



**MARITIME  
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AND  
**ENGINEERING NEWS**

# FIRE!

**U.S. Launches \$2.2 Billion  
Program To Convert Defense  
Industries To Commercial**

**PLUS...  
Recent Developments In  
The Megayacht Market**

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**GASTECH '93**

**PLUS:  
CANADIAN SHIPBUILDING  
EXPO**

**UPDATE:  
COATINGS & CORROSION  
REVIEW**

**FEBRUARY 1993**

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# SIGMAPLANE ECOL



## PRODUCT INFORMATION

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disposal costs

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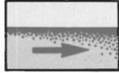
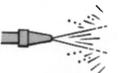
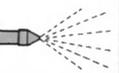
### Tinfree control

Sigmaplane Ecol is a Highly effective Ablative antifouling designed for use anywhere in the world. It is unaffected by any current local or future international legislation banning TBT.

### Fouling control

The principle of fouling control is the same as the traditional selfpolishing antifoulings. But Sigmaplane Ecol is based on a new technology binder which releases antifouling agent slowly into the laminar layer around the hull, keeping it smooth and foul free, even in static conditions. The controlled selfpolishing action continuously exposes fresh protection layers and prevents fuel penalties from excessive coating build up. Service performance is presently recommended for up to 3 years although we have already seen encouraging results from longer periods. It is suitable for both new building and maintenance including block stage application; and can top up other antifoulings with no sealer coat requirements in most cases.

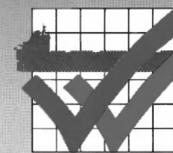
## Properties of Sigmaplane Ecol Antifouling

Type	Waste disposal	Service life	Sailing restrictions	Direct overcoating preparation	Application
					
Ablative	No extra cost	36 months	None	High pressure waterwashing	Easy - using airless spray



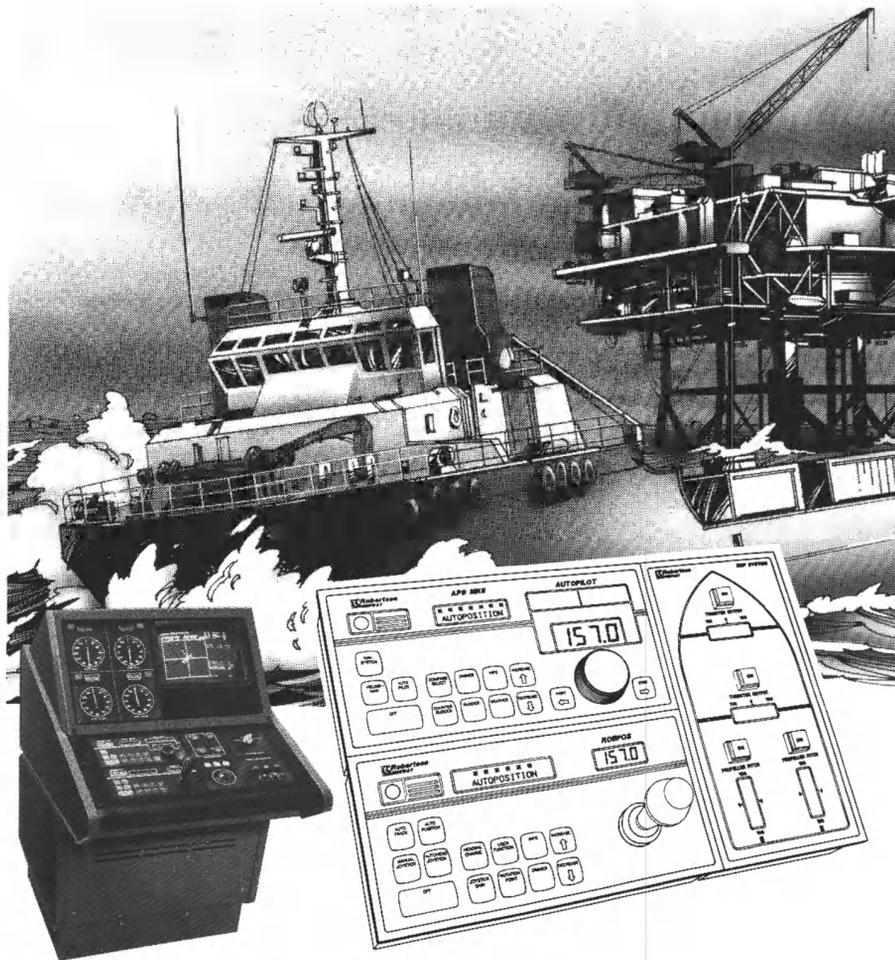
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## ON THE COVER

Pictured is the 16th Aegis guided missile cruiser built for the U.S. Navy by Ingalls Shipbuilding. To help U.S. shipbuilding weather Defense spending cutbacks and make the transition to commercial activity, the government is investing \$2.2 billion. See page 17 for details.

### INSIDE:

<b>Government To Spend \$2.2 Billion To Convert Defense Industry To Commercial</b>	<b>17</b>
<b>Megayacht Builders Order Books Brimming In '93</b>	<b>21</b>
<b>Update: Marine Coatings &amp; Corrosion Control</b>	<b>30</b>
<b>Seatrade Cruise Shipping '93</b>	<b>52</b>
<b>Canadian Shipping Exhibition &amp; Conference</b>	<b>56</b>
<b>Preview: Gastech '93</b>	<b>62</b>
<b>Southern Marine Industry</b>	<b>64</b>

### Carnival Cruise Lines Gives Fincantieri Contract To Build World's Largest Cruise Ship

Carnival Cruise Lines Inc. (CCL) of Miami, Fla., has signed a contract with the Italian shipyard Fincantieri Cantieri Navali Italiani SPA for the construction of the largest passenger cruise ship ever built.

Carnival said, in a press release, the proposed vessel, at about 95,000 gross registered tons, will feature more than 1,300 cabins. Citibank N.A. served as financial advisor to both parties. Delivery is scheduled for late 1996.

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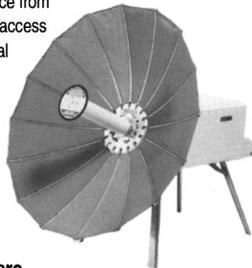
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## NWS Drops Proposal To Shutdown HF Radiofacsimile Weather Broadcasts

In the midst of a self-proclaimed "severe budget crisis" within the National Weather Service (NWS), the government agency had considered shutting down all HF radiofacsimile broadcasts.

At press time, however, a call to Maritime Reporter from **Paul Jacobs**, marine weather services program manager, at NWS in Silver Springs, Md., confirmed that the NWS had indeed backed away from its threat of discontinuing the service, instead opting to "look for other ways and means to save money." Previously, Mr. Jacobs had said "I would expect that at least some portion (of the service) would be discontinued for an indefinite period."

The NWS, which is part of the National Oceanic & Atmospheric Administration (NOAA) is presently the major provider of HF radiofacsimile weather and oceanographic charts to the fishing and maritime community in the Atlantic and Pacific oceans, the Caribbean and the Great Lakes. When news leaked out in early January 1993, even before a final decision on the matter was reached by the NWS, manufacturers such as Alden Electronics of Westborough, Ma., launched a relentless drive to keep the service active. Any cutback or shutdown of service would have been "a major safety and production setback for fisherman, and other operators, including workboats," reasoned **John P. Carlson**, manager, advertising and sales promotion, Alden Electronics.

Mr. Carlson presented Alden's case and contended that fishermen rely on the weather charts provided by the service, as well as the oceanographic data, such as sea temperature charts, to improve their catches. He argued that the timing was especially bad, as both Europe and Asia are currently expanding weather services in support of fishing. This, coupled with an NWS cutback, would reduce the U.S.'s competitive edge.

According to Mr. Carlson, voice weather broadcasts had been suggested to replace the fax transmission, but would not have been a suitable substitution.

## Navatek Begins Construction Of New 82-Foot Swath Ship

Navatek Ships, Ltd. has started constructing a new 82-foot, 22-knot, fast SWATH that incorporates proprietary twin, canted-strut technology, for which the company has U.S. patents pending.

Honolulu Shipyard, Inc., a subsidiary of Pacific Marine and one of Hawaii's largest commercial ship repair companies, was chosen to build the 149-passenger SWATH day cruise boat for client Royal Hawai-



Model of new vessel being built at Honolulu Shipyard.

ian Cruises. Royal Hawaiian Cruises currently operates the 140-foot, 430-passenger SWATH "Navatek I," reported to be the first and only SWATH day cruise vessel currently in operation in the U.S.

The \$3 million construction contract was announced by **Steven C.H. Lodi**, president of Pacific Marine, parent of Navatek Ships, Ltd.

In the new Navatek design, canted and angled struts are employed to overcome trim problems without resorting to using fins. All four struts are canted 35 degrees from vertical, which produces a larger damping effect in pitch, roll and heave, resulting in significantly better motion characteristics.

Tank testing on the new canted and angled Navatek strut design was conducted in May 1991 at the Arctec Offshore Corp. model basin in Escondido, Calif. Construction on the all-aluminum vessel is expected to be completed later this year.

For additional information on the design services of Navatek Ships,

Circle 19 on Reader Service Card

For more information on the capabilities of Honolulu Shipyard,

Circle 20 on Reader Service Card

## Nichols Brothers Receives Order For 80-Foot Catamaran Dive Yacht

The rugged Kona coast of Hawaii and its underwater caves are only accessible from a live-aboard dive boat. Nichols Bros. Boat Builders has received an order to construct an 80-foot, 60-ton catamaran for this purpose.

The Kona Aggressor II will be operated by Live/Dive Hawaii Inc. The Coast Guard-inspected, aluminum boat was designed by International Catamarans, Ltd., of Sydney, Australia. It will offer the speed, space and stability of a twin-hull platform. The Kona Aggressor II will cruise at a speed of 20 knots, powered by two Luger 540-hp diesels. Two Northern Lights generators will deliver all service electricity aboard the vessel.

Nichols Bros. is among the leading builders of fast ferries and small cruise ships in the U.S.

For more information on the boat-building capabilities of Nichols Bros.,

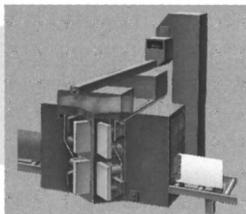
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Maritime Reporter/Engineering News



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Isn't  
Etched  
In Stone.  
It's  
Cast in  
Steel.

### McDermott To Build New Paddlewheel Vessel For Delta Queen

The Delta Queen Steamboat Company, of New Orleans, La., announced that it had entered into an agreement with McDermott Shipyard, of Morgan City, La., a division of New Orleans-based McDermott, Inc., to build an overnight passen-

ger paddlewheel vessel.

Construction is expected to begin this month and be completed in late 1994.

Delta Queen chairman S. Cody Engle said, "This agreement represents the important first step in the development of our new vessel.

"This project was actively bid by a number of shipyards," Mr. Engle continued. "We selected McDermott because of our confidence in their shipbuilding team, their commit-

ment to quality and their commitment to deliver the vessel to us at an early date."

McDermott will immediately begin working with Delta Queen to review the plans for the vessel and to set the final scope of construction. About 500-McDermott workers are expected to be employed on the project.

The proposed vessel, tentatively named the Belle of America, will be one of the largest overnight

paddlewheel boats ever constructed. The paddlewheeler will travel throughout the inland rivers of America as part of the Delta Queen Steamboat Company's fleet, which now includes the Delta Queen and The Mississippi Queen. Delta Queen operates the only overnight passenger paddlewheel vessels in North America.

For additional information about Delta Queen Steamboat Co.,

Circle 126 on Reader Service Card

To receive more information on McDermott Shipyard,

Circle 127 on Reader Service Card

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### Navy Awards Ingalls \$27.9 Million Contract For Aegis Cruiser Support

The Navy has awarded Ingalls Shipbuilding division of Litton, Pascagoula, Miss., an additional \$27.9 million contract to provide continuing engineering and support services for the fleet's Ticonderoga- (CG 47) class Aegis guided missile cruiser program.

This funding brings to \$258 million the total amount awarded to Ingalls since 1981 to provide services in support of the entire Aegis cruiser class. Ingalls provides the Navy with engineering design, training support, logistical support, data management and configuration management for the Aegis cruiser program. Additionally, Ingalls provides technical and data support to the Navy's other shipbuilder for Aegis cruisers, Bath Iron Works, of Bath, Maine.

Lead shipbuilder for the Aegis cruiser program, Ingalls was awarded contracts to build 19 of the 27 ships authorized by Congress since the program's inception in 1978. Sixteen Ingalls-built cruisers have been delivered to the U.S. Navy to date.

### Kvaerner Masa-Yards Wins Cruise Ship Order From Japan

Kvaerner Masa-Yards, a Helsinki, Finland-based shipyard belonging to the Norwegian Kvaerner group of companies, has signed a letter-of-intent to build a luxury cruise liner for Nippon Yusen Keisha (NYK) of Japan.

The letter-of-intent is to be followed by a contract in the near future. Kvaerner didn't specify the value of the order, but said it marked a breakthrough for the group's shipbuilding activities.

According to group president Diderik Schnitler, "the order will represent one of the first cruise ships built in Europe for delivery to Japan."

The ship will be constructed at the group's yard in the Finnish town of Abo. It will have capacity for 960 passengers and is scheduled to be in service by the spring of 1995.

Maritime Reporter/Engineering News

**Damen Delivers Stan Tug To Port Of Workington, U.K.**

Damen Shipyards has delivered a Damen Stan Tug 1605 to the U.K. Port of Workington.

The "Derwent" was built to the rules and regulations of Lloyd's Register of Shipping, as well as to Department of Transportation Regulations, Class IX. The tug will assist in the handling of larger vessels. The tug is a multipurpose vessel and is capable of towing, piloting and plough dredging. It has a length of 55.4 feet, a beam of 17.1 feet and a draft of 6.4 feet.



The Derwent, a Damen Stan Tug 1605

A pilot landing area is located on the foredeck, with a cut-away bulkhead and rubber-D fendering.

The tug is propelled by twin Cummins NT-885-M main engines which produce 558 bkW at 2,100 rpm and drive 4.3-foot propellers in nozzles. This configuration gives the tug a bollard pull of approximately 10.1 tons and a speed of 9.4 knots.

The Derwent is also fitted with a 3.5-ton capacity hydraulic winch, which together with an A-frame enables the vessel to carry out plough dredging work.

Electronics equipment includes a Furuno 1930 daylight radar, a Furuno FE-4300 echosounder and a Sailor RT 2048 VHF.

For literature detailing the capabilities and facilities of Damen Shipyards,

Circle 90 on Reader Service Card

**MTU, GE Sign Agreement On Stationary Application Of Gas Turbines**

MTU Friedrichshafen and General Electric have signed an OEM (Original Equipment Manufacturer) agreement for the stationary application of the GE LM1600 and LM2500 gas turbines.

MTU will package the gas turbine, gearbox, alternator and acoustic enclosure, as well as install complete plants. MTU will also assume responsibility for system and total project engineering.

This agreement allows MTU Friedrichshafen to extend its product offer for stationary power generation in the upper output range, while at the same time continuing the years of cooperation in the marine sector with General Electric.

**Avondale Records Good Year In 1992**

Milestone accomplishments at Avondale's Shipyards Division during 1992 included two keel layings, three launchings, five builder's trials, three acceptance trials, and deliveries of five ships and one floating prison. The ships delivered were the USNS Bighorn (T-AO 198), USNS Guadalupe (T-AO 200), USS

Ashland (LSD 48), and the jumboized USS Cimarron (AO 177) and USS Platte (AO 186). Delivered to the City of New York was the floating prison Vernon C. Bain. Avondale's Boat Division delivered the towboat, Elizabeth Dewey, and the tug, Capt. Bud Bisso. Another highlight was the christening of T-AGS 45, an oceanographic survey ship which was built by Avondale in 1957 as an Arctic supply vessel and converted in 1965 to an oceanographic research

vessel. The Platte was the fifth and final AO to be jumboized at Avondale, by the addition of a 108-foot parallel midbody section.

Avondale Industries is a leading marine fabricator, which also specializes in boat construction and is a major repair contractor for commercial and Navy ships.

For more information on Avondale Industries,

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**Haley Elected Senior Vice President Of AGMA**

E. Ray Haley, president of Marine Gears, Inc., of Greenville, Miss., was elected senior vice president of the American Gear Manufacturers Association (AGMA).

Mr. Haley has been involved in the engineering and gear industry since 1952. He has been with Marine Gears since 1973 and became president in 1976.



E. Ray Haley

An active participant on AGMA councils and committees, Mr. Haley has been a member of the board of directors since 1988. He has served as chairman for several AGMA technical committees, including the technical advisory group for Marine Gears to the International Standards Organization (ISO) in Belgium.

As senior vice president, Mr. Haley will oversee AGMA's strategic and long-range planning, as well as chair the policy and practice guides committee.

**Blume Appointed North American Agent For M.G. Duff Marine**

Blume Worldwide Services (BWS) has been appointed North American agents for the U.K.-based firm Duff Marine Ltd. M.G. Duff is an established supplier of marine equipment, producing a range of inert gas systems—both generator systems and flue gas scrubbers—for tanker cargo safety. These are designed to meet classification society requirements and comply with IMO Solas regulations.

