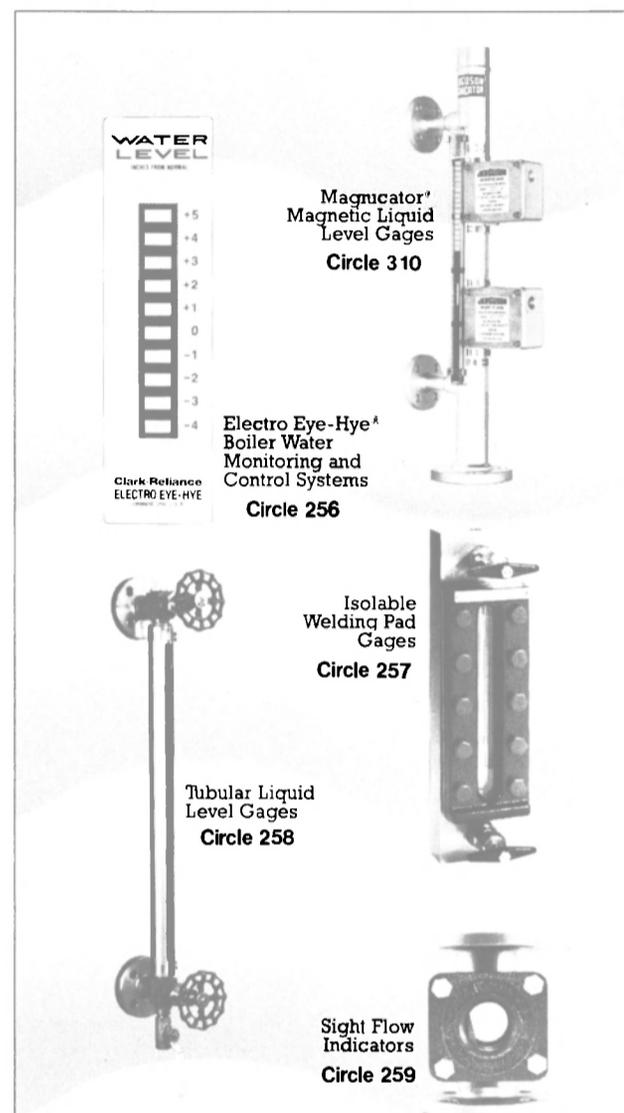
is specifically designed to work with Magnavox's popular MX 4102 and MX 5102 Transit satellite navigation receivers. Magnavox has developed new software for its Transit receivers that permits the MX 4102 or 5102 to function as control center for the GPS receiver.

Interfacing the MX 5400R GPS module provides the MX 4102 or MX 5102 user with the best satellite navigation performances available

during the transition period between Transit and GPS and beyond. And, unlike land-based radionavigation systems such as Loran-C, which depend on shore-based transmitters, the Transit and GPS systems are available anytime, anywhere.

For more information and free literature from Magnavox,

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By far the most complete lines of sight flow indicators, liquid level gages, boiler controls—and all the trimmings. For shoreside and shipboard applications. Including an extensive choice of military units. Most have been shock- and vibration-tested. All available from Clark-Reliance... your single source for the best solutions to problems involving the observation, measurement and control of fluids in use under difficult or hazardous conditions. Please call or write our Government Sales Department for comprehensive information.

The Clark-Reliance Corporation, 16633 Foltz Industrial Parkway, Strongsville, Ohio 44136, USA. Phone: (216) 572-1500. Fax: (216) 238-8828.

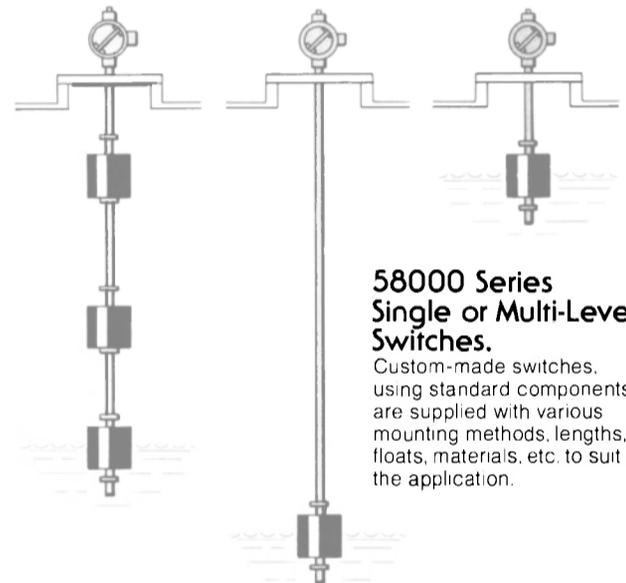
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**Externally Mounted Switches.**  
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## OSHA Gives Avondale Its Highest Safety Award

Avondale Industries, Inc. of New Orleans, La., recently became the first shipbuilding company ever to receive the U.S. Department of Labor's highest award for healthy and safe working environments.

Known as the "Star" award, the honor is given only to industries which participate in the Voluntary Protection Program of Labor's Occupational Safety and Health Administration (OSHA) and have an extraordinarily low frequency of lost-time accidents.

The award was presented to Avondale by **John A. Pendergrass**, Assistant Secretary of Labor for OSHA, during ceremonies at company headquarters. Mr. Pendergrass was accompanied by **Zoltan Bagdy**, Federal and State Operations, Voluntary Protection Program, Washington.

Accepting the award on behalf of Avondale was **Albert L. Bossier Jr.**, chairman and chief executive officer, who praised Avondale employees for the dedication to safe work practices.

Mr. Bossier said: "Avondale has become the most productive shipyard in the country. Our ability to attract new contracts is the result of our competitive pricing and we are able to turn in winning bids because our employees understand the relationship between productivity and safe work practices. Avondale employees have an extra incentive to maintain a safe work place and keep productivity because they own 60 percent of the company's outstanding stock."

For free literature giving complete information on the facilities and capabilities of Avondale,

Circle 36 on Reader Service Card

## Aeroquip Offers New Cargo Control Products Bulletin

A new publication from Aeroquip Corporation, bulletin 5989B, "Aeroquip Cargo Control Products," describes the basic products designed to secure cargo and protect goods in transit—from shoring beams and

bars to strap assemblies, buckles and winches.

Featured are new products such as the Aeroquip FE8029-1 Series E spring lock end fitting. This heavy-duty one-piece end fitting has a strength rating of 4500 pounds when attached to Aeroquip FE702 track.

Another new product featured in bulletin 5989B is the FE8040-60 SAF-T-Bar™ cargo restraint for 96-inch and 102-inch trailers. The SAF-T-BAR cargo restraint features a quick-set ratchet that allows the inner tube to extend, but won't let it slide back, permitting the bar to be quickly positioned without locking the ratchet. This results in fewer trial and error adjustments to fit the bar in a truck or trailer and eliminates the need to back one end pad away from the wall prior to locking.

For a free copy of bulletin 5989B from Aeroquip Corporation,

Circle 19 on Reader Service Card

## Tradex Marine Equipment Offers Two New Products

Tradex Marine Equipment Co. of

Denmark recently announced two new products that are now available: an oil/water analyzer, and an automatic lapping machine.

The oil/water analyzer is capable of measuring water content in lubricating oil/bunker fuel as well as crude oil cargoes. The analyzer uses highly developed mechanical technology combined with microprocessor operation to ensure accuracy, measuring from .001 to 1 percent water.

According to the manufacturer, the simple lapping machine that was also announced saves both time and money for overhaul lapping of diesel engine fuel valves. The lapping robot machine carried aboard a vessel completes the job quickly and economically, with results guaranteed.

For more information and free literature on the new oil/water analyzer and automatic lapping machine from Tradex Marine Equipment Co.,

Circle 70 on Reader Service Card

## Trimble Introduces GPS With Integrated Loran And Electronic Charts On CDs



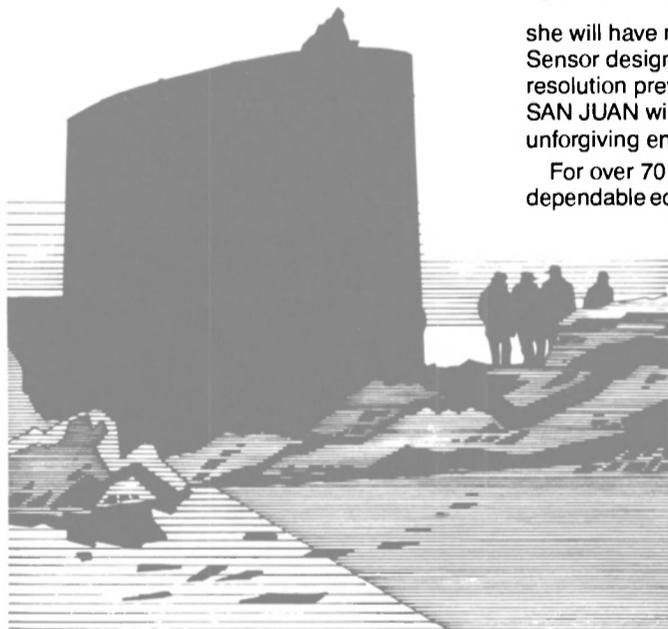
Trimble's new NavGraphic II GPS-Loran.

Trimble Navigation, a leader and innovator in GPS and Loran technology, recently introduced the NavGraphic II GPS-Loran with optional charts.

Similar to the company's classic 10X GPS system, the NavGraphic II GPS is a dual channel, slow sequencing, high performance receiver. And like its predecessor, the NavGraphic Loran Track Plotter, the NavGraphic II GPS has a high resolution LCD graphics display, massive computer power, and built-in manual for very easy use; but it is smaller, lighter, and more flexible. The NavGraphic II is a GPS, is a Loran, or both. In addition, the NavGraphic II is a track plotter, an electronic charting system, and can even be part of your stereo system when not in the chart mode.

The charts displayed on the NavGraphic II are actual NOAA charts optically digitized and reproduced on compact discs. The discs are manufactured by Laser Plot, Inc. and carry the label Sea-D®. These discs have all the details found on paper charts, including landmarks and depth indicators. The chart option is comprised of a compact disc reader and one Sea-D® containing approximately 30 chart options of

## When the USS SAN JUAN (SSN-751) surfaces in the Arctic...



she will have relied in part on a new Precision Trim Angle Sensor designed and manufactured by Henschel. With a resolution previously unheard of, the ship control party of SAN JUAN will maneuver with safety and confidence in the unforgiving environment of the Arctic.

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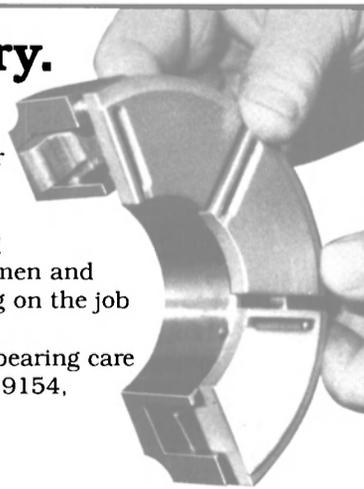
## Expert bearing care—from Kingsbury.

You probably know Kingsbury as the leading manufacturer of new marine line shaft bearings and main shaft thrust bearings, with or without housings. After all, Kingsbury is the leading bearing supplier to the U.S. Navy, and has been for over seventy years. Long-lasting, high performance marine bearings are a Kingsbury trademark.

What you may not have known is that Kingsbury also provides expert bearing repair for any installed marine bearing, regardless of manufacturer. Our craftsmen and field service engineers can work dockside, or at Kingsbury's facilities, depending on the job requirements.

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**Kingsbury, Inc.**



Circle 262 on Reader Service Card

the buyer's local areas as opposed to the 6-10 charts on competing cartridge systems. Owners of the NavGraphic II with charts may contact Laser Plot, Inc. of Auburn, Mass., for subscriptions to both a chart update service and for additional charts. Charts for major U.S. territories and many other international areas are currently available.

The NavGraphic II and classic 10X product lines bring to today's mariner leading edge technology in systems that are flexible, easy to use, and powerful; systems that will fill the needs of the recreational and commercial mariner as they become ready for increased capabilities and performance.

As with all Thimble marine products, the NavGraphic II GUS-Koran is covered by the new Three-Year Limited Warranty and Lifetime Software Enhancement Program. Optional charts and chart drive come under separate warranty from their respective manufacturers.

For more information and free literature from Trimble Navigation,

Circle 46 on Reader Service Card

### Linda S. Reese Named Port Of Houston Authority Administration Director

Linda S. Reese has been named director of the Port of Houston Authority's Administration Division, according to port executive director James D. Pugh.

Ms. Reese replaces F. William Colburn, who was named director of the Port Authority's new Economic Development Division. Ms. Reese's responsibilities will include overseeing the Port Authority's accounting, management information services, office services, personnel, safety and insurance, and purchasing departments.

### New Worldscale Takes Effect—Intertanko Offers Informative Booklet

A new tool for tanker chartering called New Worldscale took effect on January 1, 1989, replacing the "old" Worldscale which has lasted since 1969.

No immediate rate comparisons can be made between the old Worldscale and the New Worldscale. There is no "rule of thumb" conversion factor between the two scales; all one can say is that a higher number of New Worldscale points (compared with old Worldscale) are required to achieve the same dollar figure.

For example, to obtain the same dollar freight for a cargo of 240,000 long tons crude oil at the current level of Worldscale 67 for a voyage Ras Tanura to Rotterdam via Cape, the equivalent New Worldscale rate would be 75. Worldscale 130 for 80,000 long tons Ras Tanura to Yokohama equals New Worldscale 160.

However, to compare an old

Worldscale level with a New Worldscale level would be to compare apples and oranges. What one has to compare are what the various freight levels are, translated into dollars and cents (remembering to take into account that the New Worldscale is based on metric tons and the old one on long tons).