An M.G. Duff inert gas generator, integrated with the vapor recovery system, is installed aboard the Mobil Oil's double-hulled oil barge, Iroquois, by Turecamo Maritime at Gulf Coast Fabricators' yard in Pearlinton, Miss.

M.G. Duff is also engaged in all aspects of design, manufacture and supply of impressed current cathodic protection systems. Existing systems are in use throughout the world in an extensive range of applications aboard commercial and military vessels from tankers to high speed naval vessels and patrol boats.

For more information on the line of products offered by M.G. Duff,

Circle 4 on Reader Service Card

**Crowley Inaugurates New Express Service**

Crowley American Transport has announced that it has inaugurated a new weekly express service between Colombia and San Juan, Puerto Rico, using two 328-TEU containerships. The announcement was made by John Douglass, vice president and general manager, Puerto Rico and Caribbean Services.

The service started with the sailing of the M/V Cartagena from the port of Cartagena to San Juan. Service is provided as an extension of Crowley's existing U.S./Caribbean/Colombian service.

Mr. Douglass said that transit time between Cartagena and San Juan is two-and-a-half days.

The Cartagena and a sistership, the M/V Santa Marta, make regular calls at Jacksonville and Port Everglades, Fla.; Curacao and Aruba in

the Netherlands Antilles; Santa Marta and Cartagena in Colombia and now in San Juan, Puerto Rico.

Crowley American Transport has operating headquarters in Jacksonville, Fla., and is a subsidiary of Crowley Maritime Corporation of Oakland, Calif. Crowley American Transport provides liner services between the U.S., Canada, the Caribbean, Central and South America, and operates a fleet of containerships, RoRo's and triple-deck barges.

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Maritime Reporter/Engineering News



**MSRC'S SPILL RESPONSE FLEET TO BE FITTED WITH ACS SEPARATORS**—The first two of 32 oil/water separators supplied by ACS Industries, of Houston, Texas, to the Washington, D.C.-based Marine Spill Response Corporation (MSRC) were accepted after a thorough sea trial. Each of the 16 MSRC oil spill response vessels will be equipped with two ACS separators capable of processing up to 1,050 gpm of oily water and discharging clean water containing less than five ppm of oil back into the sea. These systems were custom designed for this difficult and environmentally critical application. For free information about ACS Industries' separators,

Circle 128 on Reader Service Card

### Mathers Controls/MMC Heads North To New Facilities In Washington State

After nearly 30 years at their Seattle, Wash., location, Mathers Controls, Inc. and its sister company MMC, Inc., manufacturers of marine propulsion control systems, have moved to Burlington, Wash., 60 miles to the north.

The new address is 675 Pease Road, Burlington, Wash. 98233. New phone numbers are: Mathers Controls, (206) 757-6265; MMC, (206) 757-1100; and Mathers or MMC fax, (206) 757-2500.

The new plant is a two-story, 16,000 square-foot building, with about 6,000 square feet devoted to office space and the rest to manufacturing, storage and R&D.

Mathers Controls designs, manufactures and markets control systems and propeller shaft brakes for large commercial applications. Mathers' control systems can be found aboard Washington State ferries, large tugboats, fishing vessels and other commercial vessels.

MMC, a Mathers Controls affiliate, serves the pleasure boat and commercial fishing and workboat markets with MicroCommander electronic engine and gear controls.

For information on Mathers Controls/MMC,

Circle 11 on Reader Service Card

### CODAG Announces Appointment Of Distributors For Marine Turbines

CODAG Marine Turbines, Inc., of Newport, R.I., has announced the appointment of regional distributors in the southeast and northwest U.S.

CODAG Marine Turbines is the North and South American distributor of turbine engines for CODAG SMT Ltd., of Bath, England. CODAG SMT is one of the world's only manufacturers of new production marine turbine assemblies including, as standard equipment, integral reduction gearboxes, computer controls and full instrumentation, complete, as a package.

Typically, a marine turbine weighs only 10 percent of its diesel equivalent. This weight saving leads to lighter structures and smaller engine compartments. These engines offer greater reliability, lower servicing costs (using virtually no lube oil and no oil changes), and elimination of hull-transmitted noise and vibration.

All engines are dynamometer tested before shipping and carry a manufacturer's warranty.

February, 1993

The CODAG range includes engines of 750, 1,500, 2,400 and 4,800 horsepower. Production will begin on a 25-kW turbine-powered generator which will weigh less than 100 pounds. All CODAG turbines operate on marine diesel fuel. Engine room design, technical support and engine installation is available.

For more information on CODAG products,

Circle 12 on Reader Service Card

### Norwegian Telecom Offers Automatic High-Speed Data, Video

One of the world's first services for automatic setup of calls and high-speed data transfer from mobile units is now being launched by Norwegian Telecom International. Press and television companies, ships and oil rigs in most parts of the world can send large data files and pictures direct at a rate of about eight times faster than was before possible, 24 hours a day.

Norwegian Telecom has operated a service enabling 18,000 ships, oil rigs and other mobile users to receive voice, data, telex and fax messages, as well as video via Inmarsat.

For the shipping and offshore oil industries, the service now opens new opportunities, such as onshore video monitoring of unmanned engine rooms and shore support for non-routine maintenance and repairs, medical advice, cargo planning, navigation, etc.

The time charges are only double those of ordinary modem communication. The eight-fold speed-up of the transfer rate thus means that time costs are cut by up to 75 percent. A fax sheet goes through in a few seconds.

The potential of secondary cost savings is, however, reported to be even more substantial. Such savings include automation enabled by more remote surveillance of unmanned activities and problem solving by communication, which in most cases will be much faster and cheaper than personal onboard visits by experts.

For complete information on the new system from Norwegian Telecom,

Circle 13 on Reader Service Card

### New LMX Laser Series From Tanaka Helps Cut Shipbuilding Costs

Shipbuilding, as well as other heavy construction projects, requires heavy-duty parts cut from thick steel. Until now, these parts have been cut with plasma arc and oxyfuel machines. Tanaka, a leading manufacturer of both types of machines, has now developed advanced laser technology that can cut mild steel plate up to one inch thick. Their new LMX laser series is reported to be faster, more accurate, cleaner and more efficient than plasma or oxyfuel cutting.

Cutting speed and accuracy have been enhanced by mounting the laser resonator together with the cutting head on a gantry which travels the length of the bed. Able to accommodate sheets 20 feet wide with unlimited length, the LMX is considered to be a mammoth machine compared to sheet metal lasers, yet its travelling speed is said to rival the fastest of the smaller machines. Tanaka reports that cuts also have far less dross, so finishing processes are often eliminated. The narrow kerf allows tighter nesting of parts for greater yield per sheet.

Tanaka's LMX lasers are marketed in the U.S. and Canada by Mazak Nissho Iwai.

For further information on the new LMX laser from Tanaka,

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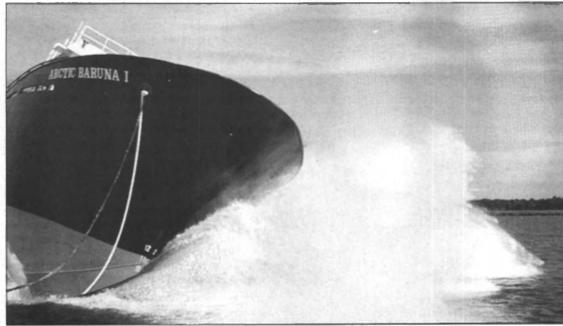
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Circle 201 on Reader Service Card



Launching of the stern-trawler Arctic Baruna I at Homeport Marine.

## Homeport Launches First Of Two Stern Trawlers For Alaska Fisheries

Homeport Marine Services, of Moss Point, Miss., recently launched the Arctic Baruna I, the first of two stern trawlers being built for Arctic Alaska Fisheries Corporation, who will own and operate the vessels.

The trawler is 112 feet long, 30 feet wide and 15 feet deep. She was classed by the American Bureau of Shipping for open ocean bottom trawling for shrimp and fin fish, which will be graded, boxed and frozen aboard the vessel. The Arctic Baruna I has a freezing capacity of 8,000 lbs of product per day and is equipped with a 150-ton freezer hold, fitted with two Grasson RC 219 fish hold plate freezers, for product storage.

The trawler's power plant consists of two six-cylinder, 1,800-rpm Cummins KTA19M1 diesel main engines generating a combined 1,000 hp and linked to 6:1 ratio Twin Disc reduction gears turning five-bladed Rice propellers in Kort nozzles. The trawler's electrical power is furnished by two 1,800-rpm Cummins NTA855MC2 diesel generator sets, each powering a 175-kW, three-phase Kata generator.

The Arctic Baruna I has also been fitted with the latest in automatic hydraulic trawl winch systems, fish detection electronics and navigation and communication systems.

In addition to the two stern trawl-

ers, privately-owned Homeport Marine also has a 124-foot shelter deck trawler under construction for Arctic Alaska Fisheries Corp.

To receive additional free information about the services available from Homeport Marine Services,

Circle 53 on Reader Service Card

### ARCTIC BARUNA I Equipment List

Main engines .....	Cummins
Reduction gears .....	Twin Disc
Propellers .....	Rice
Generator engines .....	Cummins
Generators .....	Kata
Shafting .....	Armo Aquament
Steering controls .....	Gresen, Atlas, Hydrocraft, Vickers Pump
Engine room duct fan .....	Hartzell
Coatings .....	Ameron
VHF radios .....	Sailor
SSB radio .....	Raytheon
Radar .....	Furuno
Compass/Autopilot .....	Robertson
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Maritime Reporter/Engineering News

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### SeaArk Marine Introduces New 23-Foot Commander High Speed Interceptor

The 23-foot Commander is one of several new deep-vee hulls recently introduced by SeaArk Marine, a manufacturer of all-welded aluminum work and patrol boats. Other lengths in the Commander class include a 21- and 25-foot version.

Designed by C. Raymond Hunt Associates, the Commander has a 20-degree bottom, wide chines and multiple lift strakes, all combined to produce a smooth ride at high speed in rough water. With its 375-hp OMC Cobra stern drive, the 23-foot Commander was reported to do well over 40 knots during initial trials.

The 23-foot Commander reflects SeaArk's commitment toward design excellence and their ability to produce a wide variety of boats to meet individual customer demands.

For more information on the design services of C. Raymond Hunt Associates,

Circle 16 on Reader Service Card

For free literature describing the capabilities and services of SeaArk,

Circle 17 on Reader Service Card

### Noble Denton And Marinet Systems Build Fastest Weather System

A new, fast, cost-effective weather forecasting service has been set up by Noble Denton and Marinet Systems.

Noble Denton Weather Services (NDWS) has installed a dedicated computer in its London headquarters for all of its customers across the Inmarsat-A satellite network. The service simply requires a site to have a PC installed with Marinet's communication system.

Because of Marinet's unique high performance protocol and compression techniques, throughput is reported to be 1,000 times faster than normal telex traffic and far more reliable.

With personal computer software, information can be sent in graphic form allowing charts and maps to be included with normal alphanumeric data.

The service is available worldwide. The weather services of NDWS are used extensively across the globe with many customers in the North Sea, Mediterranean and the Far East.

Marinet systems are installed with such offshore oil support and subsea specialist companies as Stena, Global Marine, Rockwater and BT (Marine). The company's systems are used by many of the world's leading cruise and cargo lines such as Cunard and P&O and is widely used by the Ministry of Defense.

For further information,

Circle 21 on Reader Service Card

### Westinghouse Produces Breakthrough In Underwater Imaging Technology

Westinghouse engineers have recently produced a breakthrough in underwater imaging technology. Known as the Model SM2000 Laser Line Scan System, this camera generates video and still photographs of items of interest, generally at ranges four to six times better than conven-

tional underwater cameras.

The SM2000 is now operational with an underwater services contractor and a production line has been opened based on anticipated demand by commercial, scientific and military customers worldwide.

For complete information on the SM2000 Laser Line Scan System from Westinghouse,

Circle 30 on Reader Service Card

### Approval Reversed For Lykes To Charter Subsidized Vessels, Transfer Contracts

Secretary of Transportation Andrew H. Card, in a recent order, has reversed the approvals given by the Maritime Administration and the Maritime Subsidy Board to permit Lykes Bros. Steamship Co. to charter its subsidized vessels and transfer its subsidy contracts to the

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Louisiana Vessel Management, Inc. (LVM).

In its August 11, 1992, order, the board found that the relationships between LVM and Lykes did not constitute affiliations within the meaning of sections 804 or 805 of the Merchant Marine Act of 1936, as amended.

Crowley Maritime Corp., Farrell Lines, Inc. and Sea-Land Service, Inc. asked the Secretary to review the decision.

### Woodward Governor Earns Certified Supplier Status From Caterpillar

Woodward Governor Company's Engine Controls group has been awarded Certified Supplier Status from Caterpillar Inc. This indicates that the company has achieved an exclusive status with the OEM, a dominant player in the world engine manufacturing industry, in terms of

process control, delivery requirements and product conformity. Caterpillar can now rely on a closer, more stable relationship with Woodward, a major supplier of engine governors, control systems and auxiliaries.

Specifically, the certification required that Caterpillar approve Woodward's quality plan and that audits of several processes meet Caterpillar standards. A specific continuous improvement plan also had

to be presented for warranty returns. Woodward met Caterpillar's standards, in part to satisfy the ISO 9001 registration tests which were also successfully completed in 1992. Woodward sells a wide range of products to Caterpillar.

### Largest Schottel Pump Jet For Fishery Research Vessel

With a power rating of 1,000 kW at 1,180 rpm, the Schottel Pump Jet SPJ 220 T is the largest propulsion unit of its kind and also the first of a new generation of Pump-Jets. These jets differ from their predecessors by their symmetrical thrust emissions.



Schottel Pump-Jet type SPJ 220 T

The first unit of this series has now been delivered to Detlef Hegemann GmbH. It is to be installed as a maneuvering aid in the bow of a fishery research vessel being built by the yard for the Federal Office for Food and Forestry.

It will be classified as a GL +100 A4 E2 special-duty vessel and have a length of 211.6 feet, a beam of 48.6 feet and a draft of 18 feet.

Schottel supplies Pump-Jets in five versions, covering a power range from 20 to 1,000 kW. The jets are used successfully for main and auxiliary propulsion in vessels of all kinds throughout the world. All recent German research vessels are equipped with Pump-Jets as bow propulsion units.

For complete information on the range of products offered by Schottel,

Circle 23 on Reader Service Card

### Ship Production Symposium To Be Held November 1-4

The 1993 Ship Production symposium is scheduled to be held November 1-4, in Williamsburg, Va. The symposium is sponsored by the Ship Production Committee and hosted by the Hampton Roads section of the Society of Naval Architects and Marine Engineers.

The conference will focus on fast delivery, high quality and high productivity—the keys to U.S. shipbuilding survival.

For complete information, contact: NSRP Ship Production Symposium Coordinator, UMTRI, Marine systems Division, 2901 Baxter Road, Ann Arbor, Mich. 48109-2150; fax: (313) 936-1081.