The ideal purpose of a scale is to provide the same net return per day (i.e., freight less bunker costs port charges, canal dues, etc.), irrespec-

tive of the voyage performed. There has been a growing number of anomalies under "old" Worldscale, stressing the need for a new scale.

Fixtures are made with reference to an agreed percentage of the flat rate—the so-called New Worldscale 100. These flat rates are a set of dollar figures quoting the freight per metric ton for each of a very large number of possible voyages. Apart from being a useful tool for chartering, the Scale system provides a

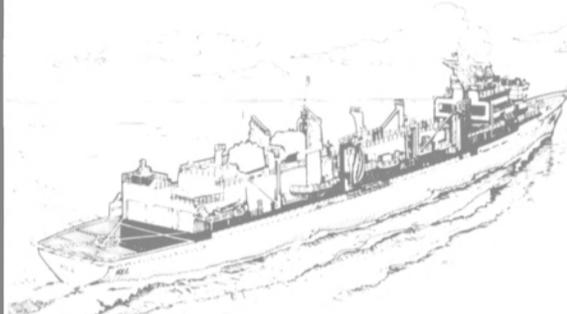
shorthand method for comparing market levels.

Intertanko, the International Association of Independent Tanker Owners, has recently produced a booklet describing New Worldscale. At the same time, the publication points out several aspects of tanker chartering which are *not* solved by New Worldscale.

For a copy of the booklet,

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## GEARS, QUIET GEARS, CINCINNATI GEARS... READY TO SERVE!



High performance marine drives designed for use in the AOE-6 class fleet support ship have the largest surface hardened and precision ground gear of any surface ship in the fleet. Surface hardening creates higher power density—HPD. Compared with conventional through hardened gears, HPD precision ground gears are lighter in weight, more reliable and produce low noise signatures while providing higher specific loading and greater accuracy. At 3.5 meters the AOE-6 HPD gears have 120% more torque capability than any other surface ship in the U.S. Navy.

The AOE-6 drive system, designed to handle four LM2500 gas turbines, features the first reversing reduction gears aboard a U.S. Navy surface ship this size. Reversing reduction gears allow the Navy to take advantage of the higher efficiency provided by fixed pitch propellers.

The design objectives of the AOE-6 drive system are consistent with the U.S. Navy's goal of improving the fleet. Future programs can take advantage of this fully developed design, particularly in regard to time and cost.

Epicyclic and parallel shaft drive systems using our high performance gears are in daily use throughout the world, above and below the ocean surfaces.

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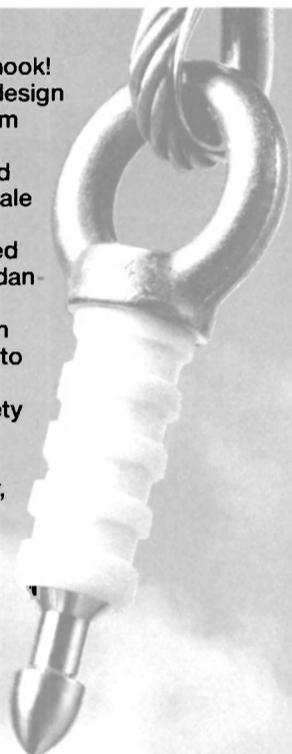
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## Whitfield Appointed Senior Project Engineer, Electrical At JJH

Hans G. Nilsen, vice president of JJH, Inc., a leading naval engineering firm, recently announced the appointment of Robert J.

Whitfield to the position of senior project engineer, electrical, at the company's Cherry Hill, N.J., office. Mr. Whitfield brings to his new position considerable and varied experience in naval and commercial ship operation, design construction and maintenance.

You can rely on the NORPOL safety release hook! This new product is based on revolutionary design principles which involve a total departure from conventional concepts of hook shape. The NORPOL safety release hook is designed to be simple and safe to use. It consists of male and female parts which separate instantly when the release button is pressed – provided the load is under 100 kg. This eliminates the danger of premature hook release... The NORPOL safety release hook is unique in being the only model on the market approved to SOLAS 83 specifications worldwide. Want to find out more about the NORPOL safety release hook? Just complete and return the coupon to the address below and you will be contacted immediately: Schat-Marine Safety, Corp., P.O. Box 465, Foot of Industrial Road, Farmingdale, New Jersey 07727, U.S.A. or NORPOL Technic A/S, Odinsvej 1, DK-7200 Grindsted, Denmark.



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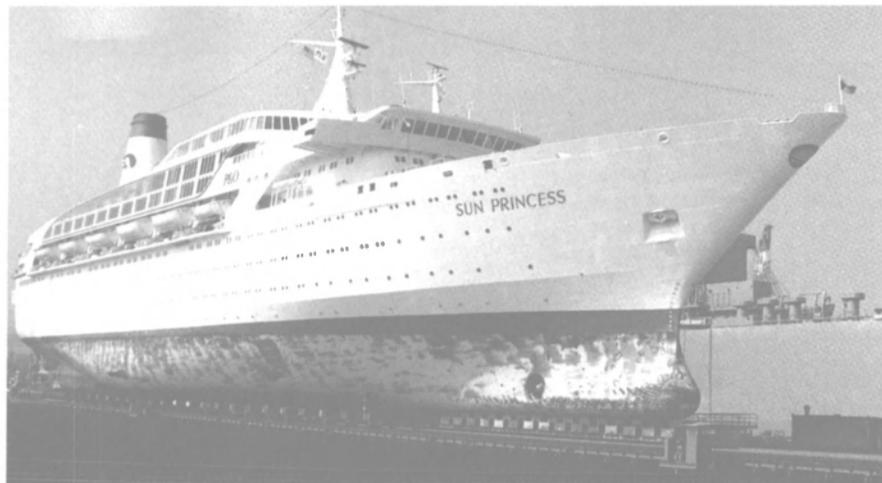
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The M.V. Sun Princess on the transfer cradle, in the process of being moved onto Land Level Workbay No. 1 for repairs.

## Drydocking At Todd Los Angeles Sets Record For Heaviest Lift On Yard's Syncrolift System

—Literature Available—

The cruise ship M.V. Sun Princess of P&O in London was recently lifted and moved on Todd's Syncrolift for repair work on the propeller shaft and rudder as well as other general repair work.

With a length of 535.75 feet and a beam of 74.80 feet, the Sun Princess is the heaviest passenger vessel lifted so far with Todd's Syncrolift in Los Angeles. The Syncrolift is 655 feet long, has a 105-foot beam and is certified to hoist ships having a light ship displacement of up to 15,000 long tons. The lift consists of 55 beams, and each beam is able to support and lift a total of 480 tons.

After shifting the ship off the lift, two or more vessels (depending on overall length) can be stored in the two workbays where all the repair work will be performed.

The M.V. Sun Princess left the yard as the Star/Ship Majestic, now owned by Premier Cruise Line.

For free literature giving full details on the facilities and capabilities of Todd Pacific Shipyards,

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For more information and free literature on Syncrolift

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## Prelube/Postlube Systems Offered By Kim Hotstart

Keeping critical engine parts cool and preventing engine wear are benefits offered by the prelube/postlube systems now available from Kim Hotstart.

As pre-heaters that also lube, these systems go a step beyond the standard mechanical or automatic prelube devices on most engines. Instead of lubing for just a few seconds or minutes prior to starting, Kim Hotstart systems have the ability to continually prelube by circulating warm oil to the bearings, turbos and other critical areas. After the engine stops, postlubing "cools down" heated surfaces gradually.

By reducing engine wear, times can be extended between overhauls. "Not only can you save time and money that way, but you'll save on labor by not having to send out mechanics to start the system 15 to 20 minutes early," explained Bill Harnish, industrial sales manager for Kim Hotstart Manufacturing Co.

The ready-to-install modular systems are mounted on a steel base plate. Each comes complete with



Shown is a Kim Hotstart prelube/postlube system in an industrial engine application. The system keeps critical engine parts cool or warm and prevents engine wear.

heater, pump, flow control and a temperature control. All electrical complies with the national electric code, CSA standards for hazardous and wet locations, and U.S. Coast Guard standards for offshore drilling rigs and shipboard use.

At the recommended wattages, ranging from 1,500 to 24,000, the Kim Hotstart systems will raise or hold up to 2,500 gallons of oil at 100 degrees Fahrenheit above ambient temperature, exclusive of wind chill.

For more information and free literature on prelube/postlube systems available from Kim Hotstart,

Circle 298 on Reader Service Card

## ICOM Names Kyle National Sales Manager, Marine Division

ICOM America, Inc., Bellevue, Wash., has appointed **Margaret Kyle** as national sales manager for its Marine Division.

In her position with ICOM, she is responsible for ICOM marine sales in the U.S. and Canada, reporting to **Brad Harlow**, marine marketing manager.

Previously, Ms. **Kyle** was director of corporate services for TeleScan, a Houston, Texas-based financial software corporation. Prior to that, she worked in advertising sales with the *Houston Chronicle* and as a manufacturer's representative for Gene Finch and Associates.

ICOM America is the wholesale distributor and service center in North America for ICOM communications equipment in the marine, avionics, amateur and land mobile industries.

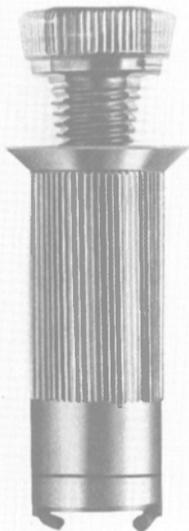
## BFGoodrich Rivnut Develops Innovative New Floating Fastener

BFGoodrich Rivnut® Engineered Fasteners, a business unit of BFGoodrich Aerospace, has developed an innovative, new floating fastener designed for quick, efficient installation where a blind application is complicated by hole misalignment.

The Rivnut fastener, called the Floatnut™, has a floating nut plate that allows for quick, one-sided installation in blind applications without the repeat drilling of holes. Originally designed for use in aircraft structures, the Floatnut can also be used in other blind and non-blind applications where misaligned holes are a problem.

According to BFGoodrich officials, the Floatnut fastener is the only known nut plate in the fastener industry that can be used in blind applications.

The new Floatnut high-perform-



The BFGoodrich Floatnut high-performance floating fastener.

ance floating fastener is available in steel (including type 4037) and stainless steel (including 300 series) and comes in countersunk or flat head styles. In addition to the standard non-ribbed, non-keyed shank style, the Floatnut is also available with a ribbed shank for superior anti-rotation and installation in aluminum and lower strength materi-

als. A keyed shank style is available for higher strength materials.

Floatnut fasteners are designed to obtain a .020-inch to .032-inch float in all directions and are available with locking and non-locking threads. Thread locking can be obtained to MIL-N-25027 requirements.

For more than 50 years, BFGood-

rich Rivnut fastening systems have been used worldwide in hundreds of fastener applications. Rivnut fastener systems are used in the aerospace, defense, automotive and consumer products industries.

For more information and free literature,

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IMO. Creating a new standard of performance, in partnership with businesses you rely on for instruments and controls, engineered products and their support services for naval systems.

IMO. Delivering performance to industrial and defense customers worldwide.

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...and the world.

IMO  
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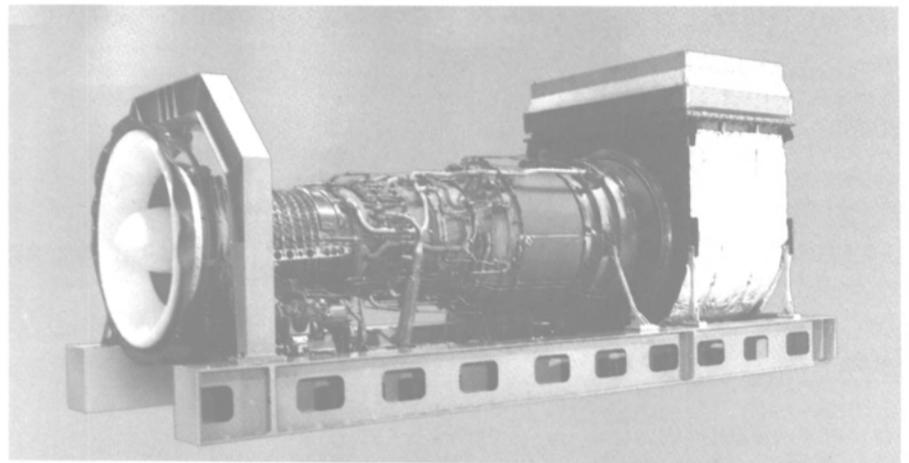
# PROPULSION UPDATE

## GE's Marine Gas Turbine Family Expanding To Satisfy The Markets

It was 1974 when the first of GE's advanced-technology marine gas turbines, the LM2500, entered naval service aboard the U.S. Navy's USS Spruance (DD-963). Since that time, the LM 2500 has been selected by 17 other navies, GE has introduced other marine gas turbines, and the served market for GE's engines has continued to expand every year. The shift to marine gas turbines for surface combatants for all worldwide navies is virtually complete, and now the trend ap-

pears to be a broadening of the served market (see Figure 1).

The U.S. Navy was not the first major navy to shift to gas turbines for its primary propulsion system for a major ship class; however, since that original commitment, the USN has been steadfast in its use of gas turbines for all subsequent classes of surface combatants short of their supercarriers. The overwhelming success of the Spruance Class led to the Perry Class frigate, Pegasus Class hydrofoil, Kidd Class



The LM2500 marine gas turbine is a simple-cycle, two-shaft, high-performance engine. It consists of a gas generator, a power turbine, attached fuel and lube oil pumps, a fuel control and speed-governing system, associated inlet and exhaust sections, lube and scavenge systems, and controls and devices for starting and monitoring engine operation.

destroyer, Aegis Class cruiser, and now the newest class, the Burke Class destroyer. Today there are more than 100 LM2500-powered ships in service in the U.S. Navy.