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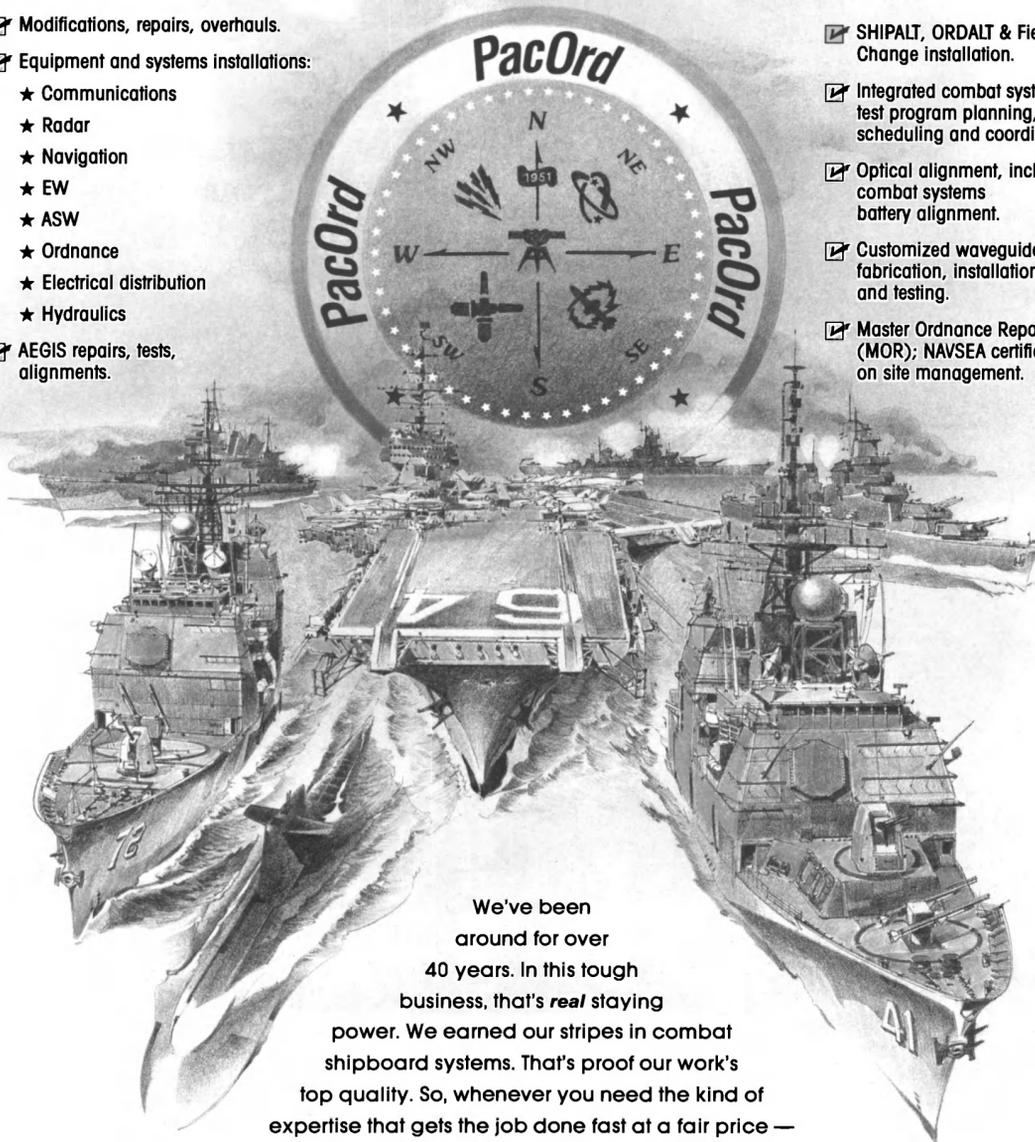
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# DEFENSE CONVERSION ACT

New Legislation To Assist U.S. Shipbuilding In Transition From Naval To Commercial Activity

by  
James R. McCaul, president  
IMA Associates, Inc.

Recognizing the problems associated with the downturn of defense spending, Congress has created a program designed to assist firms in the transition from a defense to a commercial/defense sales base. This program will provide substantial financial assistance to U.S. companies, including shipbuilders, ship repair firms, marine equipment manufacturers and other suppliers to the marine industry.

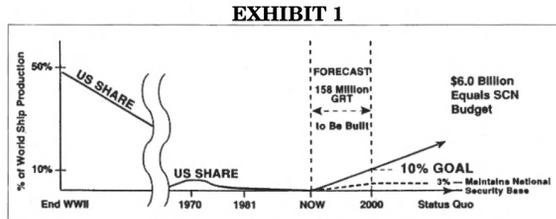
## DEFENSE CONVERSION PROGRAM

A major initiative has recently been enacted to assist U.S. companies in adjusting to the downsizing defense budget.

The Defense Conversion, Reinvestment, and Transition Assistance Act of 1992 is intended to promote commercial activities with strong growth potential, which creates jobs and utilizes the existing defense industrial base.

Development of commercial products which create a dual use for defense facilities is the objective. More than \$1.2 billion has already been appropriated for defense conversion assistance, and plans call for substantial additional funds to be included in the defense budget over the next several years.

According to Congressional sources, a major thrust will be the creation of partnerships. SEMATECH has repeatedly been cited as an example of a partnership



that has well-served the electronics industry.

It has been suggested that shipbuilders, marine suppliers and others in the industry form such a partnership.

It has also been suggested that partnerships involving commercial and government-owned facilities would be particularly interesting.

Projects in the defense conversion area must be cost-shared, with maximum government involvement set at 50 percent. The purpose is to ensure that projects have commercial potential by requiring participating companies to contribute to the funding.

Ideas developed under cost-sharing defense conversion work will belong to industry. The DOD will not own any intellectual rights to technology. However, DOD will have the right to use the technology for its own purposes.

## NATIONAL SHIPBUILDING INITIATIVE

A major component of the de-

fense conversion program is the National Shipbuilding Initiative, which was recently unveiled at an industry seminar on defense conversion.

The idea is to create a National Maritime Center which would effectively "wire together shipyard and vendors."

U.S. companies would jointly develop new technology and share breakthroughs, which would help them to be more competitive in the world market.

Projects with immediate results are desired.

It was pointed out at the seminar that despite an international shipbuilding boom on the international market, the U.S., to this point, has not been involved.

Factors such as the world fleet replacement of cruise ships, vehicle carriers and tankers, as well as the new market opportunities with LNG ships, refrigeration ships and fast ferries, coupled with MARPOL and OPA 90, have created an incredible demand for new vessels.

The U.S. builders have not been

involved because of, among other reasons, aggressive foreign government/industry investment strategies, delays in replacement of Jones Act tankers and little U.S. Government investment.

Thus, the goals of the National Shipbuilding Initiative, as stated at the recent seminar, are to:

- (1) Create 250,000 jobs
- (2) Capture 10 percent of the world shipbuilding market
- (3) Create high-paying jobs, minimum \$15/hr.
- (4) Involve all 50 states
- (5) Create products which can be exported.

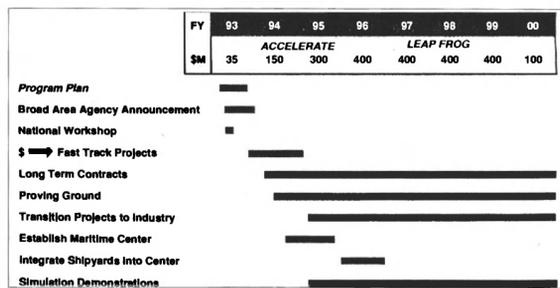
(Please see Exhibit 1)

Plans call for \$2.2 billion of defense conversion funds to be earmarked for the National Shipbuilding Initiative over the next eight years.

The action plan for spending the \$2.2 billion, which is illustrated in exhibit 2, calls for \$185 million spent over the next two years to firm up the plan, make broad area agency announcements, conduct a nation workshop and begin fast track programs.

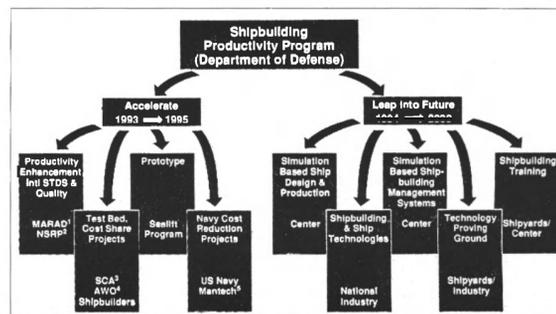
Starting in 1995, when government input would hit \$300 million for the year, such phases as long term contracts, the installation of transition projects, and the establishment of a maritime center would begin. From there, 1996 through 1999 represent the most active years, as \$400 million is slated to be spent in each of those four years to kick the program into high gear.

EXHIBIT 2



February, 1993

EXHIBIT 3



17

**Mitsubishi Delivers LNG Ship, 'Northwest Seaeagle' To International Consortium**

The Northwest Seaeagle, the fourth in a series of Lloyd's Register-classed ships for transporting liquefied natural gas from Australia's North West Shelf, was delivered recently by Mitsubishi Heavy Industries.

The new ship is owned by an international consortium made of BHP Petroleum, BP, Woodside, Shell and Chevron. Two more LR-classed ships are scheduled to follow, including the Northwest Sandpiper, scheduled for delivery in 1993, and an unnamed ship to be delivered in 1994. The vessel employs a Moss Rosenberg type containment system in a four tank configuration. The ship measures 259-meters, with a 47.2 meter breadth and a 26.5 meter draft.

**MAN B&W Looks Ahead To 21st Century, Opens New R&D Facility In Copenhagen**

In an attempt to target diesel engine technology and needs for the 21st century, MAN B&W Diesel A/S has built a new research and development resource at the group's Tegholm factory in Copenhagen. The recently-inaugurated 1,100-



The new MAN B&W R&D building

square-meter research center is solely dedicated to the refinement of diesel engine technology to meet contemporary and future requirements of ship operators and power generation authorities.

The core test facility, the advanced 4T50MX engine, is based on the current MC series but is designed and equipped to allow MAN B&W to evolve future generations of reliable, efficient, environmentally acceptable and lower cost engines.

The research center embraces the following main sections, including engine hall, test and storage hall, fuel oil treatment room, pump and compressor room, switchgear room, control room, facilities for data sampling, workshop and office.

The center is also equipped with facilities to support MAN B&W Diesel A/S training courses for marine engineers.

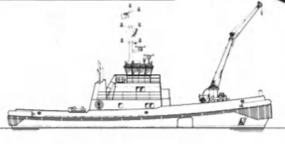
For additional information on the MAN B&W's new research center,

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**STN Systemtechnik, SAIT-RH Enter Joint Agreement**

Two European maritime companies, STN Systemtechnik Nord GmbH and SAIT Radio Holland have suddenly become closer, as STN has taken over 50 percent of the Danish subholding Nav-Star AS, a full subsidiary of SAIT-RH.

The participation of STN (a member of Bremer Vulkan Verbund AG) in Nav-Star is touted as a milestone for the European maritime industry as a whole, as the common goal is to effectively help European shipbuilding compete in the future.

SAIT-Radio is a company which operates internationally in fields such as marketing and service of maritime communication systems. STN Systemtechnik Nord is an electronics and systems engineering company.

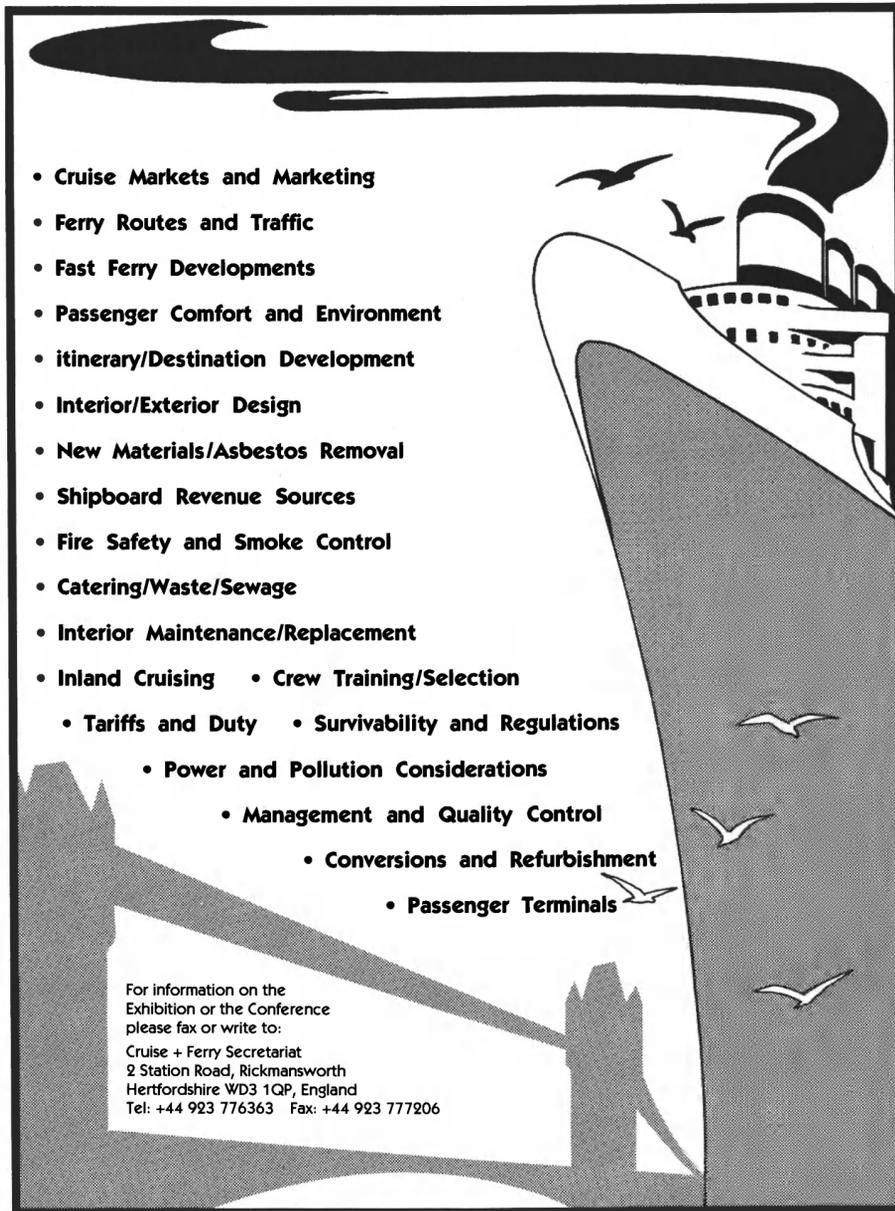
For more information from STN Systemtechnik Nord,

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Maritime Reporter/Engineering News

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### ASNE Releases Paper Outlining Steps To Preserve U.S. Naval Engineering

A White Paper entitled "Preserving Our Naval Engineering Capability," has been issued to decision makers in the Navy, Defense Department and other industry leaders, by the American Society of Naval Engineers (ASNE), recommending a series of steps that must be taken to preserve a naval engineering capability in the U.S.

ASNE's White Paper, developed by a panel of experts representing all aspects of naval engineering, contends that without proper action the U.S. will lose its leadership position in naval engineering and may eventually become incapable of designing and building the complex warships of the line required for our defense.

ASNE advocates a comprehensive national program and a commitment that includes a policy of periodically designing and building complex naval warships. Anything short of this will not be in the best interest of the U.S., the paper contends. The current downsizing trend with the Navy is acknowledged as necessary, but the corresponding reduction in shipbuilding programs portends a rapid decline in the nation's ability to design and build complex warships.

Unless there is a national commitment to a design and construc-

tion program in the years ahead, we cannot expect to attract engineering students into the profession, the report states. Thus, the impact on future research and development could be seriously hindered without the input of new engineers.

For more information on the paper, contact ASNE at: 1452 Duke St., Alexandria, Va. 22314; tel: (703) 836-6727.

### Alfa-Laval Announces New Orders, Installations Of Its Separators

Alfa-Laval Korea received an order from Halla Shipyard in Inchon, for complete oil treatment systems, including separators and Moatti automatic filters, PHE's and freshwater distillers, to be installed in six 40,000-dwt product carriers commissioned by Shell, and currently under construction.

Also, Alfa-Laval Denmark and Alfa-Laval Belgium cooperated closely to win an order for oil treatment systems and fresh water generators for a fleet of reefers currently under construction at Danyard for the Noboa Group, Ecuador.

Each of the five vessels will be fitted with four Alcap LOPX 707 separators for lube oil, Moatti automatic lube oil filters, two FOPX 610 separators for fuel oil, and Heatpac

THS thermal-oil heaters.

Each ship, which will operate as a fruit carrier between ports in South America and Europe, is powered with a 22,240-hp MAN B&W engine providing a 23-knot operating speed. Main engine and auxiliary engine booster systems will also be supplied by Alfa-Laval. Scheduled deliveries of the vessels are to begin in mid-1993.

Headquartered in Sweden, Alfa-Laval is a major supplier of oil treatment equipment, central cooling and freshwater production systems.

For more information on the company and its products and services,

Circle 32 on Reader Service Card

### Discovery Channel's Four Submarine Specials To Air In One Night

The Discovery Channel's "Submarines: Sharks Of Steel," a series of four one-hour episodes, which includes first-ever Western footage shot aboard Soviet nuclear submarines, is set to air back-to-back on Sunday, February 14, from 7 to 11 p.m. These specials feature archival footage and go behind-the-scenes for interviews with former German U-Boat commanders and the captains and crew of American, Soviet and British submarines to reveal the world of the submariner and to

trace the history of these extraordinary ships.

The four shows highlight interesting facts about submarines:

— The longest submarines in the world are the 18 Ohio-class nuclear submarines, each at 560 feet.

— The largest submarines in the world is are the six Russian typhoon-class nuclear submarines, at 24,000 tons.

— Russia has 63 ballistic missile submarines, the U.S. has 36.

— At any given time, Russia usually has 10 ballistic submarines at sea, the U.S. has 20.

— The USS Nautilus was the first atomic-powered craft, launched June 14, 1952.

— It is believed that the fastest submarine can reach 50 mph at top speed underwater.

— During World War II, 1,100 German U-boats sank over 14 million tons of shipping, killing more than 100,000 men.

— Of the 39,000 men aboard German U-boats during WW II, almost 30,000 were killed in battle.

— During WW II, U.S. subs, which comprised two percent of the U.S. Navy forces, sank two-thirds of the Japanese Merchant Marine and one-third of the Japanese Navy.

— The only nuclear submarine to have sunk a warship was the Royal Navy's HMS Conqueror, off the Falkland Islands in 1982.

— The USS Louisville is the only U.S. submarine to fire in combat since WW II. This occurred during the Persian Gulf War.

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Broward Marine's 105-foot Dasyatis, powered by two Detroit Diesel engines, was delivered in 1992.

## MEGAYACHTS

*U.S. Yacht Builders Believe Luxury Tax Repeal, Foreign Sales To Fuel Prosperous 1993*

**I**f it's true that adversity builds strength, then major U.S. megayacht builders should be the Samson of U.S. industry. Faced in recent years with a recession, a 10 percent luxury tax and increased competition from domestic and abroad, yacht builders have survived a barrage of negatives and are collectively looking for a turnaround in 1993.

At press time it was learned by MR/EN that on the first day of the 103 Congress, a bill to repeal the 10 percent luxury tax was introduced by Rep. **Clay Shaw** (R-Fla.), joined by Reps. **Ben Cardin** (D-Md.) and **David Bonior** (D-Mich.). The three Congressmen were also champions of boat luxury tax repeal in the 102nd Congress.

Meanwhile, U.S. yacht builders have kept the faith by concentrating on refits and repairs, on wooing foreign customers on the line, and on lobbying for the repeal of the luxury tax. One yard which boosted its refit business in '92 to pick up construction slack was Trinity Yachts.

"There has (in the past year) been a strong interest in refits, whether

because of ownership changes or because of owners looking for upgrades," said **William S. Smith III**, head of yacht sales, Trinity Yachts, citing the company's recent refits of the 250-foot Golden Odyssey and the 192-foot October Rose. "In the past year, we had quite a bit more volume in refit than in new construction." But Mr. **Smith**, and many of his colleagues and competitors alike, believe the imminent repeal of the luxury tax will boost business across the board.

"The luxury tax has devastated

the 50- to 100-foot yacht market, and as long as it has the chance of being repealed, the buyers are freezing up, taking a wait and see attitude," said Mr. **Smith**. "We have inquiries for many large yachts, but it's really hard to predict (with the status of the luxury tax) and considering these yachts are non-essential items."

The Trinity Marine Group-Aluminum Boats, Inc. facility, kept busy in 1992 with the delivery of the 100-foot Lima, a Caterpillar-propelled catamaran yacht/party vessel. De-

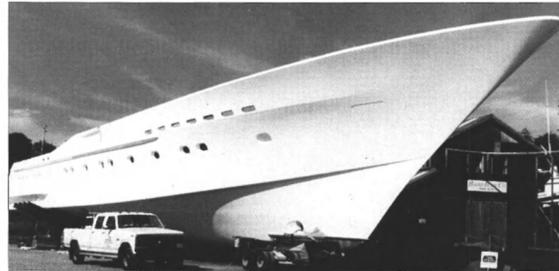
livered in September 1992, the boat features Mathers engine controls, Char-Lynn steering controls and an Allied 600 gallon per day reverse osmosis water maker. Electronics equipment includes: Sailor VHF radios; Furuno radar, loran and autopilot; and a Danforth compass.

Along with refit business, increasingly U.S. yards have looked abroad for business. Palmer Johnson did both in 1992.

According to **Mike Kelsey**, chairman of the 75-year-old Palmer Johnson, the company opened a refit and service yard in Savannah, Ga., a yard which employs over 100 people and can service boats up to 200 feet long. In 1992 Palmer Johnson also delivered four yachts, ranging in size from 80- to 116-feet.

"We were very fortunate and busy, but all of our business was overseas," Mr. **Kelsey** said. When asked if the foreign only business was by choice or design, Mr. **Kelsey** responded, "We are in a funny business, we take what the defense gives us, using a football analogy. The luxury tax has killed domestic business; it's not that people can't pay the tax, they won't."

"We have been real fortunate, and



Admiral Marine Works has developed a process to build fully-detailed, one-off female molds.

have dodged most of the bullets, although the luxury tax has been devastating," said **Randy Rust**, general manager, Westport Shipyards.

Despite the tax, last year was the busiest ever for Westport based on dollar and boat volume, and 1993 isn't looking bad either. According to Mr. Rust, the yard has a 90-foot passenger vessel, three 106-foot and one 112-foot megayachts under construction,

most for delivery in '93. Mr. Rust attributes part of the upswing to the company's fiberglass hulls and its affiliation with Ft. Lauderdale, Fla.-based Westship, which has allowed the Westport, Wa.-based company to expand east.

Despite the company's success, Mr. Rust can only imagine what volume would be without the luxury tax.

"The uncertainty of the bill is what's killing deals, because you (the customer) do not want to be the last

person at the yacht club to pay the luxury tax," Mr. Rust said.

Crescent Beach Boatbuilders is another yard which has picked up additional refit business in the past year, but the company also has an order for its new, **Jack Sarin**-designed 115-foot, tri-level yacht, slated for a September 1993 delivery, according to **Greg Tiemann**, director of sales and marketing.

The 115-foot yacht, with a 24-foot beam, is powered by two MTU 8V396

engines, driven through ZF-450 3.5:1 reduction gears, generating 1,502 hp each.

Despite a steady flow of newbuildings and refits, Crescent Beach has also been hurt by the luxury tax.

"We are an international company but our clients are mainly in the U.S.," Mr. Tiemann said.

"There has been talk for so long the tax would be gotten rid of, people are just sitting around and waiting for it to happen. Many companies have expanded to repair and refit to keep the cash flow going."

Custom yacht builder Admiral Marine Works, which has developed a process to build fully detailed, one-off female molds to allow for a totally custom, all-molded fiberglass yacht, will deliver the 161-foot Evviva this summer.

Propelled by two MTU engines with the aid of Lips propellers and thrusters, the Evviva will be able to reach 25 knots. The yacht will be equipped with Northern Lights generators, Royal West Electric steering controls, two Steen anchor windlasses, and Aquamet shafting. Electronics equipment onboard will include Robertson (3) and Sailor (1) VHS radios; Furuno radar; C. Plath

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the luxury tax"  
— Randy Rust**

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gyrocompass; Northstar Ioran; and Comnav autopilot.

Evviva's interior components are constructed entirely of Nomex honeycomb, employing aircraft materials and assembly techniques. Her composite structure, utilizing a foam cored, Kevlar/glass laminate, required one of the most complex, one-off toolings ever.

Delta Marine Industries, in business since 1967 building fiberglass fishing boats for the North Pacific, delivered its first motoryacht in 1983.

The company builds molded fiberglass in five sizes and delivered the Taurus, a 120-foot Caterpillar-powered yacht in 1992.

The Taurus, delivered to a U.S. owner, also is equipped with a Schottel thruster, two Northern Lights generators, Twin Disc reduction gears, Aquamet shafting and a full complement of electronics from Furuno, Raytheon and C. Plath. Based on recent inquiries and the expected repeal of the luxury tax, 1993 should be a good year, according to **John O'Brien**, director of marketing.

Despite the recent hurdles yacht builders have been forced to cross, the consensus feeling is the market

will rebound to be even stronger than before.

For example, Infinity Yachts, Inc., had a "fair to average year" by the admission of Infinity's general manager, **Phillip Chrysler**.

However, based on the first week of January 1993, things are looking good, as the company doubled the business it did that week than in the entire year prior, Mr. **Chrysler** said.

Infinity has been contracted to build an 85-foot yacht, to be delivered in December 1993, named Purely Pleasure.

The boat is to be equipped with four 1,100 hp, 12V92 DDEC engines driving four Rolla propellers. DDEC will also supply engine controls, and boat electrical power will be supplied by two Onan generators. Electronic equipment will include Icom radios, Raytheon radar and Ioran, an Azimuth compass and Benmar autopilot.

A relatively new yard, Puglia Shipbuilding, Inc., had a very good year, said **Neil Turney**, general manager. In business just two years, the company delivered the Samantha Lin, a 150-foot motoryacht with a steel hull and aluminum superstructure, in September, 1992 to a U.S. customer. The Caterpillar-powered vessel features Lips propellers, American bowthrusters, Northern Lights generator engines and generators, Furuno SSB radios and radar, and C. Plath compass and autopilot. According to Mr. **Turney**, in Puglia's segment of the business—vessels over 100 feet—the luxury tax has not been as hurtful because "it is nothing more than an inconvenience to foreign-flag the vessel and beat the luxury tax."

Another builder which had a successful 1992 and is looking at a hefty orderbook for '93 is Broward Marine.

In 1992 the yard built six aluminum megayachts, ranging in size from 100 to 105 feet. One particular vessel, the Daybreak, was just delivered in January 1993 and features Detroit Diesel engines driving ZF reduction gears and a Michigan propeller.

Electronics equipment onboard includes Furuno radars, a Danforth compass, Stephens radios and Robertson autopilot.

Other yacht builders also predict a brighter '93, and one factor driving this are the changes seen in yacht customers and customers' wants, according to Trinity's Mr. **Smith**.

"I think you are seeing people in the market for yachts now are more financially stable, gone is the conspicuous consumption of the 1980's," said Mr. **Smith**.

He also sees more customers using the luxury vessels as floating offices, a situation brought about largely by the tremendous increase in capability of communications equipment now on board. "Owners want the best communication equipment available and this is driving the market," Mr. **Smith** said.

Mr. **Kelsey** of Palmer Johnson backs that belief, saying "there are state of the art electronics and communications equipment on every

new boat; they (the equipment) keep improving and the price keeps going down."

Another factor to brighten the coffers of yacht builders is the very conception of what a megayacht should be.

"Ten or 15 years ago, people would go and buy a commercial boat and turn it into a yacht," said Mr. **Rust** of Westport Shipyard. "Everyone's expectations of cost and quality have risen to a large degree."

"There are forever higher quality standards on interiors," said Mr. **Kelsey**. "Large yachts are works of art."

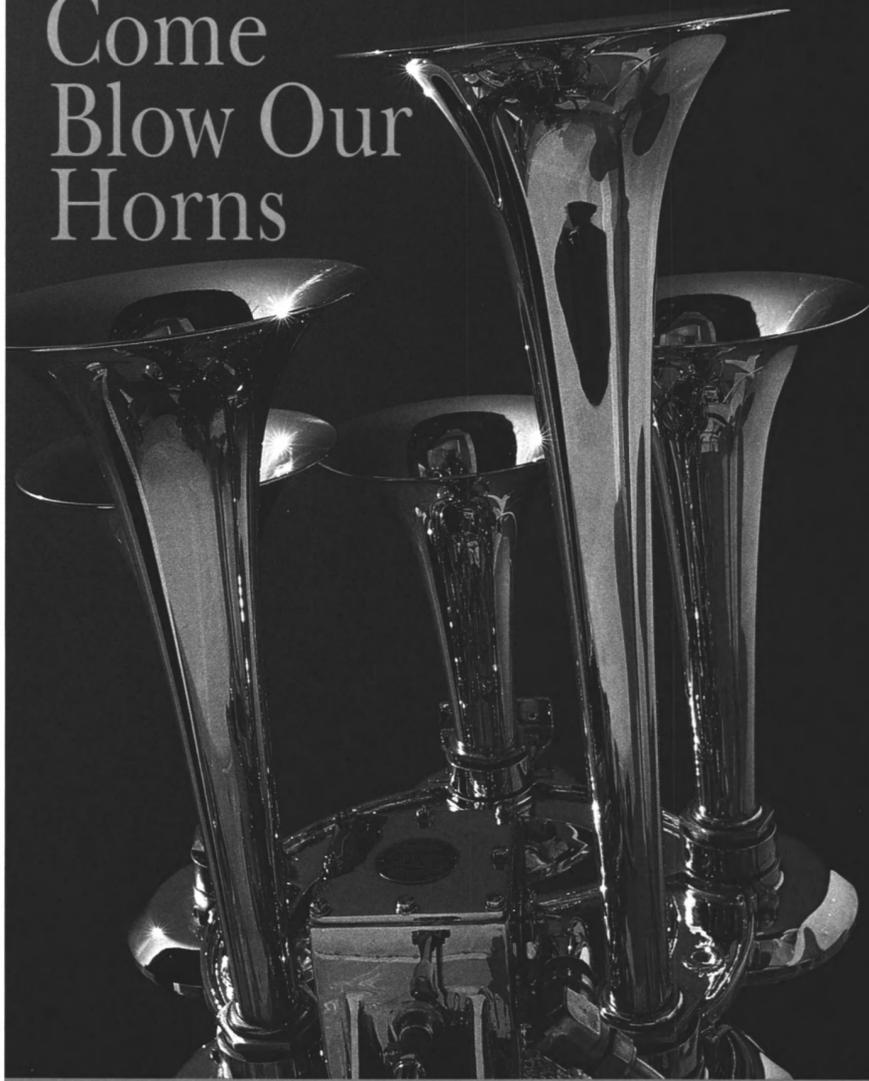
Also making the outlook better for yacht builders is the innovation of such companies as Falcon Maritime Ventures.

Falcon is a marine technology company which has come up with an innovative method of constructing aluminum hulls, a technique the company claims can save from 30 to

75 percent of the weight and save more than 50 percent in labor costs, said **Anthony Barrois**, senior technical representative.

Falcon then licenses the technique to builders. Mr. **Barrois**, who has called on several major yacht builders around the world presenting his company's product, says of 1993: "We walk through the doors of many major yacht buildings and I see 1993 as a growth year in the megayacht business."

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February, 1993

**For More Information On  
Megayacht Builders**

For additional information on the boatbuilding and repair capabilities of U.S. yacht companies, circle the number following the company on the reader service card in this issue.

Yard	Circle #
Admiral Marine Works	101
Barattucci Yachts	102
Broward Marine	103

Christensen Motor Yachts	104
Crescent Beach Boatbuilders	105
Delta Marine	106
Derektor Shipyards	107
Falcon Maritime Ventures	108
Halteras Yachts	109
Infinity Yachts	110
Jones-Goodell	111
Knight & Carver	112
Nichols Brothers	113
Palmer Johnson	114
Puglia Shipbuilding	115
Skippertimer Shipyards	116
Swiftships	117
Trinity Yachts	118
Westport Shipyards	119

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Propulsion Unit For Yachts**

MTU Friedrichshafen, which has designed and supplied complete propulsion plants for years, offers the MTU Speed Drive SD 500, a ready-to-install propulsion system with a surface-piercing propeller for fast yachts.

Rated at 370 kW (503 hp) at 2,100 rpm, the unit is designed for planing

craft with speeds of 25 knots and over.

The Speed Drive is comprised of a 6R 183 TE92 MTU diesel, a reverse reduction gear and a stern propulsor. The heart of the system is a surface-piercing propeller, a type often used by offshore racers.

The engine's compactness and reliability, the low weight of the gearing and the surface-piercing propeller design combine to offer the user optimum performance.

For information on the MTU Speed Drive SD 500,

Circle 98 on Reader Service Card

**Drip-Free Shaft  
Packing For Yachts**

For vessel owners with bad experiences with the quality or maintenance of the stuffing box packing, which protects a vessel's shaft, a recently released product may help.

Drip-Free Shaft Packing, which contains teflon and hydrocarbons, is advertised as being "self-forming," so that even pitted shafts won't leak. And because the shaft is lubricated by the packing material rather than seawater, it is reportedly drip-free. Also, because there is less friction, the company claims that some owners may even experience an increase in engine rpm.

According to **Jim Johnson**, the distributor of Drip-Free Packing, the packing should be good for the life of the boat, and that the packing gland rarely must be tightened.

For additional information on Drip-Free Shaft Packing,

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North America Helps Outfit  
The Latest Megayachts**

The Electronics Division of C. Plath North America was chosen to provide navigation equipment for the following yachts:

-- M/Y Namoh; 105-foot vessel from Broward Marine, sold and installed by Custom Navigation South;

-- 110-foot yacht from Delta Marine, sold and installed by Larry Smith Electronics;

-- M/Y MIT sea AH; 116-foot vessel from Derektor, sold and installed by Maritech;

-- M/Y Lady Jenn; 120-foot boat from Palmer Johnson, sold and installed by Radio Holland; and -- a 116-foot yacht from Crescent Beach, equipment sold and installed by Larry Smith Electronics.

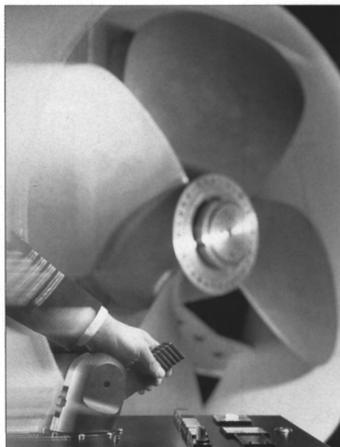
C. Plath backs its equipment with more than 200 sales and service centers in 46 countries.

For additional information on C. Plath,

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**OFFSHORE INDUSTRY**

**PROBLEM:** limited space & weight; strict compliance with regulations; equipment exposed to the elements.

**SOLUTION: OMNIPURE**

**MERCHANT SHIPPING**

**PROBLEM:** limited capital equipment funds; small crews; extended maintenance periods.

**SOLUTION: OMNIPURE**

**NAVAL VESSELS**

**PROBLEM:** adverse operating conditions; NATO compatibility; exacting design criteria.

**SOLUTION: OMNIPURE**



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**Ball Appointed Director  
Of Sales For Milwaukee-  
Based Falk Corp.**

**Terry L. Ball** has been appointed director of sales for the Falk Corporation, a Milwaukee, Wis.-based subsidiary of Sundstrand Corp. Falk is a major manufacturer of industrial power transmission machinery.