The widespread use of the LM2500 marine gas turbine is attributable to the simplicity, compactness, and unprecedented availability of the propulsion system. Moreover, maintenance requirements on the LM2500 have been far below original expectations and reliability continues to grow each year. During a recent Navy League meeting in Washington, an admiral expressed the U.S. Navy's experience with the LM2500 very succinctly and accurately as "...The only thing we ever did that exceeded our expectations."

The acceptance by international navies of the LM2500 has closely paralleled the U.S. Navy except that the international navies have hastened to adapt the engine to a much broader range of ship classes and sizes. For many of these navies, operational requirements dictate a much higher level of mobility to cope with local conditions. This has resulted in the general acceptance of the CODOG propulsion system configuration by many of these navies. In this system, the high-speed diesel engines are used to provide excellent endurance, and the gas turbine(s) provides sprint capability for reacting to emergencies and responding to conflicts. Overall, the system is very compact and lightweight so that ship payload factors are not influenced by this added mobility. In fact, the growth in the popularity of the high-speed corvette and lightweight frigate has been fostered in part by the availability of these highly efficient designs. Marine gas turbines are used extensively from corvettes of less than 1,000 tons up to aircraft carriers (see Figure 2). With the availability of advanced-technology smaller gas turbines and the growing demand for more mobility, i.e., responsiveness, power availability, and speed, the use of gas turbines in standard hulls less than 500 tons (e.g., the Stanflex 300) as well as unconventional hull forms, such as SESs, ACVs, etc., is expanding. This trend has been boosted with the emergence of a series of small, compact, and very efficient marine gas turbines which are currently offered by GE (see Figure 3). Capitalizing on the unprecedented success of the LM2500 in marine service, these engines are destined to open a variety of new markets to marinized/indus-

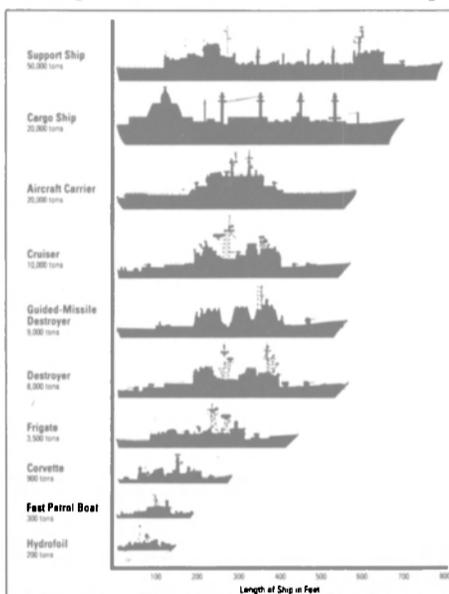
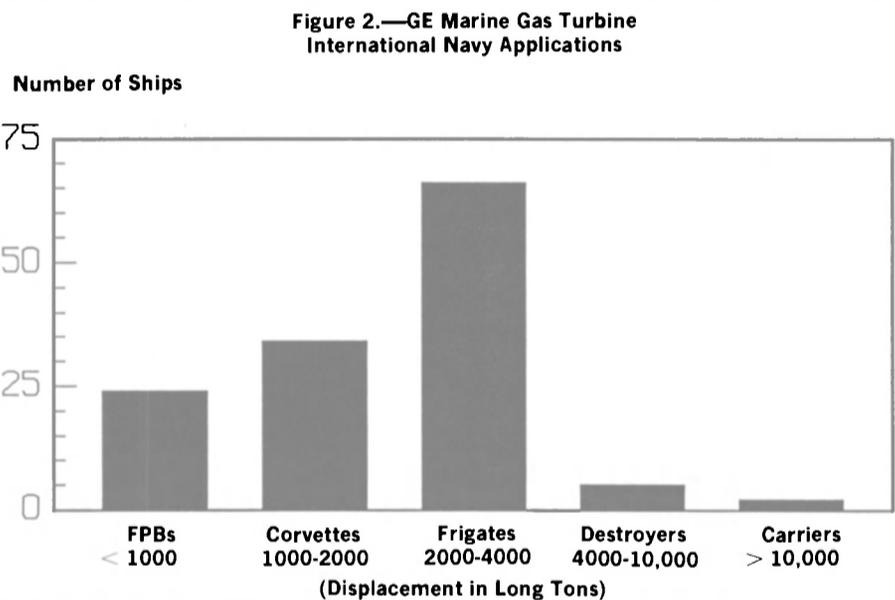


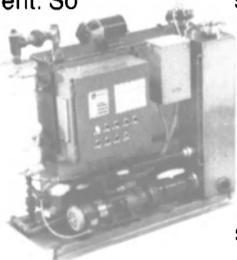
Figure 1.—The Versatility of GE's LM2500



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**Figure 3.—GE's Family of Marine Gas Turbines**

Model	Rating	Thermal Efficiency
LM5000	55,000 bhp	38%
LM2500	32,400 bhp	37%
LM1600	20,000 bhp	36%
LM500	6,000 bhp	32%
LM120	1,850 bhp	32%

trialized aircraft gas turbines. As an example, the LM120 has been selected as the prime mover for the marine propulsion system demonstrator for the U.S. Marine Corps' new high-speed amphibious assault vehicle.

The shift to marine gas turbines in international navies has not been limited to high-speed, lightweight patrol craft. LM2500-based marine propulsion systems are powering the largest naval ships recently commissioned, e.g., the Italian Navy's aircraft carrier *Garibaldi* and the Spanish Navy's aircraft carrier *Principe de Asturias*. Moreover, this same pattern is emerging in the U.S. Navy with the selection of an LM2500-based propulsion system for the AOE-6 fast support ship (displacement 55,000 tons) and apparent recommendation of the same system for the LHD-5 amphibious assault ship (displacement 43,000 tons). The merits of marine gas turbine propulsion of design simplicity, lower first cost, higher system availability, and lower life-cycle costs are now recognized to be applicable to all classes of naval ships from fast patrol boats to large aircraft carriers and support ships. Additionally, the U.S. Navy is now reaping major logistics benefits from its standardization to the LM2500.

The marine gas turbine has been responsible for the emergence of another market, i.e., propulsion system modernization. With the escalation in the cost of replacing ships, many navies are planning to modernize current ships and thus extend their life by 15 or 20 years. The first major step in this direction will be the re-engining of an aircraft carrier with LM2500 gas turbines. The compactness of gas turbines plus the availability of fluid couplings that permit the retention of shafting, propellers and gearboxes make virtually any steam propulsion system amenable to modernization with current marine gas turbines. Broader consideration of this concept is anticipated as new ship prices continue to rise exponentially.

The future for marine gas turbines in naval ships appears very bright as the emphasis on design flexibility, system availability, and life-cycle costs continues to dominate the propulsion system selection process. The combined development of electric-drive transmission systems and an intercooled regenerative gas turbine should further heighten the commitment of naval ship designers and operators to gas turbine propulsion.

It remains to be seen when marine gas turbines will challenge the dominance of the ubiquitous diesel in the commercial marine market. The demand for speed, the value of space, and the value of on-charter

time, i.e., ship availability, are militating in favor of the high-power density and reliability of marine gas turbines. These factors coupled with the proven performance of engines like GE's LM2500 would suggest that gas-turbine-powered cruise liners, containerships, and car/passenger ferries may be just over the horizon.

For free literature detailing the full line of marine gas turbine engines offered by GE for both naval

and commercial applications,

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### Improved Elliot Life Raft Passes USCG Testing And SOLAS 1983 Amendments

Elliot recently passed the SOLAS 1983 amendments and USCG testing for their redesigned and improved life raft, the company once again being the first U.S. life raft

manufacturer to have approval for its full line of inflatable life rafts, including its 25-man davit-launched life raft.

The parent company, Seaco, Inc., offers sales and servicing facilities worldwide through its extensive network of factory authorized distributors.

For more information and free literature on Elliot life rafts,

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# CRUISE + FERRY 89

International Conference & Exhibition  
Kensington Exhibition Centre  
London 24-25 May 1989

<p><b>Day 1: Wednesday 24 May</b> 09.15 CONFERENCE OPENS</p> <p><b>Session 1: Markets and Marketing</b> The Short Cruise Market - Europe and North America S. Buchin, Vice President, Temple, Barker &amp; Sloane Inc., Lexington, Massachusetts, USA</p> <p>The Cruise Ferry - responding to the market K. Levander, Senior Vice President, Wartsila Marine, Passenger Vessels, Turku, Finland</p> <p>Cruise Line Pricing and Distribution: An Analysis of Industry and Technological Changes D.L. Tatzin, Senior Consultant, Arthur D. Little International, San Francisco, California, USA</p> <p>Papers discussed by ship operator panel: G. Hughes, Managing Director, Canberra Cruises and Princess Voyages, London B. Crisp, UK Director, Cunard Line Limited, London E.T. Phippin, Director, CTC Lines, London N. Costa, Chairman, Costa Crociere SpA, Italy</p> <p>The Theme Cruise Concept P. J. Compton, Zeller Compton Stafford &amp; Associates, Inc., Coconut Grove, Florida, USA</p> <p>Niche Marketing in the Cruise Business (opportunities for new and existing cruise lines) J. Lewis, President and D. Sarel, Director, Market Scope, Miami, Florida, USA</p> <p>Papers discussed by ship operator panel</p> <p><b>Session 2: Destination Development</b> Cruise Tourism Infrastructure - on-shore satisfaction R.V.P. Kaufman, Executive Vice President, TC International Inc./Concorde Group, New York, USA</p> <p>Destination Development R.J. Zeller, Zeller Compton Stafford &amp; Associates, Inc., Coconut Grove, Florida, USA</p> <p>Development of the Underwater Leisure Industry M. Mouton, President, Sea Designers Inc., Miami, Florida, USA</p> <p><b>Session 3: Shipboard Revenue</b> Shipboard Revenues - meeting the challenge of change F. Taylor, Director - Retail Operations &amp; Development, Allders International Limited, Eastleigh, UK</p>	<p>The Control of Shrinkage (theft etc.) K.P. Dulieu, Managing Director, Capitol Consultants, Chipstead, UK</p> <p>Hotel Maritime Catering for Cruise Vessels L.A. Fraser, (formerly, Chief Executive Officer, of Poseidon Services, Miami, USA)</p> <p>Casino Management on land and sea: oceans apart? P. Hoetzing, Vice President, Casinos Austria International, Vienna, Austria</p> <p><b>Session 4: Interior Design</b> (This Session will be held in parallel to Session 2. Speakers and panellists to be announced)</p> <p><b>Day 2: Thursday 25 May</b></p> <p><b>Session 5: Operational Efficiency</b> Ferry goes Cruising - The development of common denominators between Ferry and Cruise Shipping F. Widiell and K. Brogren, Marine Trading, Halmstad, Sweden</p> <p>A Hotel approach to Shipboard Management and Operation U.F. Baur, President &amp; Managing Director, Flototel Management Service AG, Rapperswil, Switzerland</p> <p>Ship handling simulators for Optimisation of Manoeuvring Strategies of Cruise Ships in Ports. A case study for the m.s. 'Fantasy' of Carnival Cruise Lines V. Fabietti, Chief Coordinator New Buildings, Carnival Cruise Lines, Miami, Florida, USA S.M. Payne, Naval Architect, Technical Marine Planning, London</p> <p>Th. Elzinga, Head Port and Traffic Analysis Dept, and A. Rem, Project Manager, MARIN, Wageningen, The Netherlands</p> <p><b>Session 6: Fast Ferries</b> (Held in parallel with Sessions 5 and 7)</p> <p>Swath Ocean - now a serious market contender T.D. Kelly, Corporate Secretary, Swath Ocean Systems, Inc., Rancho Santa Fe, California, USA</p> <p>Jetfoils on the Ostend-Dover route. A technical and commercial appraisal J.J. Charlier, Research Associate NFSR, Institute of Geography UCL, Louvain-la-Neuve, Belgium</p> <p>Thames Riverbus - innovation in a traditional environment R.M. Mabbott, Thames Line Plc, London</p> <p>The 71-metre Wave Piercer Ferry - comes of age P.C. Hercus, Managing Director, International Catamaran Designs Pty. Ltd., Sydney, Australia</p>	<p>Application of Waterjet Propulsion Systems to Fast and Slow Passenger Ferries A. Gasparri, Riva Calzoni SpA, Milan, Italy</p> <p>45 Knot/800 passenger ferry - a new realistic alternative for ferry routes A. Ulvesaeter, Vice President, Cirrus a.s., Bergen, Norway</p> <p><b>Session 7: Passenger Terminals</b> London's new cruise facilities and their impact on tourism in the 1990's J. McNab, Chief Executive, Port of Tilbury and D. Jeffrey, Chief Executive, River Division, Port of London Authority</p> <p>Multi-purpose Passenger Terminals in the 1990's C.T. Burke, Port Everglades Authority, Fort Lauderdale, Florida, USA</p> <p>Ferry Terminal Design Considerations S.M. Kowleski, Marine Consultant, K&amp;W International, San Francisco, California, USA</p> <p><b>Session 8: Ship Design</b> Naval Architecture and Cruise Ship Design - the design process B. Naerstad, Manager, Platou Ship Design, Oslo, Norway</p> <p>Fire Safety in Passenger Vessel Design M. Murtagh,* Chief, and B. Cameron, Staff Engineer, Fire Protection Section, Ship Design Branch, Marine Technical and Hazardous Materials Division, U.S. Coast Guard Headquarters, Washington DC, USA.</p> <p>(*Marjorie Murtagh is also Chairman of the U.S. SOLAS Working Group on Fire Protection)</p> <p>Features of the first modern cruise vessel built by Japan "Fuji Maru" K. Keiji, General Manager, Technical Division, Mitsui O.S.K. Lines Ltd., and M. Kobayashi, Deputy Manager, Ship Design Department, Kobe Shipyard and Machinery Works, Mitsubishi Heavy Industries Ltd., Japan</p> <p>How the new pollution regulations affect the cruise industry F. Hovland, Manager, Norsk Hydro AS, Notodden, Norway</p> <p>Ferry Vessel Stretch - Efficiency through modernisation (A limited budget does not necessarily preclude the satisfaction of a rising demand on ferry space) R.S. Dossett and W.J. Owens, Ferry Division, North Carolina Dept. of Transport, Morehead City, North Carolina, USA</p> <p>17.30 CLOSE OF CONFERENCE</p>
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## Dynabrade's Air-Powered Abrasive Belt Machine Converts To Other Tools



Dynabrade's new kit includes the tool itself, contact arm, and parts to quickly convert the Dynaflex II to a die grinder or 2-inch disc sander.