**Terry L. Ball**

Mr. Ball joined the Falk Corporation in August 1969. In 1980, he was appointed regional sales manager and in 1986 he became director of sales, marine and special products, the job he held until his appointment as director of sales. Mr. Ball will report directly to **David L. George**, vice president of sales and marketing.

**Viking Introduces Two  
50-Person IBA's  
In One Container**

Operators of larger passenger vessels are always searching for ways to provide more deck space for passengers. Newer vessels are built lighter and have greater weight restrictions. A new lifesaving system, which addresses both of these challenges, has been developed by Viking Life Saving Equipment.

The system contains two 50-person Inflatable Buoyant Apparatus (IBA) in one container. Extensive research into new methods of packing the container has resulted in a system of storing the painter lines. This insures side-by-side simultaneous inflation of both 50-person IBA's, with no entanglement of the lines. The new two-in-one system meets or exceeds all U.S. Coast Guard and Solas 1983 Amendment III requirements for design, construction and performance for vessels in coastal cruising waters.

Having two units in each container means a big weight reduction and twice as much open deck space, with the same number of IBA's. Installation is reported to be more cost effective in that there is one less container and the initial cost of the dual unit is cheaper than two separate units.

Each of the dual 50-person units is identical in construction to the single 50-person IBA in one container. The floor is positioned be-

tween two buoyancy chambers, 21 feet in diameter, making the raft reversible.

Both units can be boarded as soon as they are deployed and inflated, regardless of which side surfaces first.

For free literature describing the new IBA system,

Circle 14 on Reader Service Card

**MarAd Approves Fishing  
Vessel, Containership Sale**

The Maritime Administration (MarAd) has approved a request by American President Lines, Ltd., for permission to sell the 17,477-dwt containership President Taft to Chien Yu Steel Industrial Co., Ltd. Pingtung, Taiwan, for scrapping in that country.

MarAd has also approved a request from Caribe Fishing Co., Inc., Rancho Santa Fe, Calif., to sell and transfer the registry of the 1,167-gt fishing vessel, South Seas. The purchasers are Northern Bold Adventure Co., Operative Ltd., and the Government of the Sovereign Democratic Republic of Fiji.

**San Francisco Shipyard  
School First In Nation**

Classes recently began at what is

reported to be the nation's first school to teach shipyard workers high-paying blue-collar skills such as boiler maintenance, carpentry, blueprint reading, metal working and painting.

Funding for the school comes from employer contributions to a Taft-Hartley trust fund.

Currently, whenever ship repair work is done, the fund receives eight cents per man hour.

The fund was set up 13 years ago as a result of contract negotiations between ship repair yards and labor unions.

While final details are not complete, the program may also include a basic high school equivalency curriculum and is presently working with San Francisco City College to incorporate the program into vocational training.

The official start of classes at the San Francisco Shipyard Training Center was commemorated by Mayor **Frank Jordan**, **Kevin Shelley** and **Jim Gonzalez** from the San Francisco Board of Supervisors; executive director **Michael P. Huerta** and commissioner **Francis O'Neill** from the Port of San Francisco; **Orlando Barsetti**, president of Service Engineering; **Richard E. Hardin**, executive secretary-treasurer of the Pacific Coast Metal Trades Council; and dozens of shipyard workers.

The Center reportedly will be an important component of the port's effort to market ship repair to ship-ping lines worldwide.

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NOTE! The January Issue contained an incorrect phone number for V.M. Trucking.  
The correct phone number is (718) 797-9778

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**TRACOR MARCON  
Monitor Control Alarm**  
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- USCG
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- American Commercial Barge Lines
- Matson Navigation
- Texaco
- Sun Transport
- Canadian Coast Guard
- MSC
- Honeywell, Australia
- Scripps Institute
- Woods Hole Oceanographic
- Canoe Transportation

are a few users of this technology which is continuing to be supported, manufactured and enhanced by

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800 Ferndale Place, Rahway, NJ  
Circle 294 on Reader Service Card

### Stage/Blast Introduces Inspection System To Marine Industry

Stage/Blast, Inc., a U.S. staging, blasting and coating company, recently completed a worldwide trip to introduce its inspection system to the marine industry. The staging system, called the Stageway System, allows shipowners safe access to all areas of their vessels whether the ship is underway, at anchor or at berth.

The Stageway System utilizes motorized platforms and unique rigging techniques to provide access to the interior side shells and overheads in oil tankers and bulk carriers. Stage/Blast teams up with a certified inspection company to provide a comprehensive condition report that is reported to be acceptable to all regulatory bodies and meets the new inspection guidelines currently being implemented.

Over the last 18 months, the Stageway System has been used in the U.S. in performing numerous inspections on VLCCs for the purpose of meeting inspection guidelines and preparing shipyard specifications for bidding purposes.

Many of these jobs have been done while the vessel was underway. The ability to use the system while the vessel is underway provides shipowners with a tremendous opportunity to reduce costly downtime.

One feature of the system is its versatility. Once the platforms are in place, light to medium repairs can be done from the staging. According to Gerry Bell, president of Stage/Blast, "This is one of the only systems that will allow the transportation of up to four people

in complete safety for the purposes of inspection, repairs or maintenance and we are currently negotiating with shipyards worldwide to have the Stageway System on site."

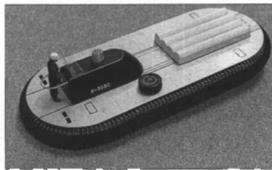
For further information,

Circle 39 on Reader Service Card

### Kinetics Introduces Oil Spill Response Air Cushion Vehicle

Kinetic Technologies (Kinetics) of Bellevue, Wash., recently introduced a unique air cushion vehicle (ACV) platform. The Kinetics ACV, designated K-35SC-1, is reported to be suited for amphibious transport of oil spill response personnel and equipment. Other operations which the ACV can perform include near shore oil boom deployment, waste removal and survey assistance.

The length of the craft is 38 feet with a beam of 18 feet. On cushion operating height is 2.5 feet. The vehicle has a six-ton payload capacity. Cruising speed on water is 25 knots and on land it is 30 knots.



A model of the air cushion vehicle from Kinetics.

Other vehicle characteristics include: modular construction—allowing for vehicle road transport; open

deck—for oil boom and waste barrel stowage; diesel power lift module; integrated lift-ride control system; alternate propulsion system options and single operator control station.

For more information describing the Kinetics ACV,

Circle 134 on Reader Service Card

### BethShip, Sabine Yard Experiences Most Profitable, Busiest Year

Bethlehem Steel Corporation's BethShip, Sabine Yard has experienced its most profitable and busiest year since it began operations in Port Arthur, Texas, in late 1985.

Firm bookings for the drydocking of offshore drilling and production rigs extend well into January 1993.

The main facility contributing to the increased business activity at the Sabine yard is its 64,000-ton drydock. It is capable of servicing any type of mobile offshore drilling unit and production facility, as well as all types of ships.

The Zane Barnes, a semisubmersible which is one of the largest oil drilling rigs in the world, was drydocked for repairs sustained by Hurricane Andrew. Operated by Reading & Bates Drilling Co., it left the Sabine yard following eight weeks of repair work.

By the end of 1992, the yard reported that it had worked on at least six ships and six drilling units. The yard is presently negotiating with several other drilling companies for work which could continue well into the first quarter of this year.

The depth of the Sabine-Neches

Ship Channel at Bethlehem's 10-acre Pleasure Island location is 40 feet.

When the yard's drydock sections are assembled in ship mode it is 829 feet long and 122 feet wide. When the sections are arranged in an oil rig configuration, it provides a clear docking area of 414 feet by 362 feet.

For details on the facilities and services provided by BethShip,

Circle 59 on Reader Service Card

### Wartsila's Donation Benefits USMMA

Wartsila Diesel Corp. recently donated a diesel engine to the U.S. Merchant Marine Academy which will enhance the federal maritime school's marine engineering program.

The Vasa 8R22 diesel engine will be used as a training aid by undergraduate midshipmen, as well as by licensed seafarers who enroll in various continuing education engineering courses at the Academy.

Wartsila has also provided necessary maintenance tools, manuals and demonstration models with the diesel engine.

"In 1990, Wartsila pledged a substantial contribution to the Kings Point endowment fund which led to the designation of an engineering laboratory as the Wartsila Room," says Cmdr. James Harbach.

The diesel engine donated by Wartsila will be a primary aid in a diesel maintenance course in which many Academy senior engineering majors enroll.

### Robertson Disc Navigation System Increases Safety Of Navigation

The Robertson Disc Navigation system is designed to increase the safety of navigation by the integration of its stored electronic charts with input from the ship's instruments into a real-time geographic information tool. The Robertson ECDIS, which is able to receive input from the ship's gyrocompass, speedlog, ARPA, depth sounder and GPS, monitors the vessel's route in relation to land, charted or observed objects, and unseen hazards. An ownship model is displayed on a true motion or relative motion electronically digitized chart or single color background.

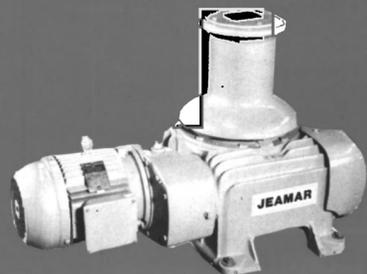
The 308-foot icebreaker Nathaniel B. Palmer, built by North American Shipbuilding, Inc., is reported to be the first U.S.-flag ship to be fitted with a Robertson ECDIS. The only other vessel in the Antarctic, the Rieber Shipping cruise/research ship Polar Circle, is also fitted with a Robertson Disc Navigation System.

Besides the Robertson Disc Navigation system, the Palmer also has Robertson's Dynamic Positioning system and main steering controls.

For a full-color brochure on ECDIS or other Robertson Marine products,

Circle 60 on Reader Service Card

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The Herjolfur is equipped with fully-integrated Alcap fuel and lube oil cleaning and conditioning systems.

#### Icelandic Ship Equipped With Alfa-Laval Fuel And Lube Oil Cleaning Systems

Commissioned by the Westman Islands shipping line and built by Simek Shipyard, Flekkefjord, Norway, the Herjolfur is the first Icelandic ship to be equipped exclusively with the latest fully-integrated Alcap fuel and lube oil cleaning and conditioning systems.

The systems include an Alcap FOPX 605 for fuel oil, an MMPX 304 for diesel oil, two Alcap LOPX 705 for lube oil, two Heatpac electric heaters plus ancillary equipment and electronic controls.

Alfa-Laval Norway won the bid for the job in the face of fierce competition.

The 70.5-meter Herjolfur is powered by two MAN B&W Alpha diesel engines, and operates as a ferry between Thorlakshafn, Iceland, and the Westman Islands.

The vessel can carry 480 passengers and 72 cars.

Alfa-Laval, which supplies oil treatment equipment, central cooling and fresh water production systems for the marine and power industries worldwide, also announced its first-ever Bulgarian order. Danaos Shipping Co., Ltd., has placed an order for three 29,000-ton multipurpose vessels with Varna Shipyards, Bulgaria.

For complete information on the products and capabilities of Alfa-Laval,

Circle 35 on Reader Service Card

#### Todd Pacific Shipyards Weathers Economic Storm

The maritime industry, both nationwide as well as internationally, has experienced many economic changes in recent years.

For some which could not change or adjust, this fate meant closure. But Todd Pacific Shipyards, located in Seattle since 1916, has faced the challenges of consolidation and remains solvent.

Todd Pacific Shipyards recently completed the Fleet Rehabilitation and Modernization of eight high endurance Coast Guard vessels and currently has an ongoing Phased Maintenance contract with the United States Navy for two combat support ships (AOEs) until 1995.

Todd Pacific Shipyard is a full service shipyard with three drydocks, the largest being an 873-foot 40,000-ton capacity dock, which can handle maintenance requirements for almost all vessels.

This year in particular has seen the shipyard receive a whirlwind of business in its repair and overhaul segment, in particular with the fishing vessels, the American President Line fleet, the Matson Line containerships, Totem Ocean Trailer Express vessels, Washington State Ferries and Exxon Tankers.

In addition, the Navy has also supplied a steady stream of repair and overhaul work.

Looking forward to 1993 and beyond, Todd Pacific Shipyards will continue to seek new ship construction opportunities on a worldwide basis, while continuing to expand its efforts on local and national levels in the ship repair and overhaul business.

For complete literature on the facilities and services provided by Todd Pacific Shipyards,

Circle 120 on Reader Service Card

# MAXIM fresh water makers on board!



MAXIM® evaporators are "on board" every type of commercial and military ship, offshore platform and fishing vessel around the world. For more than fifty years, we have been providing fresh water wherever it's needed.

A wide range of MAXIM standard designs are available for quick delivery anywhere in the world. Stock sizes range from 200 to 12,000 gal/day. For larger fresh water requirements, we custom design units to meet your needs, whatever the size.

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90-10 copper nickel construction provides excellent corrosion resistance.

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Circle 20 on Reader Service Card

# Powered by Wärtsilä Diesel

The cruise ship M/S Royal Majesty is equipped  
with Wärtsilä Diesel engines.

Main engines: 4 x Wärtsilä Vasa 6R46  
Total output 21,120 kW

Auxiliary engines: 4 x Wärtsilä Vasa 6R32  
Total output 9,840 kW



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Wärtsilä Diesel Oy  
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Circle 245 on Reader Service Card

# MARINE COATINGS & CORROSION CONTROL

Over the past few years there has been an increasing demand to protect the environment with the products which are used to protect marine vessels.

The marine coatings industry has reacted to the ever-present environmental protection concern and has developed many new products which meet environmental guidelines and specifications.

The following review is a brief overview of some of the marine coatings products and equipment available for use in the marine industry based on a survey of some of the largest manufacturers and suppliers of these type products. Some companies which are featured strictly specialize in products that enhance worker productivity and safety.

## For Further Information

For free literature, technical data, brochures and reports detailing any of the products or services reviewed in this feature, circle the appropriate Reader Service number accompanying the manufacturer's review on the postpaid Reader Service Card bound into the back of this issue.

### AMCLEAN

Circle 64 on Reader Service Card  
Amclean, Miami, Fla., specializes in environmentally safe coatings removal. Amclean has developed a line of ultra-high pressure (30,000 psi) equipment for the removal of epoxies, alkyds and any combination of marine coatings. Ultra-high pressure waterjetting uses no abrasive so the cost of abrasive and its disposal are eliminated.

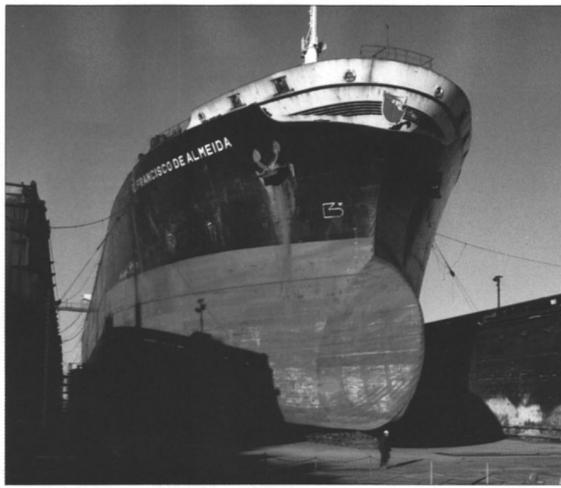
Amclean has also developed a hull cleaning system that removes marine growth at rates of 8,000-square-foot per hour.

Amclean represents a line of rust inhibitors and paints that offer a 10-year guarantee in harsh marine environments.

Amclean is presently looking for distributors for the ultra strip line of waterjetting products.

### AMERICAN SAFETY TECHNOLOGIES

Circle 65 on Reader Service Card  
For more than 75 years, American Safety Technologies, Roseland, N.J., formerly American Abrasive Metals, has been a leading source for non-slip safety systems worldwide. Originally developed as a protective non-skid coating system for U.S. Navy aircraft carriers, American Safety coatings have been applied to virtually all naval flight decks since 1962, where they withstand the constant abuse of heat, rain, snow, frost, strong winds, salt spray, chemical spillage, the impact from chains and landing gear, as well as the abuse of thousands of



fighter jet landings.

This experience, coupled with ongoing chemical research, has led to the development of advanced, non-slip, total-protection formulations for above-the-waterline marine applications including boottops, topsides, decks and deck fittings.

American Safety coating and decking systems now enhance the safety, esthetics and seaworthiness of all types of vessels—from pleasure craft to commercial shipping, fishing, transportation and offshore geologic exploration—becoming an integral part of ship safety and design.

American Safety Technologies offers non-slip coatings for a wide variety of marine applications. All bond easily to wood, aluminum, steel and fiberglass. All provide superior chemical resistance and excellent surface adhesion, retaining their

non-slip integrity for several years in demanding oceangoing and offshore conditions.

### AMERON

Circle 93 on Reader Service Card  
Over 10 years ago, Ameron developed the formulation techniques which now permit the manufacture of coatings that can stand up in today's tough regulatory climate while maintaining high levels of performance.

In the early 1980s, Ameron introduced Amerlock 400, a high-solids, high-build epoxy which offers surface-tolerant corrosion protection. Even today, Amerlock 400 surpasses all EPA VOC requirements. Several years later, Amershield, a high-build VOC-compliant polyurethane, joined Amerlock.



Based on the experience gained from the successes of Amerlock and Amershield, Ameron now offers its "Environmentally Designed" line—high-performance coatings for users who require the alternative of environmentally sound products. An Ameron ED coating is made to perform as well as the conventional coating it replaces. This strict adherence to performance extends throughout the product line, from alkyds and latexes used in less critical areas to tank linings and antifoulings which see the most demanding service.

All ED coatings meet the most stringent VOC regulations in effect in California AQMDs. At this time California is one of the only states that has imposed VOC regulations on marine coatings.

Furthermore, since OSHA has established reportable limits for lead, arsenic, selenium, mercury, etc., Ameron monitors its raw materials so that all ED coatings contain less than reportable levels of heavy metals.

Ameron reports its ED coatings do not contain methyl and ethyl cellosolves or their acetates. Additionally, ED coatings technology makes it possible to duplicate with lead- and chrome-free pigments in the same colors as with conventional lead and chrome pigments.

ED coatings are applicable using standard application techniques and are no more difficult to apply than their conventional predecessors.

### ANTRAC GROUP

Circle 135 on Reader Service Card  
The AnTrac Group of Dublin, Calif., manufactures a line of products designed to remove rust and scale from metal while leaving a coating to protect after deoxidation is complete. The products are currently being used on the West Coast and throughout the Pacific Rim in all types of commercial and military shipboard applications. The Military Sealift Command has approved its use by shipyards and contractors as a rust and scale remover in shipboard piping systems. The products were also recently tested against EPA and California Title 24 standards to ensure compliance. They are non-toxic, non-flammable, water-based, and will not attack gaskets, washers, diaphragms, rubbers, plastics and most paint surfaces. The products can be applied by spray, brush/roller or dipping, and they can be recirculated through piping systems allowing the user to maintain hard-to-reach spaces.

### ARNESSEN

Circle 94 on Reader Service Card  
Arnessen rust removing equipment first appeared about the time of World War I, and is designed to remove rust and scale from steel

vessels, barges, drill rigs and work platforms. Basic operation is a beating action by hardened steel fingers and wheels.

The Arnessen line consists of a broad range of chipping hammers powered by a choice of air or electric drives. These are completely portable units designed for continuous or intermittent use that can be used directly at the work site to clean steel of old paint, epoxy, rust scale and caked-on residue. They can be used on vertical, horizontal or irregularly-shaped surfaces, with 15 types of rotating heads available to handle everything from thick to fine residue removal. No special training is required, even for unskilled labor, and a single operator can easily clean over 900 square feet of plate in an eight-hour shift.

Arnessen deck scalers are specifically engineered for heavy duty removal of undesirable deposits from large flat areas. These units are available with air, electric or gasoline power and are built to give years of reliable duty; some 30-year-old machines are still in regular service. They are easy to maintain, with 44 hardened steel striking wheels that can be quickly replaced when worn.

Additionally, Arnessen has a line of universal needle scalers designed to work in confined spaces and uneven areas.

#### CARBOLINE

Circle 68 on Reader Service Card

To provide long-term corrosion protection to the mile-long array of interconnected steel platforms and bridges that form the world's largest offshore mining development, Freeport-McMoran Inc. recently selected a three-stage coating system supplied by Carboline, St. Louis, Mo., comprised of a zinc primer with an epoxy mid-coat and a polyurethane topcoat. The coating was applied to all exposed steel surfaces—from the top of the 340-foot high sulfur-mining production platforms to the mudline, more than 200 feet below the surface of the Gulf of Mexico. Coating the jackets down to the mudline, instead of the traditional 10 feet below sea level, is expected to double the length of cathodic protection.

Mitch Braun, marketing services manager for Carboline, said: "Because the steel structures of the huge mining complex will be continually exposed to salt air, seawater and sulfur, Freeport-McMoran needed a tough, durable coating system that could provide outstanding, long-term corrosion protection. Our Carbo Zinc 11 primer over-coated with Carboline 890 epoxy and Carboline 134 polyurethane offered the ideal solution for the tough coating project."

Carbo Zinc 11 is an inorganic zinc primer coat that protects steel galvanically to eliminate sub-film corrosion.

Carboline 890, based on a high-performance Ciba-Geigy epoxy resin, is a two-component, high-solids, high-build coating.

Carboline 134 polyurethane is a

two-component coating designed to produce a glossy, smooth, hard-film surface finish.

#### CHESAPEAKE SPECIALTY PRODUCTS

Circle 69 on Reader Service Card  
For shipyards and other industries involved in blast cleaning prior to painting, Chesapeake Specialty

Products, Inc., Baltimore, Md., has developed new quality control performance standards for recyclable abrasive blasting media such as steel shot or grit.

The new standards proposed by Chesapeake Specialty Products are based upon performance criteria rather than the generally accepted tests of the SAE, SFSA and ISO standards which measure features of the abrasive product such as mi-

crostructure, hardness, cracks and voids. These tests are costly, labor intensive, subjective and not relevant to the main purpose of abrasive blasting which is to clean steel prior to painting.

The real measure of an abrasive is how fast it cleans, type of surface produced and how long it will last.

The advantages of the proposed test are that it meets the three primary criteria noted above and that



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- ▲ High strength, low alloy steel super-structure
- ▲ Full instrumentation in operator's compartment

#### MODERNIZE YOUR SHIPYARD... Increase Your Boat Handling Capability With The All New 500 Ton Capacity Marine Travelift Straddle Hoist

Marine Travelift, Inc., the World Leader in the manufacture of Self-Propelled Straddle Hoists, introduces the largest rubber tired boat hoist in the world.

The Model 500BFM will double or triple your shipyard productivity for handling commercial boats such as tugs, barges, work boats, fishing boats, large pleasure boats or any other type of vessel...also, sections and heavy yard lifts.

The 500BFM lifts 100 ton to 500 ton vessels in and out of the water in minutes instead of hours or days as required with previous boat handling methods.

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For complete information and specifications on the 500BFM or our complete line of mobile boat hoists with capacities from 15 to 500 tons, contact Marine Travelift, Inc., 49 E. Yew St., Sturgeon Bay, WI 54235 USA • 414-743-6202 • Telex: LIFTS STGB 260056 • FAX: 414-743-1522.

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Model 500BFM at Abu Dhabi, United Arab Emirates

Circle 274 on Reader Service Card

it uses a standard test method already approved by both the scientific and commercial communities. The major attributes of the test procedure are as follows: measurability, repeatability, simplicity, controlled conditions and cost effectiveness.

In summary, the proposed performance standard is relevant to the blast cleaning/painting industry and establishes criteria for cost benefit analysis.

Chesapeake Specialty Products, Inc. is proposing these new standards to the Steel Structures Painting Council and to the International Standards Organization.

#### CORROSEAL, INC.

Circle 70 on Reader Service Card  
Corroseal, Inc. produces two products for marine use at its plant in Seattle, Wash. The first product is

Corroseal™, a rust convertor and metal primer used in daily maintenance all types of marine vessels. The second product is Crystal Lok™, a concrete hardener and waterproofer for ferrocement hulls, concrete drydocks, wharfs and other shore structures.

Corroseal™ converts rust to an inert substance called magnetite and at the same time polymer primes the metal for top coating. This conversion process, when ap-

plied to clean, tight rust, creates a harder-than-steel barrier layer. This conversion process occurs exactly where the rust has corroded the steel. It does not dissolve the rust into the metal primer coating but rather converts it where the rust occurs to a non-rusting, inert substance.

Corroseal™ is an ideal product for ship, tug or barge maintenance of corroded surfaces. It is non flammable, contains no toxic pigments, is VOC compliant at 60 grams-per-liter, has no offensive odors and its mild, converter formula has a pH between grapefruit juice and orange juice.

This makes the product user friendly and a reported favorite of vessel crews because it is easy to apply. It is especially effective on welds.

Crystal Lok™ is not a coating. It penetrates new or existing concrete and hardens the surface, locking out moisture it reduces effervescence and chloride intrusion of concrete and it will stop moisture penetration of concrete up to 300-inch immersion depth. This helps prevent rusting of rebar or steel in concrete and thus prevents spalling or breaking up of the concrete.

#### DEVOE

Circle 71 on Reader Service Card  
Founded in 1754, Devoe Coatings, Louisville, Ky., is one of the oldest companies in the U.S. and reportedly the oldest paint company in the world. Over the years, Devoe has been a major contributor to coating technology. From Devoe's original invention and patent of the epoxy resin back in the 1940's, the company has maintained a leading position in epoxy technology.

Devoe offers a diverse range of products under trade names Devran, Bar-Rust and Devchem. The product range includes coatings designed for underwater application, low temperature cure, surface tolerant and the industry standard in chemical tank linings.

Not only has Devoe been a leader in epoxy technology, but the firm also was one of the first companies in the world to offer organotin-free ablative antifouling. Its ABC line of antifouling has proven performance in waters around the world.

#### DU PONT COMPANY

Circle 72 on Reader Service Card  
Du Pont Company, Wilmington, Del., offers Starblast XL blasting abrasive for the marine industry. At less than one percent free crystalline silica, Starblast XL abrasive has been added to the Navy's Qualified Product List and is CARB approved.

The abrasive is said to be exceptionally efficient and economical due to low-dusting, faster cleaning rates, less clean-up time and virtually free of heavy metals.

Starblast XL abrasive leaves a surface profile of 1.8 to 2.2 mils, which is ideal for maximizing coating adhesion performance.



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SeaArk Marine's NEW 32' Barracuda is a patrol boat designed for law enforcement officers who require high speed, durability, and features that make boarding easier and safer. To meet these demanding tasks, Barracuda class boats have deep vee bottoms, wide flat decks, abundant hand rails, excellent slow speed maneuverability and stability. A 35' Barracuda is also available from SeaArk Marine.



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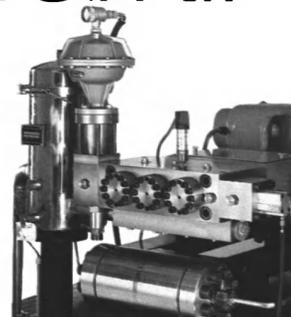
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February, 1993

Circle 260 on Reader Service Card



33

### ERVIN INDUSTRIES

Circle 73 on Reader Service Card

The first cast steel shot and grit abrasives were produced by **John F. Ervin**, who was awarded a U.S. patent in 1939 for his unique discovery of using alloyed steel to make a technically advanced abrasive product for blast cleaning and surface preparation.

Ervin Industries, Ann Arbor, Mich., remains a family-owned busi-

ness. A new product development center located in Tecumseh, Mich., is now being completed. This new research facility will support the continuous improvements that provide customers of Amasteel with excellent product performance for surface preparation. Ervin Amasteel comes in three forms: shot, grit and a blend of the two.

The fundamental requirement is removal from the steel surface of a contaminants that would be condu-

cive to premature paint failure.

Three principal degrees of blasting cleaning cleanliness are specified and described by both the Steel Structure Painting Council (SSPC) and the National Association of Corrosion Engineers (NACE).

### ESGARD

Circle 74 on Reader Service Card

Esgard, Inc., Lafayette, La., offers a wide range of coatings de-

signed to offer optimum protection of marine and power transmission equipment. All Esgard coatings are formulated for environmental and worker safety while preserving operators dollars.

New to the market are the "P" products. These five coatings are all qualified under MIL-C-16173D, are easily removable and are VOC compliant. Their intended uses include preservation of power transmissions, gears, reducers and associated lube oil components, steam turbines and other machined metal equipment. Each "P" product was designed to exceed specifications and the most stringent of clean air requirements.

The mainstay of Esgard's product lines are Bio Kote and Bio Float. These coatings offer effective, safe, nonhazardous and economical protection for ballast tanks, cofferdams and void areas on marine vessels. Both are single package products which are applied over minimal prepared surfaces. Although they are 100 percent solids, they cure to a firm film which will not wash out and provides a safe surface for inspection. Independent testing has shown no pollutants attributable to the coating.

Esgard sales, service and products are available worldwide.

### EUREKA CHEMICAL COMPANY

Circle 75 on Reader Service Card

Eureka Chemical Company, South San Francisco, Calif., manufactures non-solvent base coatings and lubricants under the trade name, Fluid Film. The increase in the extended life cycle of in-service ships has resulted in a substantial increase in the sales of the liquid and semi-liquid non-solvent coatings for salt water ballast tank protection.

Surface preparation is minimal. The coatings are applied over rust scale at three to 15 mils thickness at a cost of three to seven cents per square foot. The liquid type is designated Liquid A and may be applied by flotation or spray. Protection afforded depends on the conditions at time of application and will range from two to four years. Both coatings may be used as a descaler to clean surfaces, thus reducing maintenance costs substantially. Both Liquid A and semi-liquid AR are transparent, and the fluid characteristic assures penetration to the base metal.

Fluid Film products will not evaporate and dry out like solvent base products. As an indication of the effectiveness and high quality performance, the company notes major producers with competitive coatings and lubricants, which specify Fluid Film tank coatings and wire rope lubricants instead of their own company's products.

### GRACO

Circle 76 on Reader Service Card

Graco, Inc., Minneapolis, Minn., offers a wide range of gasoline-powered and air-powered airless spray-



## MAGNAKOTE®: The best way to avoid a tough scrape with your ship's worst enemy.

The easiest, most effective, and economical way to protect your ship's ballast tanks and void spaces from rust and corrosion is with MAGNAKOTE® rust preventative.

MAGNAKOTE's unique patented formula penetrates the existing rust in your ballast tanks and protects the base metal from forming new corrosion.

**Easy to apply.** MAGNAKOTE rust preventative is easily applied, while in port or in transit, by spraying or float-coating. The tank surface can be new or rusted, wet or dry. In approximately 36-48 hours, MAGNAKOTE cures to a pliable, transparent, protective film that will not crack or peel and protects for years.

**No need for extensive surface preparation.**

Apply MAGNAKOTE to a rusted surface and it penetrates right through the oxidized deposits to the base metal. As MAGNAKOTE rust preventative attaches itself to the metal, it breaks the bond between the oxide and the steel surface. With normal ship movements, the rust layer is dislodged and falls to the bottom of the tank.

No scraping, grit, or high-pressure water blasting procedures are necessary.

**Protection that lasts.**

Unlike coatings that simply cover the surfaces of ballast tanks and void spaces, MAGNAKOTE rust preventative actually bonds to the steel and forms layers of microscopic platelet crystals. The effect is like "fish scales," or layers of protection. Only a thin film of approximately 3 mils is necessary for long-lasting protection.

**The MAGNAKOTE "LIFE PRESERVER PROGRAM."**

The fight against rust and corrosion is an ongoing battle. That's why Drew offers the MAGNAKOTE "LIFE PRESERVER PROGRAM." With this program you get Drew's warranty, plus worldwide inspection of your ship's ballast tanks and void spaces by Drew Service Engineers for as long as you are a MAGNAKOTE user.

MAGNAKOTE rust preventative: Your ship's best protection against its worst enemy.



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Circle 250 on Reader Service Card



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ers for spraying a wide variety of marine coatings. Delivery volumes range to seven gallons per minute and pressures from 2,760 to 4,950 psi, providing medium to extra high volume delivery for fast coverage.

Many of the sprayers feature Graco's Severe Duty™ construction, designed to handle new high solids coatings formulated to reduce emissions. Severe Duty features tougher packings and a chrome over high quality stainless steel treatment for rods and cylinders which provide greater life when pumping these highly abrasive and/or corrosive materials.

In addition, Graco's new sturdy cart with a wide stance and big tires is easy to maneuver and puts the pump in position fast.

#### HEMPEL COATINGS

Circle 77 on Reader Service Card  
Hempel Coatings (USA), Inc., Wallington, N.J., was one of the first marine coating suppliers to introduce tin-free technology—the Olympic range—to the market. Olympic was an initial step in a targeted research program, which began in 1976, to develop environmentally acceptable biocides that would enable established hull management strategies to remain in place.

Although the development of this tin-free range was a major breakthrough, research continued in order to produce, test and market a more advanced product. The culmination of these endeavors was Hempel's Nautic Tin Free 7190—a self-polishing antifouling that does not rely on organotin copolymer to provide the self-polishing action.

The main ingredient in this technology is a self-regulating binder of a complex composition. It consists of a saponifiable tin-free resin combined with two moderating copolymers which control and stabilize the transport mechanism of ions in the reaction layer, thereby controlling the self-polishing process. Through the self-regulating action the tin-free bioactive ingredients are continuously being released at the surface of the coating film, providing constant protection against the settling of the fouling organisms on the hull surface.

Cuprous oxide has a long and established track record as an efficient biocide. In Nautic Tin-Free it is combined with a novel organic biocide to obtain a synergistic effect which ensures efficiency against the whole spectrum of fouling organisms.