The Dynaflex® II air-powered abrasive belt machine performs grinding, deburring, polishing and sanding of virtually any material used in manufacturing. The tool accepts six interchangeable contact arms for many different applications including entering small openings. Grinding work is done where the abrasive belt runs over the contact wheel and deburring/finishing is accomplished by working over a platen mounted on the contact arm.

New kits are available which include the tool itself, contact arms, and parts to quickly convert the Dynaflex II to a die grinder or 2-inch disc sander.

Tool features include quick and easy changing of abrasive belts and contact arm, lever throttle and choice of three motor styles. As an added feature, the air motor can be rotated and locked in position for work at virtually any angle.

For more information and free literature from Dynabrade,

Circle 52 on Reader Service Card

## Fairbanks Morse Offers Free Literature Detailing Blower Bypass Systems

The Fairbanks Morse Engine Division of Colt Industries, Beloit, Wisc., is offering a free copy of its color brochure detailing a blower bypass system for Fairbanks Morse blower scavenged opposed piston engines.

The four-page brochure, File No. 3090, describes expected engine performance using the blower bypass system for blower scavenged opposed piston engines.

According to the publication, the blower bypass system increases exhaust temperature at low load to significantly reduce or eliminate wet oil in the exhaust stack. The unit may be installed on old style, slope-side blowers, as well

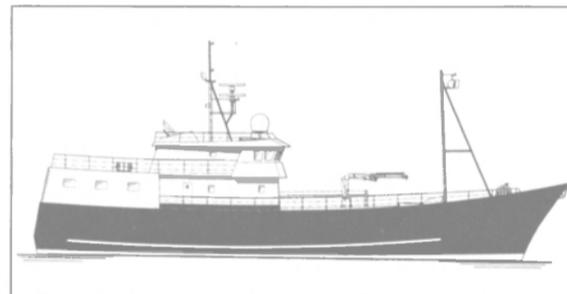
as on all new styles on both standard and reverse rotation engines.

The brochure uses several graphs, as well as configuration drawings to demonstrate engine performance with and without the blower bypass system.

For a free copy of the brochure from Fairbanks Morse,

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## MARCO-Seattle To Build Two Alaskan Longliners



Drawing of the newly designed MARCO Shipyard 135-foot freezer longliner.

MARCO-Seattle shipyard has signed a contract to build two new 135-foot steel freezer longliners for Alaska Frontier Co. of Seattle, Wash.

With the continuing "Americanization" of North Pacific fisheries under provisions of the Magnuson Act, the larger foreign longliners are being taken out of the fishery. Historically, the Alaska longline fishery has been based on smaller "ice boats." Now, however, there is a trend toward larger (130- to 150-foot) freezer longliners, which head, gut, and freeze the fish on board. The new MARCO boats are designed to meet this growing need.

"This is an especially gratifying opportunity," commented MARCO vice president **Bob McMahon**. "We've been developing this new design over the past couple of years as the situation in the North Pacific has been evolving, and now it's time has come."

The new MARCO design is a house-aft configuration with a full-length shelter deck. The ship's fish-processing capacity will be approximately 34,000 pounds per day, using horizontal plate freezers to produce blocks that will be kept in refrigerated dry holds for delivery to port or transshipment.

The 14,000-cubic-foot (400 m<sup>3</sup>) fish holds will have a capacity of about 560,000 pounds (254 mt). In addition, there will be a 1,000-cubic-foot refrigerated bait hold aboard.

The Alaska Frontier vessels will have complete MARCO automatic longline systems, featuring the CircleMatic baiting and setting machine that automatically baits full-circle circle hooks. Also included will be the MarcoMatic hauler/coiler and the efficient MARCO rack storage system.

Operated with a crew of up to 21, the new longliners will be powered by Caterpillar 3512 diesel engines, rated at 1,175 hp, driving 86-inch, three-bladed CP propellers. Auxiliary power will be supplied by two Caterpillar 3406T gensets with 250-kw generators.

The new construction project follows contracts for three major conversions at the MARCO yard. The yard has completed work on the Westward Wind and Alaskan Command, and at present, is converting the Resolute. The yard also recently completed the installation of a new two-level pilothouse on the 108-foot MARCO crabber Norseman II, originally built in 1979.

The contract for the two Alaska Frontier new-buildings calls for August and October 1989 deliveries.

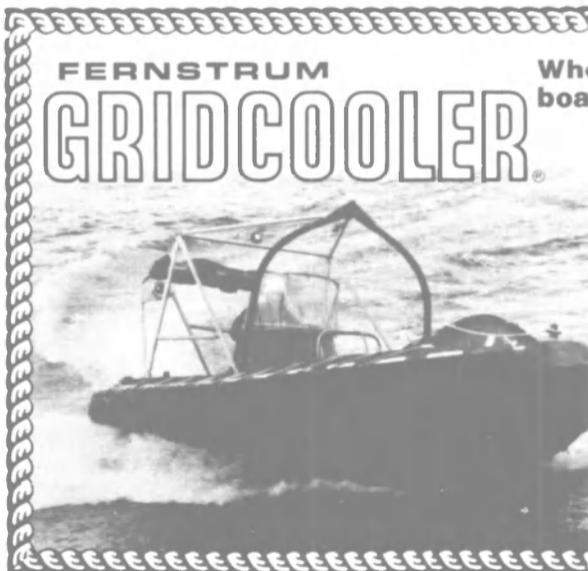
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Maritime Reporter/Engineering News

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**Hall Named Manager,  
Sales And Marketing  
At Avondale Industries**



Charles A. Hall

Barry Heaps, general manager of Avondale Boat Division, Avondale Industries, Inc., has named Charles A. Hall as manager of sales and marketing for the division. Mr. Hall will be responsible for sales and marketing of the division's domestic and foreign marine-construction programs.

According to Mr. Heaps, the addition of this position reflects the steady growth of Avondale's Boat Division.

Mr. Hall has spent 27 years in marine-related marketing and management. Most recently, he was president of Maritime Marketing, Ltd., a New Orleans-based international marketing and consulting firm. He has also been associated with several shipyards and inland and offshore marine groups, including Halter Marine, Inc., and American Marine Corporation in the New Orleans area. In these companies, he has held management positions related to operations and marketing.

The Avondale Boat Division, using the company's advanced engineering and assembly technology, contracts with a variety of clients to build state-of-the-art boats, such as high-speed, surface effect passenger ferries.

**Sperry Marine Rascar  
Gains Acceptance  
With Naval Communities**

Sperry Marine's Rascar, the revolutionary new touchscreen control rasterscan radar/ARPA, is gaining acceptance in naval communities worldwide, according to Mike Manfredi, senior marketing representative. The ability of Rascar to rapidly acquire, lock onto, track, and predict course and speed of a designated target provides the naval operator with the ability to do target intercept, fire control solutions, and normal ARPA collision avoidance calculations automatically. These capabilities coupled with its user-friendly touchscreen control have shown Rascar to be a cost effective enhancement to today's increasingly valuable FPBs, FPBMs, and larger vessels, according to Mr. Manfredi.

The Swedish Navy selected the Rascar display because of its inherent user-friendliness, efficient oper-

ation, and outstanding discrimination. Rascar was chosen for use aboard the new Swedish icebreaker Oden, following the sea-trials in which it was shown that the eight levels of video on the Rascar display provided better discrimination of ice ridges, making the task of determining best vessel path much easier.

Available in either X-Band or X-Band configurations, Rascar can also be used as a stand-alone display for other radar systems. This capability is provided through the use of a "Universal Adaptive Interface" option available for all configurations of Rascar. Finally, Mr. Manfredi stated, Rascar's use of high-power processing and a widely ac-

cepted VME bus allows for interfacing with other systems such as ECM, voyage management systems, integrated navigation, and multiple radar sources, as well as providing the capability of being used as a universal display.

For further information and free literature from Sperry Marine,

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# PROPULSION UPDATE

## New Worldwide Distributor Network For EMD Power Products

—Free Literature Available—

A new worldwide distributor network that will sell and service EMD engines, generators and motors in the marine, industrial and oil drilling markets has been established by the Electro-Motive Division (EMD) of General Motors to increase flexibility and improve customer service.

Distributors, with their autho-

rized parts sales and service centers, will provide local availability of genuine EMD parts and rebuild components in assigned areas of responsibility. They will handle all direct sales and field service activities, including technical assistance and "hands on" maintenance.

Distributors will market EMD power products, engines and acces-



sories. They will take basic components, furnished by EMD, and custom assemble them for specific applications. This will provide flexibility in customizing designs to meet specific customer requirements for EMD products. Basic components development will continue to be handled by EMD's central engineering staff, thereby ensuring customers will be getting state-of-the-art equipment.

An EMD sales and service staff for power products will be headquartered in LaGrange, Ill. This group will provide sales, technical service, and engineering support to distributors.

Most of the distributors, who are assigned a specific territory of sales and service responsibility (see illustration for details), will carry both EMD and Detroit Diesel Corporation products, providing customers a full line of engines with a broad power range.

Kelly Jones, EMD power products business manager, said, "There are a lot of companies in the marketplace right now representing themselves as suppliers of EMD products. It's important for power products customers to know that EMD's new distributors and their assigned parts sales and service centers are the only ones authorized by GM to sell genuine EMD products."

The following is a listing of the new distributors. For free literature detailing the EMD power products offered by the distributor, circle the corresponding Reader Service Number immediately following the address.

**U.S. East Coast—Power Systems Division**, Morrison-Knudsen Co., Inc., P.O. Box 1928, Rocky Mount, N.C. 27801; telephone: (919) 977-2720; twx: 510-929-0725; fax:

919-446-3830. EMD contact: **Milt Sharpe**.

**Circle 10 on Reader Service Card**  
**U.S. Midwest, South, Mexico and Central America—Stewart & Stevenson Services, Inc.**, 2707 North Loop West, P.O. Box 1637, Houston, Texas 77251-1637; telephone: (713) 868-7700; telex: 794221; fax: 713-868-7692. EMD contact: **Tommy Wall**. Or, contact: Stewart & Stevenson Services, Inc., 1400 Destrehan Ave., Harvey, La. 70059; telephone: (504) 347-4326; fax: 504-348-8970. EMD contact: **Ralston Cole**.

**Circle 11 on Reader Service Card**  
**U.S. Midwest, North—Valley Detroit Diesel Allison**, 13644 East Nelson Avenue, City Industry, Calif. 91744; telephone: (818) 333-1243; twx: 910-584-1318; fax: 818-369-7096. EMD contact: **Lee Arkus**.

**Circle 12 on Reader Service Card**  
**U.S. West Coast, Baja Peninsula, Alaska and Hawaii—Western Engine Company**, Energy Systems Corporation, 500 South Lombard Road, Addison, Ill. 60101; telephone: (312) 620-2000; telex: 728468; fax: 312-620-0287. EMD contact: **Bob Bowles**.

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**Australia, Indonesia, New Zealand, New Guinea, Philippines and Malaysia—Detroit Engine & Turbine Co.**, P.O. Box 188, Blair Athol, South Australia 5084, Australia; telephone: 260-2299; telex: 790-82427; fax: 349-4142. EMD contact: **Ray Dawkins**.

**Circle 15 on Reader Service Card**  
**Canada—Midwest Power Products, Ltd.**, 1460 Waverly Street, Winnipeg, Manitoba, Canada R3T 3G6; telephone: (204) 452-8244; telex: 075-7726; fax: 204-452-

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Stevensville, MD 21666, (301) 643-4141

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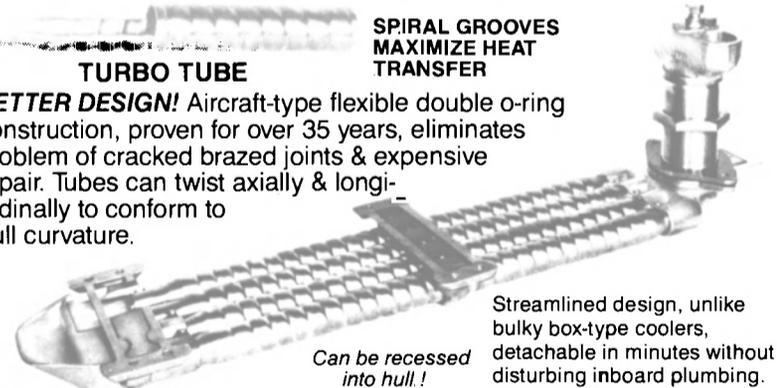
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Maritime Reporter/Engineering News

2153. EMD contact: **Bryan Norrie**.

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**Brazil—Retnam Diesel**, Rua Dr. Alfredo de Castro 200, Sao Paulo Cep 01155, Brazil; telephone: 671-151; telex: 112-4985; fax: 825-1816. EMD contact: **Paulo Sampaio**.

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**Europe, Middle East and North Africa—Turner Diesel, Ltd.**, 65 Craigton Road, Glasgow G51 3EQ, Scotland, United Kingdom; telephone: 440-0666; telex: 851-778742; fax: 445-4123. EMD contact: **Stan Quinn**.

Circle 18 on Reader Service Card

### Schichau Delivers Car/Rail Passenger Ferry 'Robin Hood'

The car/rail passenger ferry Robin Hood was recently delivered to Hamburg-based TT-Line GmbH & Co. by Schichau Seebeckwerft of Bremerhaven, West Germany. The vessel immediately joined her sister ship Nils Dacke in serving the line's Lubeck-Travemunde to Trelleborg route. The Nils Dacke has been employed on this route since October 1988.

According to TT-Line, which with its Swedish partner Swedcarrier operates the service from Lubeck, West Germany, to Trelleborg, Sweden, the 24,728-ton Robin Hood and sister vessel Nils Dacke are among the largest vessels of their kind. They are equipped with tracks on the lower deck to handle complete cargo trains. The rail facilities can also be used to accommodate truck/trailer units.

Like the Nils Dacke, the Robin Hood has an approximate length of 581 feet and a width of 84.5 feet. Both offer three decks interconnected by internal ramps, and have accommodations for up to 300 passengers: 280 beds in a total of 121 cabins, all with shower and toilet facilities; video-cinema; conference room; lounge; and self-service restaurant.

For free literature giving full information on the facilities and capabilities of Schichau Seebeckwerft,

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### ABB Turbo Systems Formed—Literature Available

In the recent decentralization of Asea Brown Boveri Ltd., Baden, Switzerland, the former business site of Superchargers has been turned into a separate company, ABB Turbo Systems Ltd., Baden.

ABB Turbo Systems Ltd. ranks among the world leaders, both technically and in market terms, in the field of turbochargers for diesel engines with ratings of over 500 kw. In recent years, millions of dollars have been invested in the turbocharger factory in Baden to automate it and

make it one of the most modern in the world.

At present, the facility employs about 800 people, mainly in the field of large turbochargers. Turnover in 1988 was about \$165 million; this includes revenues from sales and service generated by roughly 400 employees in more than 60 countries.

ABB Turbo Systems Ltd. will assume all the obligations of the ear-

lier business area, especially as regards warranty and service commitments.

ABB Turbocharger Company, North Brunswick, N.J., is the exclusive U.S. distributor of ABB Turbo Systems turbochargers.

ABB Turbocharger Company offers to OEM and the after-market a complete range of high efficiency turbochargers and application engineering support for diesel and gas

engines for marine and land installations.

Repair and service facilities staffed with factory-trained personnel and stocked with spare parts are maintained on the East Coast, Florida, Gulf Coast, Midwest and West Coast.

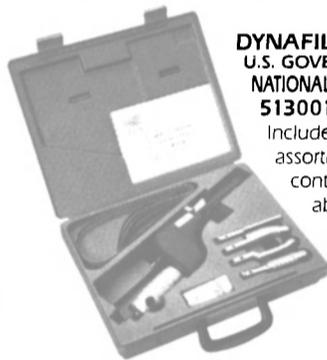
For free literature detailing ABB Turbocharger products and services,

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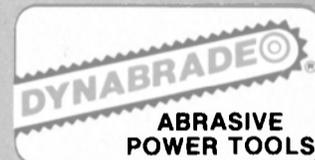
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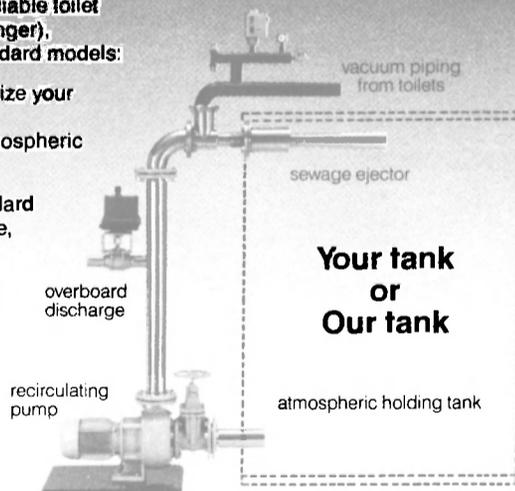
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## Hapag-Lloyd Orders Five Containerships From Samsung

The shipping line of Hapag-Lloyd AG recently ordered five 4,400-TEU containerships from the South Korean shipbuilder Samsung Shipbuilding & Heavy Industries. The vessels are scheduled for delivery between 1991-1992.

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# ELECTRONICS UPDATE

## Raytheon's SNA-91 Integrated Bridge System Is Said To Make Significant Contributions To Fuel Savings

Raytheon Marine is offering a free, four-color brochure fully detailing its new cost-saving Integrated Bridge System, SNA-91. The fold-out publication features color photos, dimensional drawings and a detailed block diagram describing the system and its operation. In addition, the brochure provides information on functional specifications such as position fixing, navigation planning, route tracking, ARPA and data display.

According to Raytheon Marine, its innovative SNA-91 Bridge Integration System makes significant contributions to fuel savings for ships of this size. The company claims this system often saves as much as 2 percent of the fuel costs, or about \$5,000 a month. It does this with the use of its own built-in adaptive steering system which minimizes unnecessary rudder movements. It also interfaces with performance sensors to monitor engine, hull, weather, and navigation data.

The SNA-91 consists of a Navigation Control Unit with a multicolor 20-inch Raster Scan CRT; a Computer Planning Terminal, including floppy disks for electronic charts, data and programs; plus a Chart Digitizer; and Printer.

Designed to be easy to use, the SNA-91 Bridge Integration System presents a broad range of ship management information on-screen. For example, three electronic "pages" of engine data include: propeller rpm, propeller pitch angle, shaft horsepower, torque, turbocharger rpm, engine start air pressure, temperature and load, and fuel oil consumption. The computerized integration system also displays hull pitch and roll data, draft and trim, and propeller slip ratio.

The SNA-91 interfaces with the ship's navigation systems, including gyro, log, SatNav, GPS, Loran, and

radar. When interfaced with Raytheon's Pathfinder®/ARPA (Automatic Radar Plotting Aid) the SNA-91 displays ARPA-track radar targets, along with electronic charts, nav aids and other data. The SNA-91 and ARPA transmit information back and forth, so that the ARPA can also display buoys, coastlines, etc., enabling the operator to see electronic chart data in relation to radar images. By exchanging data, the two systems provide "map match" checks resulting in the highest level of accuracy possible.

Raytheon's Pathfinder/ST ARPA, with ranges from 1/4 to 96 nm, automatically monitors up to 40 targets simultaneously, and displays vectors and data for the 20 most critical targets, on a very sharp, ultra bright, 34-cm CRT. Among route planning features available is a Trial Maneuver mode, which al-

lows the operator to enter possible changes in course and speed to determine best course of action.

With the introduction of the M/V President Adams into trans-Pacific service last fall, a total of five new C10-class ships joined the American President Lines fleet in 1988. They were designed to meet the needs of APL's Pacific Basic customers, using the most advanced technologies available, including a "wide body," non-Panamax hull, and a new, computerized Integrated Bridge System.

These C10-class ships' navigation consoles are designed in "T" formations with an SNA-91 Bridge Integration System and Raytheon Pathfinder/ST ARPA on each arm, and engine and steering controls in the center. The integrated dual system helps to make it easy to carry out navigation and other ship performance functions from one location.

Built in Germany by Howaldswerke-Deutsche Werft (M/V's President Kennedy/Truman/Jackson) and Bremer Vulkan (M/V's President Polk/Adams), the C10s incorporate many of Germany's "Ship-of-the-Future" ideas into their design, as part of APL's efforts to reduce costs on a per-container-mile basis.

For further information on the Integrated Bridge System,

Circle 3 on Reader Service Card



Crew member checks Raytheon Pathfinder ST/ARPA and SNA-91 Bridge Integration display (right) at console of American President Lines C10 conbulk. In addition to interfacing with radar and other navigation equipment, the system interfaces with performance sensors to provide a wide range of important information in one spot, including navigation, engine, hull, and weather data.

## Raytheon's New Professional Loran Is Highly Accurate And Also Exceptionally Easy To Use

Raytheon's new Raynav 780 Loran-C Navigator is a rugged, commercial-quality, weatherproof unit designed, according to the manufacturer, with the most advanced technology available to bring mariners a new, unbeatable, high-level of accuracy. Yet this Loran is exceptionally easy to use and has rotary and keypad controls to eliminate operator confusion.

Five lines of data are displayed simultaneously, with most important data displayed in the largest size. Raytheon's Raynav 780 is the only Loran in its class to show lat/long or TDs in half-inch-high readouts. Information provided on the LCD also includes bearing, range and time to next waypoint; distance to final waypoint; present speed and course; velocity toward destination

and along route; course made good; and cross-track error with steering guidance.

Simply turn on this Loran and switch to any function. Operations that once required tedious study, now take only seconds for initial setup, using on-screen prompts.

Programmable for up to 99 waypoints, the Raynav 780 has automatic/manual route sequencing, and 10 quick-access "save" memories. Automatic and manual selection of GRI and secondary Loran stations help provide the highest degree of accuracy. To make navigation easier, this Loran offers automatic corrections for magnetic variation and Loran signal deviation (ASF). The Raynav 780 also allows manual correction of lat/long or TD



The Raynav 780 has a high dynamic range of 120 dB, which provides much improved reception in fringe areas. The Loran uses data from two separate chains to ensure accurate fixes.

offset, and provides automatic home-position corrections.

The Raynav 780 has a built-in clock which gives date and time. For sailboat racers, it has a stop-watch and count-down timer. Of special interest to fishermen is the way-point "arrival" alarm which can be used to signal the approach to fishing grounds, or alert when own vessel exceeds preset limits for anchor-drift and cross-track error.

The Raynav 780 has one preset and six automatically adjusted notch filters to eliminate unwanted noise interference. Two separate data outputs are available (NMEA 0180/0182/0183 or JRC/Raytheon formats) and can be independently controlled for interface with GPS, SatNav, radars, depth indicators, fishfinders, plotters, autopilots, steering indicators, sailing instruments, and other computers.

Equally at home on large ships,

workboats, fishboats, megayachts and other power and sailboats, the Raynav 780 is designed as an attractive "look-alike" companion to Raytheon's Raystar 920 GPS Receiver and RAY 90 VHF Radiotelephone. Together, these three units fit easily into overhead equipment racks with optional flush-mount kits.

For more information on the Raynav 780 Loran-C,

Circle 13 on Reader Service Card

### Hagglunds Marine Reports Brisk Sales For Cranes

Last year, Hagglunds Marine & Offshore received orders for about 200 deck cranes.

Among new orders recently announced by Hagglunds are two from Dutch yards, totaling 21 cranes; an order at the Donghae yard in South Korea and Bangkok for four 40t SWL container cranes of L-2 type; four general cargo vessels building at Jurong yard in Singapore will each have two 35t SWL container cranes of L-2 type; ten 25t G-2 type cranes will be fitted to two bulkers on order by India; in Europe, a Norwegian vessel will be retrofitted with the new GL-2 type crane of 40t maximum capacity; and an order for 24 deck cranes has been placed with Hagglunds by a Turkish shipyard.

Among orders received by Hagglunds last year were orders for cranes for a total of nine reefer

ships, each to have two 18t SWL twin cranes. Similar cranes have also been ordered in Japan for two reefer ships, each to have one twin 18t SWL and two single 8t SWL cranes.

Hagglunds' Norwegian subsidiary, Hagglunds MTT, received orders during 1988 for about 40 service cranes of different types.

Another of Hagglunds' main markets is West Germany. In 1988, orders were received from Bremer Vulkan, HDW and Flender Werft for about 20 cranes of both service and general cargo types.

Recently, in cooperation with Scandinavian Crane AB, a 37-ton crane was erected at the Swedish inland port of Koping. The crane is basically an electro-hydraulic Hagglunds G type unit on a railborne portal and mast adapted to the requirements of the Port of Koping.

For free literature containing full information on cranes from Hagglunds,

Circle 24 on Reader Service Card

### China Shipbuilding To Build 14 Boxships

Taiwanese shipbuilder China Shipbuilding Corporation will build fourteen 3,500-TEU containerships under a recently state-approved plan. The order for the ships, for state-owned Yangming Marine Transport Corporation, is estimated to be worth \$600 million.

### SPD In Joint Venture With Daeyang Electric

Philadelphia-headquartered SPD Technologies recently announced a joint venture agreement with Daeyang Electric Co., Ltd., of Pusan, South Korea, to provide Mil-Spec circuit breakers and switchgear for the Korean naval industry.

SPD, one of the world's leading suppliers of Mil-Spec circuit breakers, will provide circuit breakers and technical services to Daeyang for designing and producing Mil-Spec switchgear for Korean Navy combatant ships. Daeyang has served the Korean maritime industry and Korean Navy markets with electrical distribution equipment and lighting fixtures since 1977.

SPD Technologies is a world leader in the design, development and manufacture of advanced electronically controlled electrical systems protection equipment for military applications and other harsh operating environments. The company has service, repair and overhaul facilities across the U.S. and serves military markets throughout the world.

For free literature detailing the Mil-Spec circuit breakers and switchgear offered by SPD Technologies,

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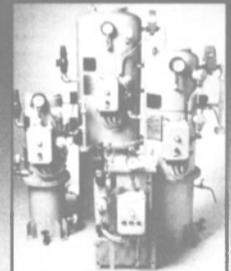
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**Circle Seal Expands  
Sampling/Bleed Valve Line  
—Literature Available**

Circle Seal Controls, Anaheim, Calif., has expanded its line of Sampling and Bleed valves to include both high-pressure and low-pressure miniaturized versions for use in airborne, shipboard and ground support equipment.