Although the chemistry involved in Nautic Tin-Free is different from that of the tin-based antifouling, the final result is the same: A controlled self-polishing effect producing a smooth hull surface.

#### JOTUN VALSPAR

Circle 78 on Reader Service Card  
Current thinking on below-waterline hull treatments increasingly focuses on easy-to-apply coatings which offer both extended periods of protection and are friendly to the

February, 1992

environment. Anticipating this trend for some years, Jotun Protective Coatings (JPC) has already developed a range of appropriate treatments.

Included in the range is Jotamastic 87, a high-solids epoxy coating which can be applied in dry-film thickness up to 400 microns in a single coat. Requiring only nominal pretreatment of the steel surfaces to be protected, it has the further "green" advantages of a low

solvents content and complete exclusion of isocyanate. Successful applications include the repair of self-polishing antifouling.

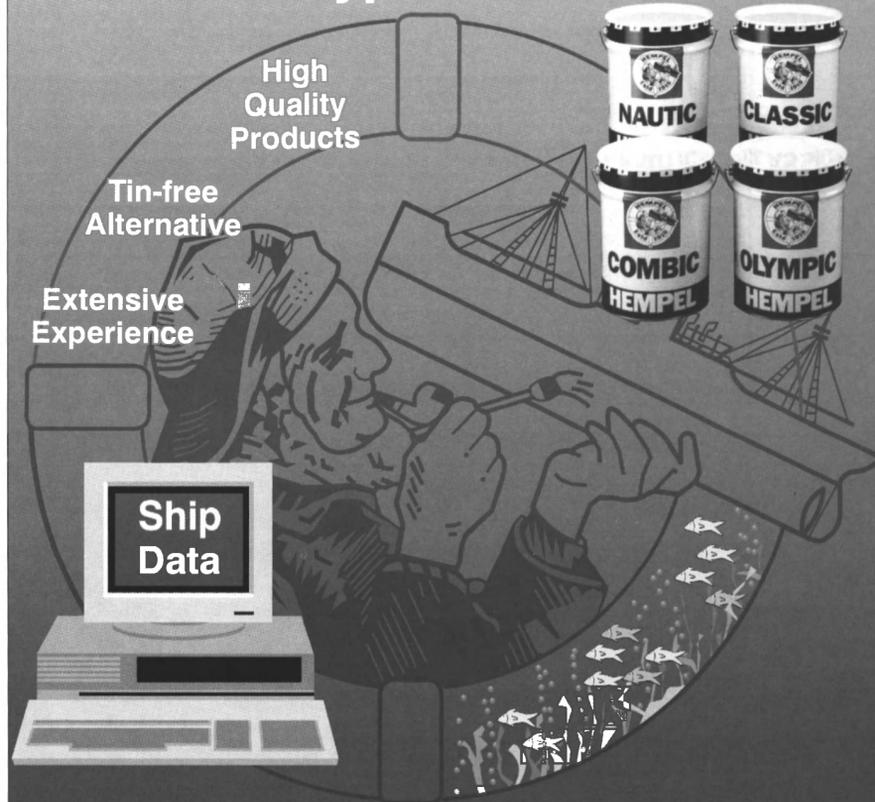
Ordinary repair methods for such antifouling involve three coats of primer. As these are applied, each successive coat tends to "grow" over the edges of its predecessor, the final coat often forming a largely continuous sealer over intact antifouling. Wasteful retreatment with antifouling is therefore not needed over

these areas.

Jotamastic 87 offers an alternative repair method which eliminates "sandwich" build-up. Used as a drydocking primer in conjunction with self-polishing antifouling, the single coat of Jotamastic 87 is applied only to the damaged areas, leaving intact antifouling to continue its work when the vessel again puts to sea.

Combined with the easy application of Jotamastic 87, this protec-

## Tailormade Antifouling for all types of vessels



Hempel's SHIPDATA holds a wealth of information from more than 16,000 drydockings.

This vast experience bank forms the basis for Hempel's tailormade specifications where the exact film thickness required to protect any particular vessel

until its next scheduled drydocking can be calculated for all antifouling types. Hempel's antifouling range comprises all the technologies known today: CLASSIC, OLYMPIC, COMBIC and NAUTIC. In the cases where environmental considerations assume priority, tinfree alternatives are of course also available.

Circle 264 on Reader Service Card

# HEMPEL



tion method can result in major long-term savings in maintenance costs. By avoiding hull roughness, fuel consumption is also minimized.

#### LTC INTERNATIONAL

Circle 79 on Reader Service Card  
Protecting people and the environment has become a priority issue. For shipyards and aboard ship repairs conventional open sandblasting is becoming a thing of the past.

Under new ownership LTC International, Sterling, Va., now manufactures a wide range of unique high production Vacuum Blasting machines and systems for sales and rentals.

Special attention has been given to compactness in the design of machines and systems so as to afford access and flexibility during surface preparation. High level containment in the removal of lead-based paints, PCB's and other hazardous

coatings is achieved with the incorporation of HEPA secondary filtering of exhausted air.

The engineering staff at LTC is available to work with you in evaluating and selecting the equipment for your applications.

#### NORTHSTAR MFG.

Circle 92 on Reader Service Card  
Northstar Manufacturing Company, Inc., Spring, Texas, produces

the innovative protective equipment designed for coaters, blasters and painters. The ASH-301 has approval through MSHA/NIOSH as a type C or CE respirator to be used as a paint hood, as well as an abrasive blast hood. The hard shell meets ANSI standards for face and eye protection, yet the complete unit weighs less than five pounds. The foam inner liner gently holds the head in order to hold the wide viewing window in place. The foam also distributes quieter air throughout the inner chamber and fits over the ears for additional hearing protection.

The 301-14 airline filter was designed to provide cleaner, safer air on a more stable base for use in blasting yards or in a shop environment. The replaceable filter cartridge traps and removes 98 percent of impurities down to 1/2 micron in size. Northstar also manufactures a disposable hood, full face constant flows respirator and approved breathing air hoses.

#### REED MINERALS

Circle 80 on Reader Service Card  
Reed Minerals, a Harsco Company, manufactures a coal slag abrasive under the trade name of Black Beauty<sup>®</sup> at 15 different plants throughout the U.S.

Reed Minerals has been manufacturing Black Beauty since the early 1940's and is one of the largest coal slag abrasive processors in the U.S. Black Beauty is utilized by the marine industry for their abrasive needs.

The product name Black Beauty refers to a by-product of the combustion of coal which is processed into abrasive products. Typically, it is fused ferro-alumino-silicate of complex composition, formed when the molten slag is quenched in cold water. The quenching instantly solidifies the molten solution into an amorphous or non-crystalline glass, and by thermal shock, fractures the slag into rough, angular particles. The overall appearance of the material is that of a coarse, black aggregate.

Black Beauty has a range of six to seven on the Moh's Scale of Mineral Hardness, and is characterized by low friability and low-dusting, which is especially important on jobsites in congested areas or where emission containment is specified. The abrasive is also classified as a "low free silica" abrasive and can be used where "low free silica" abrasives are specified. Black Beauty is also reported to be chemically inert and virtually non-leachable as demonstrated by independent laboratory testing.

#### SCHMIDT MFG.

Circle 81 on Reader Service Card  
Engineered and manufactured by Schmidt Manufacturing, Inc., Fresno, Texas, the Accustrip System is a new generation of safe, non-sparking and non-toxic abrasive blasting equipment utilizing a patented formulated blend of sodium bicarbonate blast media.

The Accustrip System is said to  
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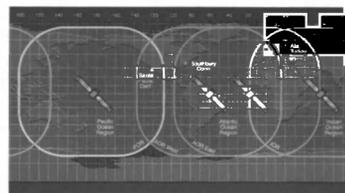
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Circle 301 on Reader Service Card

be a process that can remove typical surface corrosion and coatings in the same step from virtually any surface without additional tools or chemicals.

The Accustrip System can clean or remove many layers of coatings or one layer at a time from soft substrates without the need to pre-wash to remove dirt, grease and oils in a fraction of the time when compared to hand tooling or sanding.

This environmentally sensible de-coating process gives the user the ability to blast soft substrates and sensitive surfaces of virtually any material. When blasting rotating equipment, the Accustrip System will not damage pumps, motor bearings, packing, mechanical seals or polished rods.

The Accustrip System, Schmidt reports, is safe for the operator and the environment and can be operated and maintained with minimal operator training. Portable or stationary systems are available with various media storage capacities for one or more operators.

#### SHERWIN WILLIAMS

Circle 82 on Reader Service Card  
The Sherwin Williams Company, Coffeyville, Kan., manufacturing site has been in continuous operation since 1906. The plant, originally designed and constructed to produce pigments for use in Sherwin-Williams paints, still produces pigments for the coatings industry under the Moly-White and Kemgard

names.

Moly-White products are pigments used in coatings to prevent corrosion. These products are used by all the major paint producers and are specified in coatings by the Navy and other government agencies because of their non-toxic properties. Concern for the environment has led to increased usage of these functional products. These highly specialized pigments, which are now sold worldwide, are produced at the Coffeyville site.

#### SIGMA COATINGS

Circle 83 on Reader Service Card  
Sigma Coatings, Harvey, La., a member of the Petrofina Group, is recognized as a major international manufacturer of marine, industrial and domestic paints.

The Sigma portfolio of problem-solving reinforced, epoxy paint systems now features the new generation of high solid, coal tar-free coatings, such as 7480 Sigma TCC, Sigma Alumastic and Sigmacover Glassflake. These products combine safety-conscious formulation with maximum impact and abrasion resistance over an extended lifespan. These Sigma anticorrosive systems are all designed for easy application, using standard spraying equipment, and can be used in widely varying climatic conditions. Sigma Coatings also manufactures a range of antifouling systems to meet different criteria to provide tailor-made protection for each

operator's needs.

The company's tin-free antifouling is based on Sigmaplane Ecol, an EPA registered ablative antifouling, which has self polishing characteristics. The surface material is gradually polished away to continually expose fresh layers of toxins.

The Sigmapilot line of antifouling, which employs the contact diffusion method of biocide release, has two members—Sigma Pilot ATF and Sigma Pilot Ecol, both tin-free antifouling.

In January 1992, Sigma Coatings moved their operations to 1401 Destrehan Avenue in Harvey, La. This new location has more than doubled the space of the previous location. The expanded production facilities provide the much needed capabilities to keep in line with growing sales levels.

In all aspects of the marine market, Sigma Coatings USA, through this new facility, is confident in meeting the demands of the marine industry, not only locally but nationally, including Canada, in the upcoming years.

#### STAN-BLAST ABRASIVES

Circle 84 on Reader Service Card  
Stan-Blast Abrasives Co., Inc., Harvey, La., one of the leading suppliers of low free silica abrasives on the U.S. Gulf Coast, has been manufacturing abrasives since 1971. In an effort to better serve the needs of its customers, the company has expanded its line of blasting and con-

tainment products. GMA Garnet Abrasives and Indian Valley Containment Screens have been added to the company's product list. Stan-Blast is also a regional blender for TDJ Group's Blastox.

Stan-Blast abrasives contain less than 0.1 percent free silica and are virtually free of all heavy metals. Stan-Blast is a harder abrasive, which means less particle breakdown, resulting in lower emissions and better cutting for more efficiency and lower costs in blast cleaning operations. The sharp, angular form of each particle creates a more pronounced profile for improved coating adhesion. Stan-Blast is recommended as a safe alternative to sand by NIOSH, listed on the Navy's Qualified Products List (QPL-22262) and are approved by the California Air Resources Board (CARB).

Blastox, a waste management chemical, is blended with abrasives before blasting to render spent abrasives non-hazardous. Blastox creates chemical bonds with the heavy metals in spent abrasives to produce a waste which can be disposed of in standard landfills.

Containment systems are designed to meet the most stringent environmental regulations by containing and capturing overspray and spent abrasives. Indian Valley uses strong, lightweight, flexible, flame retardant and ultraviolet resistant fabrics to make tarps, nets and screens in standard sizes, as well as custom sizes.

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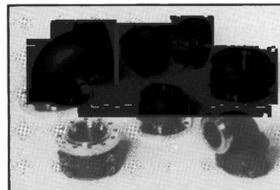
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land and water blasting and painting sites are also available.

### UNITOR SHIPS SERVICE/ CORROLESS INTL.

**Circle 86 on Reader Service Card**  
It is a common misconception within the shipping industry today that corrosion control onboard vessels can only be carried out by painting. Unitor AS, Norway's international ship service company, does not subscribe to this view and in recent years has been at the forefront of introducing new anti-corrosion technologies for marine corrosion control.

Featuring the Corroless range of anti-corrosion systems, Unitor Ships Service, Long Beach, Calif., has developed high performance corrosion control materials for all areas of vessels. Applications include the long-term protection of decks, ballast tanks, double bottoms, hatch covers and coamings, mechanical equipment and electrical systems.

Latest innovations in Unitor's range of corrosion control systems include a new "Tar-Free" ballast tank system, Corroguard EPF and a range of easy-to-use maintenance materials for patch priming and everyday corrosion protection called Corroless Rustkiller.

Unitor's unique range of products combine proven anti-corrosion technologies with surface tolerance and ease of use thereby ensuring the most effective corrosion protection currently available.

The Corroless range can be supplied through Unitor's extensive network of offices in major ports around the world.

### U.S. PAINT

**Circle 87 on Reader Service Card**  
U.S. Paint Corporation, St. Louis, Mo., offers Awlgrip's Awl-Star Gold Label tin-free antifouling. It is now available in bright blues, green, black and red—a revolutionary breakthrough for a non-tin-containing copolymer. Formerly only muted colors were available to the passenger vessel market.

One boat owner who used Awl-Star Gold Label reported that after one year and 27,000 miles, the hull surface remained protected and clean. U.S. Paint, a world-recognized yacht finish innovator, is the pioneer of one of the first tin-free copolymer yacht antifoulants as a response to environmental concerns.

Free Awl-Star Gold Label technical data and material safety bulletins are available upon request.

### Brownsville Conference To Focus On Developing Inland Waterway Business

Brohl & Company, of Clifton, N.J., will be holding an Inland Waterway Business Development Conference in the Brownsville, Texas, area. This two-day program will be held from May 16 to 18 at the Radisson Resort on South Padre Island, Texas, and will compliment the Inland Waterway Business Conference now held annually in Chicago, Ill., by Brohl & Company.

The emphasis of the conference will be on the development of U.S. and Mexican trade, which has doubled in the last five years. The

Port of Brownsville alone experienced a 36 percent increase in barge trade in 1992. One-hundred percent of that business was engaged in cross-border trade.

The U.S. inland waterway network extends from the Great Lakes to the Gulf of Mexico with its southern terminus in Brownsville. The city was chosen for the conference because its proximity to the border will allow a central location for bringing together business representatives from both the U.S. and Mexico.

For additional information on sponsorship, exhibition space and registration, please contact Brohl & Company, 75 Frederick Avenue, Clifton, NJ 07013, or call (201) 345-7813, fax: (201) 345-5207.

### ASRY Scores With Computerized Tender System, Two New Docks

As part of the expansion policy of the Arab Shipbuilding & Repair Yard Co. (ASRY) and the inauguration of its two new floating docks, the yard has been gearing up to handle the increasing number of vessels expected in the coming months.

More and more specifications are being received and the number of tenders prepared is expected to rise sharply in 1993 and thereafter. This increase requires a quick, accurate and responsive estimating service to satisfy owners and for the preparation of quotations on a short time scale.

ASRY has therefore developed, in conjunction with a Swedish consultant, a tender preparation sys-

tem based on an extensive computerized cost data base, which provides accurate information to management and enables time taken in formal tender preparation to be reduced to a minimum. It similarly facilitates decisions aimed at keeping prices to a minimum and focuses attention on those areas of the business where cost savings can be made most effectively. The tender system is now being further developed and integrated with production planning throughout the yard.

For further information on the facilities provided by ASRY,

**Circle 88 on Reader Service Card**

### Shaw Appointed President, COO Of Maryland Marine

Kyle A. Shaw has been appointed president and chief operating officer of Maryland Marine, Inc. The appointment was announced by chairman of the board, Carroll N. Bjornson. Captain Shaw, U.S. Coast Guard, retired, is a 1960 graduate of the Coast Guard Academy. He served in the Coast Guard for 26 years prior to joining Maryland Marine in 1986.



Kyle A. Shaw

Maryland Marine, Houston, Texas, owns and operates a fleet of 29 state-of-the-art tank barges in the petrochemical trade along the Gulf Coast. The barges are on time charter to Stolt Transportation Services, Inc.

### USCG Amending Tonnage Measurement Regulations

The U.S. Coast Guard has announced that it is amending its tonnage measurement regulations for vessels by updating the list of organizations which are authorized to measure vessels. The Simplified Measurement System will now be extended to include all barges over 79 feet in overall length not engaged on a foreign voyage. This will also eliminate, in most cases, the need to file an additional form for Simplified Measurement.

This rule is effective immediately. For further information, contact Donald W. Goebel, Vessel Documentation and Tonnage Survey Branch, (202) 267-1103.