Their use, for taking samples of, or bleeding off excessive oils, hydraulic fluids or gases, is extremely quick and easy. They feature a non-rotating, corrosion-resistant seal to assure minimum self-generated contamination. High-pressure versions, the P-500 Series, can be partially opened for metered delivery, or to full flow with a one-quarter turn of their knurled handle. Low-pressure

versions, the HV-20 Series, are opened by simply pushing a button. Both series close automatically for dead-tight sealing when hand is removed from valve.

For further information and free literature from Circle Seal Controls,

Circle 30 on Reader Service Card

**Marco Seattle Names  
Fernstrom Executive VP/  
Chief Operating Officer**



H. Allen Fernstrom

H. Allen Fernstrom has been named to the post of executive vice president and chief operating officer of Marco Seattle. He takes over the day-to-day management of the 35-year-old company from president and founder Peter G. Schmidt, who will be devoting increased time to the firm's foreign operations and new projects.

Mr. Fernstrom comes to Marco from his most recent post as president and chief executive officer of American Shipbuilding Company in Tampa, Fla. Prior to his 13 years there, he spent 10 years with the Singer Company, his last position being operations director of the company's industrial products group.

Marco is an internationally recognized designer and builder of commercial fishing vessels, manufacturer of hydraulic deck machinery and systems, and one of the world's leading builder of oil spill recovery vessels. The company operates shipyards in Seattle and San Diego, as well as shipyard, manufacturing, or service facilities in Chile, Mexico, Panama, Peru, Spain, and Dutch Harbor, Alaska.

**Hornbeck And OMI Agree  
In Principle To Merger**

Hornbeck Offshore Services, Inc. and OMI Corp. recently announced an agreement in principle to a merger between Hornbeck and three OMI affiliates—OMI Petrolink Corp., OMI Offshore Marine Services, Inc., and Potomac Transport, Inc.—following an exchange of shares. As part of this transaction, OMI will purchase certain debt obligations of Hornbeck and restructure such notes. The merger is contingent upon the negotiation and execution of a definitive agreement.

Hornbeck, a publicly owned company, is engaged in the operation of vessels which provide transportation services for offshore oil and gas drilling, geophysical exploration and oceanographic research activities and containerized cargo hauling.

The OMI affiliates are engaged in the lightering of tankers and the ownership and operation of vessels which provide transportation services for the lightering operations and offshore oil and gas drilling activities in the U.S. Gulf.

The merger would produce a combined fleet of 18 vessels, primarily supply/workboats and a division engaged in lightering operations.

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## MTIS Offers Information Packages On N.Y. Homeport

Marine Technical Information Services (MTIS) is offering information packages on current contracting and planning for shore facilities construction for the Battleship Surface Action Group Homeport, currently under construction on Staten Island, N.Y.

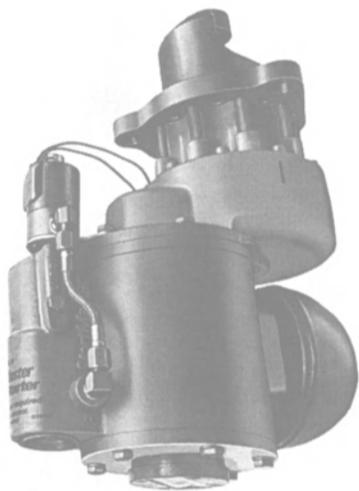
Information includes planned ship repair and maintenance facilities, electronic systems support, public works, shore operation center, warehousing, bulkhead wall construction and dredging activities for the Stapleton and Fort Wadsworth locations.

Other forms of database research are available.

For more information and free literature containing complete details,

Circle 92 on Reader Service Card

## StartMaster Introduces Series Of Air Starters With Built-In Solenoid Valve



StartMaster's new air starter with built-in solenoid valve saves time and the cost of extra hoses and fittings.

StartMaster has introduced a series of air starters with a 12-volt or 24-volt solenoid valve mounted directly on the starter. This permits the starter to be activated electrically from a switch on the dash or control panel. It also eliminates much of the plumbing and extra space required with ordinary air starter installations. A single hose from the air tank is all that is needed. The relay valve, lubricator, muffler and now the solenoid valve are all built into StartMaster starters, thus saving time and the cost of extra hoses and fittings.

For more information and free literature from StartMaster,

Circle 49 on Reader Service Card

## Falk Offers Revised Speed Reducer Bulletin

The doubling of its "A" unit parallel shaft speed reducer line, from

eight to 16 sizes, is described in a revised 48-page bulletin from The Falk Corporation, a major manufacturer of power transmission machinery.

This latest issue of the "A" unit bulletin contains information on the new speed reducers at lower torque ratings up to 197,000 inch-pounds, as well as new units with ratings to 470,000 inch-pounds.

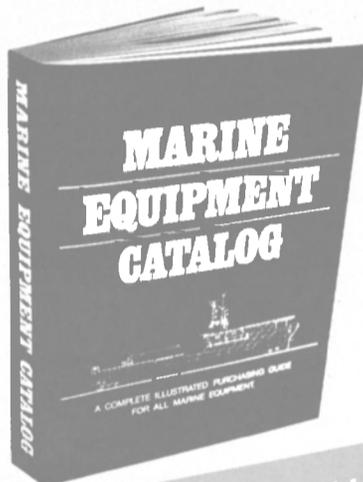
Falk's full line of parallel shaft speed reducers range from 138,000 up to 2 million inch-pounds of torque, with speed reduction ratios from 1:84 to 1, to 437.9 to 1. Also added to the revised bulletin is information on Falk's extensive range of reducer cooling methods, including electric fans, cooling tubes, or external pumps and coolers.

To aid in proper speed reducer selection, the publication contains construction and design features of each model. Service factors are provided alphabetically, both by application and industry.

For further information and a free copy of the revised 48-page speed reducer bulletin from Falk,

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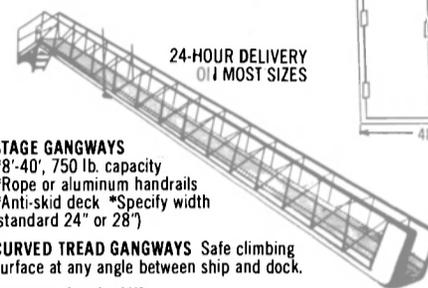
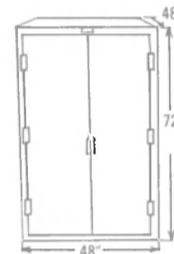
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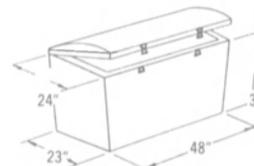
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**WE REPAIR GANGWAYS**—COMPLETE RESTORATION 50% OF ORIGINAL COST  
24-HOUR TURNAROUND ON MOST REPAIRS



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# FOR MORE INFORMATION ON EQUIPMENT AND SERVICES ADVERTISED IN THIS ISSUE

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The listings above are an editorial service provided for the convenience of our readers.

## Resource Technology Expands Marine Trash Compactor Line

### Firm Offers New Down-Sized Unit That Complies With Annex V/MARPOL Regulations

New Annex V/MARPOL 73/78 regulations restricting the dumping of waste from vessels at sea and offshore rigs have created storage, cleanliness and disposal problems for the marine industry. In response to these new regulations, Resource Technology Group, a leader for 17 years in the trash compaction and recycling field, recently announced the introduction of the new down-sized C-2500 marine trash compactor designed to complement the firm's popular and powerful C-3000 line.

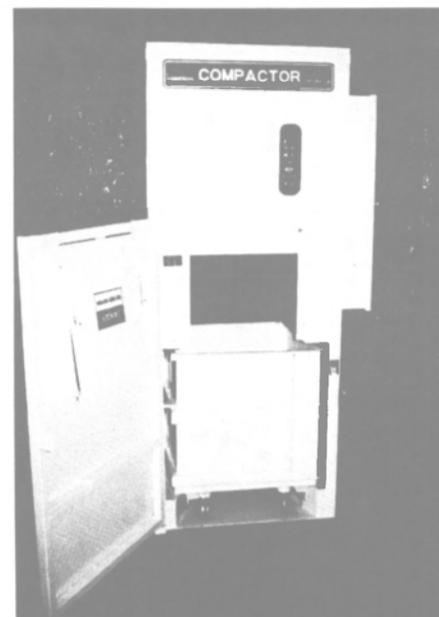
Commercial Compactor Corporation, an RTG subsidiary, manufactures and distributes a wide range of marine trash compactors in reinforced or stainless steel to safely and

efficiently handle all types of waste products generated on board.

The C-2500, with an overall height of only 80 inches, has been designed with a high-compaction 1-hp, 120-V, 30-amp power unit which delivers a 26,000 pounds of packing force. Only 23-1/2 inches in depth and 32 inches wide, the C-2500 delivers a 9-cubic-foot payload and compaction ratios up to 20:1. The vertical design saves space and allows the unit to be located anywhere a power source is available. The access door requires only 32 inches for loading and unloading operations. The compaction cycle occurs in as little as 29 seconds, which serves to greatly minimize labor time.

The C-2500 can be used to compact both recyclable and non-recyclable solid wastes such as packaging crates, boxes, metal objects and dunnage into reusable cubes or lined corrugated cartons. Wastes which have a high liquid content such as food production waste can be compacted into 6-mil polyvinyl bags, which can then be heat sealed and stacked efficiently. Paper, cardboard and other recyclables can easily be compacted into corrugated containers. The container weight can be easily adjusted to produce cubes weighing from 50 to 250 pounds. Every unit is designed with a wide range of safety features including a safety interlock switch which prohibits any operation while the access and unloading doors are open. An indicator light signals the operator that the desired load weight has been reached and triggers an overload protection mechanism which forces removal of the full container before operation can be resumed. The C-2500 operates at a noise level of only 64 dba, a further indication of its smooth yet quiet efficiency. The three-sided compaction container cart can be wheeled to the storage area and easily unloaded. These and other features provide safe, reliable operation and protect the unit from costly operator error. A solid 1,750 pounds, the C-2500 promises maximum compaction with minimal maintenance and repair.

The larger and more powerful C-3000 marine unit stands 88 inches tall, 44 inches and 23-1/2 inches



The compact C-2500 marine trash compactor from the Resource Technology Group meets the new Annex V/MARPOL regulations regarding the disposal of waste at sea.

deep. A container capacity of 10-1/2 cubic feet and a maximum adjustable module weight of 350 pounds affords marine users with a practical option where space and module weight are less of a factor. Its larger capacity further minimizes time spent loading, unloading and compacting.

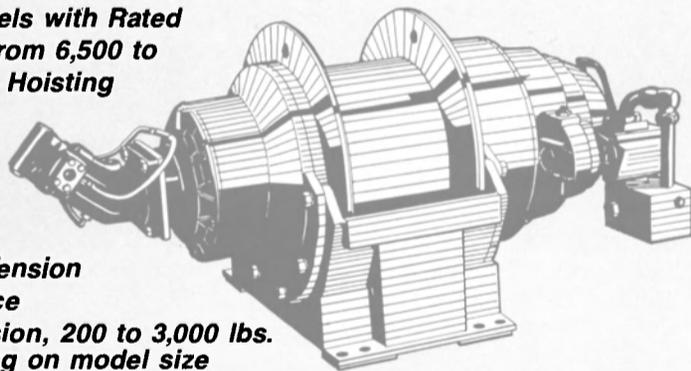
For free information and specifications on these and other marine waste disposal and storage systems from RPG,

Circle 71 on Reader Service Card



## CONSTANT TENSION WINCHES PROVIDE CONSTANT CONTROL FOR HANDLING RESCUE BOATS, BUOYS OR ANY FLOATING OBJECT.

Three Models with Rated line pulls from 6,500 to 27,500 lbs. Hoisting speeds to 210 FPM.



### Constant Tension Performance

- Line tension, 200 to 3,000 lbs. depending on model size
- Line speed, 550 FPM plus Acceleration in excess of 12 ft/sec<sup>2</sup>

### STANDARD FEATURES

- Single lever control
- Automatic constant tension when launching
- Slack cable pulled by hand
- Fast response without shock load
- Designed to SOLAS requirements

### OPTIONAL FEATURES

- Gravity lowering
- Hand crank
- Optional drum sizes
- Grooved cable drum
- Hoist motor to suit existing hydraulics
- Overload protection
- Remote control console

"LEADERS IN WINCH DESIGN"

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Circle 23 on Reader Service Card

## USCG Proposes New Regulations For Small Passenger Vessels

The U.S. Coast Guard recently proposed extensive changes in existing regulations covering small passenger vessels because of new uses for these vessels and advances in design and technology.

The proposed regulations are expected to reduce the number of injuries, lives lost and property damage caused by accidents involving these vessels, primarily by requiring the vessels to carry improved lifesaving equipment, including life raft capacity.

Although newer vessels in this category still meet tonnage requirements for small passenger vessels, they now are larger, made of new materials, carry more passengers, are used for different purposes, and sometimes carry equipment invented since the regulations were written.

There are about 5,000 such vessels operating in the U.S. They include small car-ferries, high-speed passenger ferries, harbor taxis, party and charter fishing boats, tour boats, dinner cruise boats, overnight cruise vessels and offshore oil industry crewboats.

The Coast Guard estimates the average annual cost of the proposed regulations to the small passenger vessels industry at \$8.5 million. Existing vessels would have a phase-in period to give them time to add

equipment required by the new regulations.

Written comments on the proposed regulations will be accepted until the end of May 1989. The proposed regulations were published in the January 30, 1989 issue of the *Federal Register*. Copies of the proposed regulations may be obtained by writing to: Commandant (G-LRA-2), U.S. Coast Guard Headquarters, Washington, D.C. 20593-0001, or by calling (202) 267-1477.

## C. Plath Acquires Spacreek Instruments —Catalog Available

C. Plath North American Division, Litton Systems, Annapolis, Md., recently announced the acquisition of Spacreek Instruments, previously available through Landmark Marine.

Spacreek products include electrical accessories such as ammeters, alternator controls, corrosion detector and the well-known "12-Volt Doctor's Handbook" by Edgar J. Beyn. C. Plath will continue to carry the complete Spacreek product line.

Catalogs are available for the full range of C. Plath products, including Weems & Plath plotting tools, clocks and weather instruments as well as Spacreek instruments. For your copies,

Circle 42 on Reader Service Card

## Ingram Barge Company Acquires Additional Barges And Towboats

Ingram Barge Company, headquartered in Nashville, Tenn., has signed a letter of intent to purchase 319 barges and eight towboats from American Barge and Towing Com-

pany of St. Louis, Mo. The terms of the purchase were not disclosed.

In making the announcement, Neil N. Diehl, chairman and CEO of Ingram Barge Company, said: "We are very pleased to have reached agreement with American Barge and Towing for purchase of its marine assets. Ingram's rapid growth as well as this acquisition

further illustrates our continuing commitment to the barge transportation business and assures our customers of our dedication to providing premium service to them."

Ingram Barge Company has been towing on America's inland waterways since 1946, and its present fleet of over 1,150 barges and 39 linehaul towboats already makes it

one of the nation's largest barge companies. Ingram is a full-service, fully integrated barge line transporting a wide range of products, including petroleum, chemicals, ore, stone, grain and coal.

## Parker Filter Brochure Features CN Family Of Medium Pressure Filters

A new brochure from the Parker Filter Division of Parker Hannifin Corporation provides full information for evaluating, specifying and installing their new CN family of medium pressure filters. This line fills the gap between spin-on can filters and high pressure filters; especially for applications requiring a filter to operate under tough, cyclic conditions.

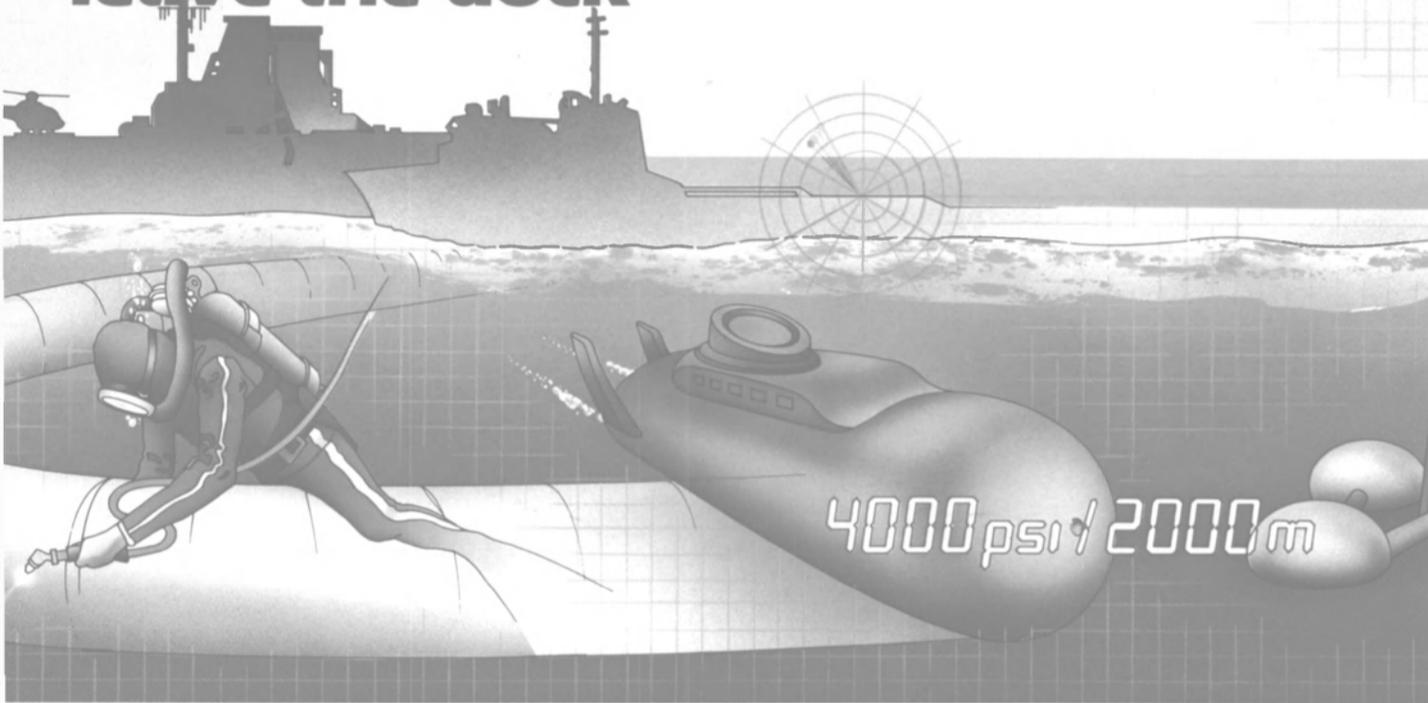
The brochure discloses element and housing performance with engineering data and graphs, installation and specification data, detailed parts list, and ordering information. Typical applications are listed, both for mobile and stationary equipment.

These Parker CN filters are suited for OE and retrofit situations, with the 40CN having automotive industry acceptance (meets AIAG standards).

For further information and free literature from Parker Filter Division,

Circle 28 on Reader Service Card

# Security at sea is using Aeroquip products before you leave the dock



### RISIC Couplings



Aeroquip RISIC 3 Couplings provide improved system flexibility for piping on ship water and oil service. **RISIC 3 is approved on U.S. Navy surface and subsurface vessels.**

Consult Aeroquip for your application.

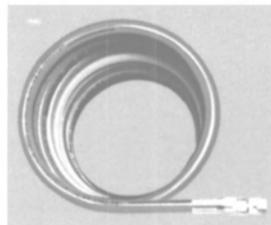
### Marine Hose and Fittings

Aeroquip's FC300 AQP hose now has **NAVSEA** approval. FC300 hose has been engineered for demanding high-temperature shipboard applications and is available with a complete selection of fittings. FC300 exceeds SAE 100R5 specifications.

Request Catalog 306

### Polyon™ Hose

Specially formulated thermoplastic hose designed for tight hose bend applications. Temperatures to +200°F. and pressures to 10,000 psi.



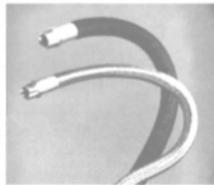
Request Bulletin 2068

### Reusable Fittings with Convoluted Teflon\* Hose

**NAVSEA** approved reusable fittings for rapid replacement of hose lines. Three piece, bolt-together fittings are easily assembled with hand tools for emergency repairs.

\*Teflon is a DuPont trademark

Request IEB 319 and Catalog 306



### Quick-Disconnect Couplings

Aeroquip offers hundreds of styles of quick-disconnect couplings, including our



new Deluge Coupling for fire quenching applications in rocket launching chambers. Couplings are available in steel, stainless, and brass in diameters up to 1½" and with pressure ratings to 10,000 psi.

Request Bulletin 258B

**Aeroquip products meet strict MIL, NAVSEA, and USCG specifications,** and are available through a worldwide network of distributors.

Our Marine/Military Customer Service Group is a team of experienced professionals who speak your language. For assistance, call them at 419-238-1190.

Aeroquip Corporation, 300 South East Avenue, Jackson, MI 49203-1972.

For literature call 800-982-0030.

## RO/RO Carrier Launched By Schichau Seebeckwerft

The Geeste yard of Schichau Seebeckwerft AG, Bremerhaven, West Germany, recently launched the second roll-on/roll-off (RO/RO) carrier for Ethiopia.

Christened the Ziway, the 320-dwt vessel has an overall length of 197-1/2 feet, molded breadth of 39.4 feet, mean draft of 4.8 feet and gross tonnage of 995 tons.

Built to the rules of Lloyd's Register of Shipping, LR +100 A1 +LMC for Red Sea Coastal and interisland service, the Ziway is powered by ZF-g geared MTU diesel engines, two model 6V 396TB3s, which each develop 490 kw (657 hp) at 1,650 rpm. She will have a crew of 23 and a service speed of about 10 knots.

For free literature detailing the shipbuilding services of Schichau Seebeckwerft,

Circle 299 on Reader Service Card

Visit Booth 229 and 230 ASNE DAYS May 4th and 5th



Marine Products from TRIJOVA

For literature on Aeroquip products, circle the appropriate number of the reader service card: Hose & Fittings—Circle 121; Polyon Hose—Circle 122; Teflon Hose—Circle 123; Quick-disconnect Couplings—Circle 124.

# BUYERS DIRECTORY

This directory section is an editorial feature published in every issue for the convenience of the readers of MARITIME REPORTER/Engineering News. A quick-reference readers' guide, it includes the names and addresses of the world's leading manufacturers and suppliers of all types of marine machinery, equipment, supplies and services. A listing is provided, at no cost for one year in all issues, only to companies with continuing advertising programs in this publication, whether an advertisement appears in every issue or not. Because it is an editorial service, unpaid and not part of the advertisers contract, MR/EN assumes no responsibility for errors. If you are interested in having your company listed in this Buyers Directory Section, contact John C. O'Malley at (212) 477-6700.

## AIR CONDITIONING AND REFRIGERATION—REPAIR & INSTALLATION

Adrick Marine Corp., 320 Cantor Ave., Linden NJ 07036  
Cospolich Refrigerator Co., 949 Industry Rd., Kenner LA 70062  
Stal Refrigeration AB, Butangsgatan 16, S-60187 Norrkoping SWEDEN

## BALLAST

Genstar Stone Products, Executive Plaza IV, Hunt Valley, MD 21031  
Mineral Research & Recovery Inc., 4565 S. Palo Verde, Ste 203, Tucson AZ 85714

## BARGE BUILDING

HBC Barge, Brownsville PA 15417

## BARGES—Leasing

McDonough Marine Service, P.O. Box 1825, Parkersburg WV 26101

## BASKET STRAINERS

Beaird Industries, P.O. Box 31115, Shreveport, LA 71130

## BEARINGS—Rubber, Metallic, Non-Metallic

Johnson Rubber Co., Duramax Marine Div., 16025 Johnson St., Middlefield, OH 44062

Kohlenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241

Kingsbury Inc., 10385 Drummond Rd, Philadelphia PA 19154

Lucian Q. Moffitt, Inc., P.O. Box 1415, Akron, OH 44309

## BOILER CLEANING

Asea Stal, 50 Chestnut Ridge Rd., Montvail N.J. 07645

## BROKERS

Captain Astad Company, Inc., P.O. Box 350486, Ft Lauderdale FL 33335;  
P.O. Box 1093, Houma, LA 70360

Bergeron & Associates, P.O. Box 726, Chalmette LA 70044

Jack Faulkner Inc., 2419 Caddy Lane, P.O. Box 371, Flossmoor IL 60422

Mowbray's Tug & Barge Sales Corp., 35 De Hart St., Morristown NJ 07960

Ocean Marine Brokerage Services, P.O. Box 1257, Port Canaveral, FL 32927

## BULKHEADS

The Waugh Co./Rockment (TNF), 5111-6 Baymeadows Rd., Suite 394, Jacksonville, FL 32217

## CARGO ACCESS EQUIPMENT

Morgan Crane Co., Inc. (Hiab SeaCranes and QMC Trident, Ferrari, Fassi marine cranes), 1009 E. Chestnut Ave., Santa Ana CA 92701

## CARGO HANDLING SYSTEM

Skarpenord A/S, US Agent: American United Marine Corp., 5 Broadway, Rte 1, Saugus MA 01906

## CHAIN

Baldt Inc., P.O. Box 350, Chester PA 19106

Crandall Dry Dock Engineers Inc./Marit Chain, 21 Pottery Lane, Dedham MA 02026

Milligan Marine Supply Inc., 5832 Harvey Wilson, Houston TX 77020

## CHOCKING COMPOUND

Philadelphia Resins Corp., 130 Commerce Dr., Montgomeryville, PA 18936

## COMPACTORS

ICI Multi-Pak Inc., 14719 Carolcrest, Houston TX 77079

TFC Corp., 9819 Logan Ave., So., Minneapolis MN 55431. Sales Agents: American United Marine, 5 Broadway, Rte 1, Saugus MA 01906

## COMPUTERIZED INFORMATION SYSTEMS

TIMSCO, P.O. Box 91360, Mobile AL 36691

## CONDENSERS/SEPARATORS

Riley-Beaird, P.O. Box 31115, Shreveport, LA 71130

Wright Austin Co., 3250 Franklin St., Detroit MI 48207

## CONTROL SYSTEMS—Monitoring

ASEA, Inc., 4 New King St., White Plains, NY 10604

Eldec Corporation, 16700 13th Ave. West, P.O. Box 100 Lynnwood, WA 98036

Imo-Delaval, Inc., Gems Sensors Division, One Cowles Rd., Plainville CT 06062

Indikon Division, Metravib Instruments Inc., 26 New St., Cambridge, Ma 02138

NAMCO Controls, 7567 Tyler Blvd, Mentor OH 44060

Teleflex Inc., 771 First Ave., King of Prussia, PA 19406

Valmet Automation A.S., P.O. Box 130, N-3430, Spikkestad, Norway

WABCO, 1953 Mercer Rd., Lexington KY 40511

## CRANES—HOISTS—DERRICKS—WHIRLEYS

ASEA-Hagglund, Inc., 50 Chestnut Ridge Rd., Montvale NJ 07645

The Crosby Group, Inc., P.O. Box 3128, Tulsa OK 74101

Del Gavio Marine Hydraulics Inc., 207 W. Central Ave., Maywood NJ 07607  
telex: 132610 DELMARINE

Marine Travelift, Inc., 49 E. Yew St., Sturgeon Bay, WI 54235

Morgan Crane Co., Inc. (Hiab SeaCranes and QMC Trident, Ferrari, Fassi marine cranes), 1009 E Chestnut Ave., Santa Ana CA 92701

J.D. Neuhaus, Hebezeuge, D5810, Witten Heven, West Germany

Pettibone-Tiffin Corp., 235 Miami St., Tiffin, OH 44883

Westmont Industries, 10805 Painter Ave., Santa Fe Springs, CA 90670

## DECK MACHINERY—Cargo Handling Equipment

Braden Carco Gearmatic, P.O. Box 547, Broken Arrow, OK 74013

Gearmatic—see 'Braden Carco Gearmatic' above.

Markey Machinery Co., Inc., 79 S. Horton St., Seattle, WA 98134

McElroy Machine & Mfg. Co., Inc., P.O. Box 4455, Biloxi MS 39535

Morgan Crane Co., Inc. (Hiab SeaCranes and QMC Trident, Ferrari, Fassi marine cranes), 1009 E Chestnut Ave., Santa Ana CA 92701

Schoellhorn-Albrecht, P.O. Box 22110, St Louis MO 63116

## DIESEL ACCESSORIES—CYLINDER LINERS

Acurax Corporation, Autodata Division, 555 Clyde Ave., P.O. Box 7042, Mountain View, CA 94039

Colt Industries Inc. Fairbanks Morse Engine Div. 701 Lawton Ave., Beloit, WI 53511

Diesel America Inc., 5217 River Rd., New Orleans LA 70123

FCS Inc., 22 Main St., Center Brook CT 06409

General Thermodynamics Corporation, 210 South Meadow Road, P.O. Box 1105, Plymouth, MA 02360

Kiene Diesel Accessories, 325 S. Fairbanks St., P.O. Box 386, Addison IL 60101

## DIESEL ENGINE—Spare Parts & Repair

Bergen Diesel A/S, P.O. Box 924, N-5001 Bergen NORWAY

Bergen Diesel Inc., 2701 Delaware Ave., Kenner LA 70062

Colt Industries Inc. Fairbanks Morse Engine Div. 701 Lawton Ave., Beloit, WI 53511

Cummins Engine Company, Mail Code 60011, Box 3005, Columbus, IN 47202-3005

Goltens, 160 Van Brunt St, Brooklyn NY 11231

MAN B&W Diesel GmbH, Stadtbachstrasse 1, D-8900 Augsburg 1, Federal Republic of Germany

MAN B&W Diesel, 50 Broadway, 18th Fl., New York, NY 10004

Markisches Werk GmbH, P.O. Box 1442, D-5884 Halver 1, Federal Republic of Germany

Sims Pump Valve Co., Inc., 1314 Park Ave., Hoboken NJ 07030

Sulzer Brothers Inc., 200 Park Ave., New York, N.Y. 10166

## DIVING & SALVAGE

H.J. Merrihue, P.O. Box 23123, New Orleans LA 70183

Muldoon Marine Services, P.O. Box 3221, Terminal Island, CA 90731

Parker Diving Service Inc., Berth 69, Los Angeles Harbor, P.O. Box 5272, San Pedro CA 90733

## ELECTRICAL EQUIPMENT

Eldec Corporation, 16700 13th Ave West, P.O. Box 100, Lynnwood WA 98036

L. F. Gaubert & Co., Inc., P.O. Box 50500, New Orleans LA 70150

SPD Technologies, 13500 Roosevelt Blvd., Philadelphia PA 19116

Ward Leonard Electric, 31 South St., Mt. Vernon, NY 10550

Zidell Explorations, Inc., 3121 S.W. Moody St., Portland, OR 97201

## ELECTROMAGNETICS

Sentel Corp., 6713 Robinia Rd., Camp Springs MD 20748

## ELECTRONIC ENCLOSURES

A&J Manufacturing, 14131 Franklin Ave., Tustin CA 92680

## ELECTRONIC INFORMATION SYSTEMS

Inventory Locator Service, Inc., 3965 Mendenhall Rd., Suite 10, Memphis TN 38115

## ELECTRONIC SYSTEMS

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## ENGINE TEST EQUIPMENT

General Thermodynamics Corp., P.O. Box 1105, 210 S. Meadow Road, Plymouth, MA 02360

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Thomas Coudon Associates, 6655 Amberton Dr., Baltimore, MD 21227

Dynabrade, 72 E Niagara St., Tonawanda NY 14150

Maritime Power Corp., 200 Henderson Street, Jersey City, NJ 07302

Space Machine & Engineering Corp., 2346 16th Ave North, St Petersburg FL 33713

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MECO (Mechanical Equipment), 861 Carondelet St., New Orleans LA 70130

Beaird Industries, P.O. Box 31115, Shreveport, LA 71130

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Band-It Division, Houdaille Industries Inc., P.O. Box 16307, Denver CO 80216

Hardware Specialties Co., Ships Division, 48-75 36th St, Long Island City NY 11101

Lee Brass Company, P.O. Box 1229, Anniston AL 36202

Mapeco Products, Inc., 725 Glen Cove Ave., P.O. Box 6, Glen Head NY 11545

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Kohlenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241

Milligan Marine Supply Inc., 5832 Harvey Wilson, Houston TX 77020

Seaward International, Inc., Clearbrook Industrial Park, P.O. Box 98, Clearbrook VA 22624

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McElroy Machine & Mfg Co., Inc., P.O. Box 4454, Biloxi MS 39535-4454

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ITT Standard Heat Transfer Technology, Buffalo, NY 14240

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Riley-Beaird, P.O. Box 31115, Shreveport, LA 71130

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Cunningham Marine Hydraulics Co., 201 Harrison St., Hoboken NJ 07030

Del Gavio Marine Hydraulics Inc., 207 W Central Ave., Maywood NJ 07607,  
telex: 132610 DELMARINE

Parker Hannifin Corporation, 17325 Euclid Avenue, Cleveland, OH 44112

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A/S Vesta, 27 Skudehavnsvej, DK-2100 Copenhagen DENMARK. US Agent: American United Marine, 5 Broadway, Rte 1, Saugus MA 01906

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Stacey/Fetterolf, P.O. Box 103, Skippack, PA 19474

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 Palmer International, P.O. Box 8, Worcester, PA 19490  
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 Deutz Corp., 7585 Ponce de Leon Circle, Atlanta, GA 30340  
 Fincantieri, Diesel Engines Division—GMT, Bagnoli della Rosandra 334, Trieste, ITALY  
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 Parker Actuator Division, 9948 Rittman Road, P.O. Box 450, Wadsworth, OH 44281-4050  
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**WASTEWATER TREATMENT**

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**Conrad Industries Delivers Floating Drydock For Use At New Missouri Repair Yard**



This 3,250-ton-capacity floating drydock, built by Conrad Industries, Morgan City, La., was recently delivered to Missouri Drydock and Repair Co.

A 3,250-ton-capacity floating drydock, built by Conrad Industries, Inc., Morgan City, La., has arrived for service in St. Louis, Mo. Conrad Industries' CEO, J. Parker Conrad, said the unit, which was contracted for by Missouri Drydock and Repair Company, Cape Girardeau, Mo., is being used primarily to drydock river push-boats.

This vessel, measuring 180 by 78 feet, is unique in that it was constructed in three 60-foot sections, each built and launched separately. Though independent, the sections work as one unit connected by steel straps that provide Missouri Drydock and Repair Co. with a full-size floating drydock.

In addition, any single section may be removed and placed in the remaining sections allowing self-maintenance. As a complete unit, the drydock is capable of completing a maximum pump-out in only 35 minutes.

Designed to work at the Missouri Drydock and Repair Company's new St. Louis facility, the multi-sectional steel drydock was routed from Conrad Industries' expanded facilities, through the Morgan City Harbor, the Gulf of Mexico, and up the Mississippi River to St. Louis.

Recently constructed vessels built by Conrad Industries include the Majestic Lady, a three-deck pleasure craft for Citsejam Tours of Nassau, Bahamas; a drydock contracted by Naval Drydock Guadalupe, French West Indies; and the Rio Manzanaras GS-01, a multipurpose drydock/barge vessel built for the Nacional de Canalizaciones of Venezuela.

In an expansion program completed in 1988, Conrad Industries added 550 feet of new steel bulkhead, extending the riverfront of the yard to 1,300 feet, and a second drydock, measuring 200 feet long with a 2,400-ton capacity. The yard also expanded and upgraded its sandblasting, welding, painting, machine shop, etc., facilities.

For free literature detailing the building and repair facilities of Conrad Industries,

Circle 87 on Reader Service Card

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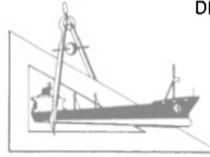
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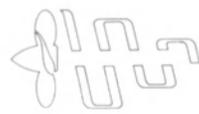


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A committee has been formed in New York City to restore the Slocum Fountain monument in Tompkins Square Park under the Municipal Art Society's Adopt-A-Monument Program. The aim of the committee is to raise the estimated \$12,000 for the restoration and endowed maintenance for the coming 85th anniversary of the fire aboard the excursion steamer General Slocum, in which 1,021 lives were lost. The disaster has gone down in history books as the second largest inland water casualty in the nation and worst in the history of New York City.

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Information may be obtained from the non profit Slocum Memorial Fountain, Municipal Art Society, 475 Madison Avenue, New York City, N.Y. 10022.

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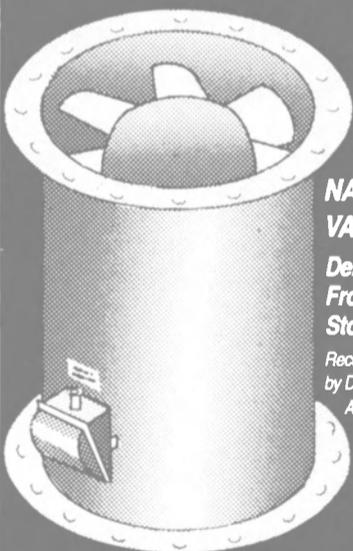
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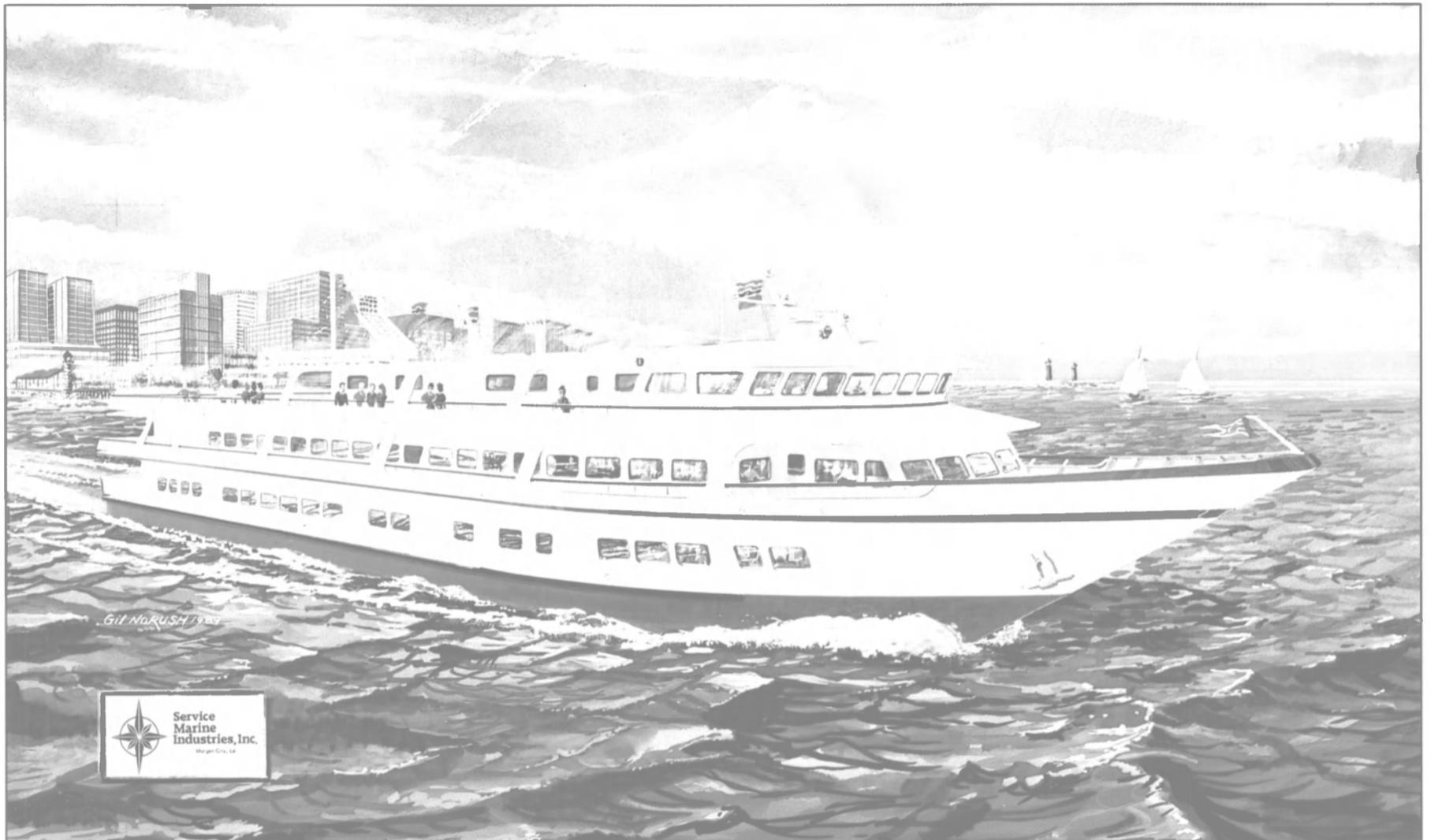
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