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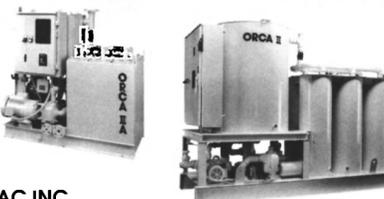


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**New Shipyard  
San Francisco Drydock  
Begins Operations**

On January 1, 1993, San Francisco Drydock, Inc., located on the former site of Southwest Marine's (SWM) facility at the foot of 20th street, began operations as a full service ship repair yard.

According to the newly formed company, an affiliate of SWM, it

operates the second largest floating drydock facilities on the West Coast and can provide a full range of repair services, from a complete modernization and overhaul to a routine "shave and a haircut."

SWM chairman and CEO **Arthur Engels** said, "San Francisco Drydock is set up to better serve their commercial customers by offering a more cost effective repair service, resulting from cost containment and greater efficiency. We see this move as beneficial to our company and our

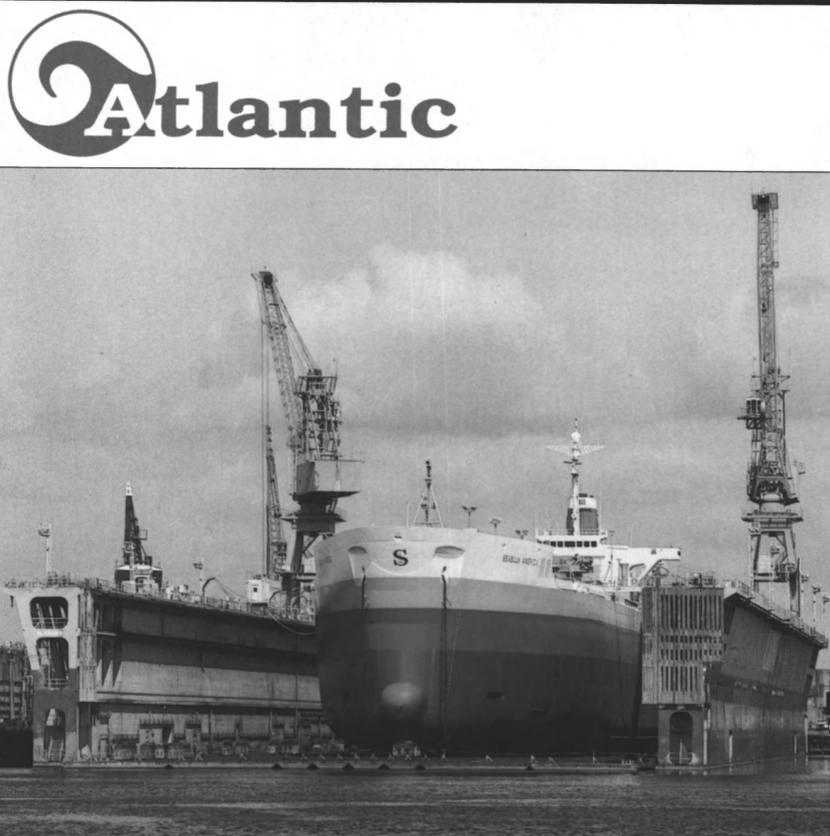
customers." SWM has recently undergone a restructuring process to streamline its operation along the West Coast and become more responsive to the demands of current market conditions.

The staff at San Francisco Drydock will remain the same and project teams will be established. The teams will include cost analysts, schedulers, estimators, buyers and project foremen dedicated to each commercial job.

San Francisco Drydock reports



Cunard's cruise ship Sagafjord in drydock (right), the tanker Admiralty Bay (center) and Pacific Gulf Marine's bulk carrier, Moku Paku in San Francisco Drydock undergoing repairs.





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that it will maintain its cooperative working relationship with local government officials and labor unions to continue to ensure a viable ship repair industry in the Bay area. Through this partnership of public and private interests, expanded cross trade work abilities to reduce standby time and reduced dockage fees from the port have been instituted, translating into reduced costs for the customer.

Additionally, a shipyard training center designed to upgrade skills for existing workers and train new workers in modern shipyard techniques has recently been opened. This school will ensure that shipyard workers are properly trained and are able to provide high levels of quality work.

For more information about San Francisco Drydock,

Circle 131 on Reader Service Card

**American Oil Industry  
Plans To Boost U.S.  
Offshore Spending In 1993**

According to the Salomon Brothers' annual oil and gas exploration and production spending survey, the U.S. oil industry is expecting to increase its spending within the country during 1993, with an emphasis on offshore development, while overseas drilling budgets are expected to drop slightly as the result of sluggish oil prices and weak refining and petrochemical profits. A portion of the budget increases in independent companies will be devoted to U.S. gas drilling operations.

An increase in expenditures in the Gulf of Mexico by independent and major oil companies will drive a decisive shift towards further spending on offshore oil development and production this year. "In the U.S., more than twice as many companies plan to spend an increasing percentage of their budgets offshore rather than onshore," the survey stated.

The survey included 147 independents who anticipated spending an additional 6.5 percent in the U.S. this year, with the biggest spenders including: Anadarko Petroleum Corp.; Apache Corp.; BHP Petroleum; Burlington Resources, Inc.; Consolidated Natural Gas Co.; Mitchell Energy & Development; Murphy Oil Corp.; Noble Affiliates; Parker & Parsley Development; and Santa Fe Resources, Inc.

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As excited as we are to include the GP-50, we'd be remiss if we didn't mention its two bigger brothers, the new mid-range GP-70MKII and our top-of-the-line GP-500 MKII.

All three units feature instant entry of man overboard

position and have the ability to send nav data to plotters, sounders, autopilots and other electronics as part of an All-Furuno Bridge. Plus, for future use, all three are configured to accept differential GPS data.

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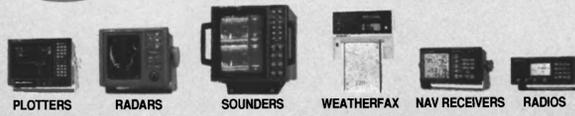
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Circle 215 on Reader Service Card

## BOATS AND BARGES



The Oileain Arann's electronic equipment was supplied and installed by Racal Marine Ireland.

### New 350-Ton Passenger Ferry Features Racal Electronics, Caterpillar Propulsion

The new passenger and cargo ferry, Oileain Arann, built by McTay's of Merseyside and delivered to O'Brien Shipping in Decem-

ber 1992, features a complete electronics fit from Racal Marine Ireland, Ltd. The vessel, which will replace the

Naomh Eanna on the 30-mile route between Galway and the Aran Islands, is powered by two Caterpillar, 1,445 hp engines, and is fitted with a bowthruster and high-lift rudders.

A Racal-Decca Bridge Master primary radar heads a comprehensive electronics package of 17 different products from a variety of manufacturers. The equipment has been supplied and installed by Racal Marine Ireland and covers all aspects of the vessel's operations, from navigation and communication to passenger entertainment.

A sampling of the other electronics onboard includes: Icom MR40 secondary radar and VP21 color video plotter; Trimble GPS Navigator; Sailor RT2048 VHF radiotelephones; Marcom 6000 handheld VHF's; Skanti TRP 7000 HF radiotelephone; JMC echosounder; Robertson RGC50 gyro compass and AP45 autopilot; Simrad 2182 watch receiver; ABB Nera public address system and 120-watt, four-track passenger entertainment stereo system; and Motorola cellphone system for passenger use.

The 130-foot ferry can carry 200 passengers in two main areas, as well as 140 tons of cargo in its single hold, while offering additional facilities for vehicle transport and refrigerated goods. The Oileain Arann has an 11-ton hydraulic fixed-jib deck crane. The boat also has cattle pens on deck which are capable of accommodating up to 60 animals.

#### OILEAIN ARANN Equipment List

Main engines.....	Caterpillar
Radar.....	Racal-Decca
Secondary radar.....	Icom
Color video plotter.....	Icom
GPS.....	Trimble
Echosounder.....	JMC
Gyro compass.....	Robertson
Autopilot.....	Robertson
Watch receiver.....	Simrad
EPIRB.....	Lokata
Public address system.....	ABB Nera
Cellphone system.....	Motorola

### Norway's Kvaerner Receives \$29.9 Million Cypriot Ship Order

Norway's Kvaerner A/S reported that its Warnemunde, Germany-based shipyard of Kvaerner Warnow Werft GmbH, received an order valued at 200 million Norwegian Kroner (\$29,880,000) to build a containership for an unnamed Cypriot shipping company.

Construction of the 19,000-dwt vessel will begin in August 1993 and is scheduled for completion in June 1994.

Kvaerner's Warnemunde yard specializes in building container vessels of this type. The former state-owned shipyard has a capacity for six containerships a year and currently has orders for 11, according to the Norwegian group.

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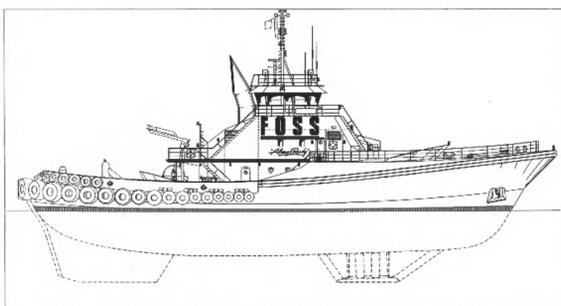


Our current orderbook includes seven 125,000 DWT shuttle tankers, and the conversion of a conventional crude carrier into a shuttle tanker. All of them with the hull strength needed for continuous round-the-year operations in the extremely harsh conditions of the North Sea. Vessels have dynamic positioning, certified heliports, conventional or diesel electric propulsion, conventional bow loading or direct bottom loading.

Maritime Reporter/Engineering News

The Shipbuilders of Spain

## Foss Awards Trinity Marine Contract For Two \$11 Million, Voith-Schneider Propelled Tractor Tugs



Drawing of the Voith-Schneider-powered tractor tug being built by Trinity Marine Group.

Foss Maritime Co. of Seattle, Wash., awarded a contract to Trinity Marine Group of Gulfport, Miss., for construction of two enhanced tractor tugs that will escort and assist oil tankers in northern Puget Sound. Each vessel will reportedly cost \$11 million.

Designed to measure 155-feet with a beam of 46 feet and a 20-foot operating draft, the 7,600-hp vessels will reportedly be the world's largest, most powerful tugs fitted with Voith-Schneider cycloidal propulsion units. Main engines on the tugs are EMD ME16-710G 7A diesels.

The German-design circular propulsion system consists of two sets of five vertically oriented blades installed ahead of the tug's center. This design gives the tug 360-degree maneuverability and an unparalleled ability to steer and stop tankers in the event of an emergency.

Foss' first tug is due to enter service at the end of November 1993. ARCO Marine Inc. will have preferential use of this tug under a contract signed last August by ARCO and Foss.

The second tug is due to be delivered in February 1994. Under a contract signed in October, BP Oil Shipping Co., U.S.A., will have preferential use of this tug. Foss' existing North Sound tractors, the Andrew Foss and Arthur Foss, will remain in service after the new vessels arrive.

The hulls of the two vessels are scheduled to be fabricated in Trinity's Halter Marine shipyard in Lockport, La. The two Voith-Schneider propulsion units, the propulsion-protecting grounding plate and the aft skeg will not be installed on each vessel until the hulls are drydocked at Trinity's Equitable Equipment shipyard in New Orleans. The deckhouses will also be fabricated and installed at Equitable.

The Voith-Schneider propulsion units for both vessels have already been ordered from the German fac-

tory, and the first shipment is due to arrive in New Orleans by the first of August.

Design work for the two new tugs was performed primarily in house by the Foss Design Team. The Glasten Associates Inc., a Seattle-based naval architecture firm, provided a contract design and prepared plans and specifications.

The enhanced tractor tugs will have a primary mission of tanker escorting and assisting, but will also be responsible for marine firefighting, offshore salvage and emergency assistance towing. Each vessel will be equipped with two 6,600-gpm monitors and 6,000 gallons of storage for firefighting foam, representing the first time a significant marine firefighting capability will be available in northern Puget Sound.

The yet-to-be-named tugs will perform sea trials in the Gulf of Mexico before Foss takes delivery.

For additional information on the building capabilities of Trinity Marine Group,

Circle 40 on Reader Service Card

For additional information on Voith-Schneider propulsion units,

Circle 41 on Reader Service Card

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Circle 202 on Reader Service Card

## Boats & Barges



The Colombian Coast Guard patrol boat Libra, built by Mako Marine.

## Mako Marine Delivers Patrol Boats To Colombian Coast Guard

The Miami, Fla.-based boatbuilder, Mako Marine, Inc., has delivered two harbor patrol boats, the Escorpion and Libra, to the Colombian Coast Guard.

The vessels' primary mission is to interdict and curtail the flow of narcotics moving in and out of Columbia's ports and harbors. The boats will also fulfill secondary missions of search and rescue, protection of natural resources and maritime assistance.

Based upon Mako Marine's highly regarded 261-B hull, which is 26 feet long with an 8.5-foot beam, the deep-vee hull has excellent seakeeping characteristics, permitting the forward .50 caliber

and after port/starboard M-60 machine gun stations to remain active in rough conditions.

The vessels are powered by two 175-hp Evinrude outboard engines generating speeds in excess of 40 mph. Two tactical radios, a PRC 1077 VHF and PRC 1099 HF, have been fitted to provide communications with military vessels and shore stations, while a Ross DSC 500 marine VHF will be used to contact commercial vessels. The coast guard boats' electronic suite also includes a Raytheon R40X marine radar, Ritchie compass, Raytheon depthsounder, VHF radio direction finder and a Trim pack PSN-10 GPS to provide precise navigation for interdiction and search and rescue missions.

To ensure that the boats can be rapidly redeployed anywhere in the country, their custom pilot houses can be split and radar masts lowered to allow airlift via Colombian Air Force C-130 Hercules transports.

The Mako Marine-built harbor patrol boats provide the Colombian Coast Guard with an extremely versatile, readily deployable and low maintenance asset.

To receive additional free information about Mako Marine and its 26-foot harbor patrol boats,

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Engine controls .....	O.M.C. Binnacle
Steering controls .....	Teleflex
Radar .....	Raytheon
VHF marine radio .....	Ross
VHF tactical radio .....	PRC
HF tactical radio .....	PRC
Depthsounder .....	Raytheon
Compass .....	Ritchie

### Veneziani Marine Coatings Now Available Through Its Pennsylvania Office

Veneziani s.p.a., of Milan, Italy, products and services are now available through Veneziani Americas of Paoli, Pa. A full range of marine coatings are available, including inorganic zinc and epoxy tank lining technology.

The company has served the marine industry since 1860 and was one of the first producers of antifouling coatings.

Coatings such as RB-191 Inorganic Zinc have been used in ballast areas for more than 40 years. The company is a division of the Maxfin Group, and one of the Varasi Companies.

For more information on Veneziani products and services,

Circle 137 on Reader Service Card

Maritime Reporter/Engineering News

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Circle 257 on Reader Service Card

### Kvaerner Ships Equipment Supplies Cargo Scooper

Now in operation in North America on a regular service between Canada and the U.S. is an unusual cargo scooper-equipped, self-discharging vessel owned by Canada's St. Mary's Cement Corporation.

The vessel is an integrated tug/barge unit which has been con-

verted into a self-unloader for operation between Bowmanville, Canada, and Detroit, Mich.

The tug, Sea Eagle II, was not part of the conversion program, but the 18,000-dwt barge, St. Mary's Cement II, has undergone major alterations from her original oil-carrying role to enable her to undertake her new dry bulk cargo-carrying role.

The conversion of the barge was undertaken by E.S. Fox Ltd., of Port Robinson, Ontario, with the focal

point of the work being the installation of the unique Kvaerner Cargo Scooper self-discharging system.

This contract represents the first placed with Kvaerner Ships Equipment AB, Gothenburg, Sweden, by a North American interest.

The cargo scooper installation onboard the barge is designed to handle coal, cement and cement clinker cargoes, with a discharge rate of 1,200 tons/hour.

Due to the design and configura-

tion of the barge's two cargo holds, two separate cargo scoopers were ordered for each hold. Both holds are equipped with two longitudinal and two transverse scrapers.

The barge is also fitted with a Kvaerner-designed, 61-meter, fully enclosed slewing discharge boom, reported to be the longest cargo scooper discharge boom currently in operation.

For complete information on the products and services of Kvaerner Ships Equipment,

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### THE CURE FOR CORROSION

Trac 1205 & 1204 are Non-toxic, non-flammable, water based rust and scale removers being used throughout the maritime industry to relieve costly corrosion problems. They are not converters or eradicators but deoxidizers that completely remove the rust or scale and bring the metal back to its original state.

After the rust is removed through deoxidization there is a coating left to prevent the metal from oxidizing prior to priming and painting.

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The products do not attack gaskets, washers, diaphragms, rubbers, plastics or most paints.

The Military Sealift Command has approved its use by shipyards.

The products are currently being distributed on the U.S. West Coast and Pacific Rim and for the first time are now available across North America.

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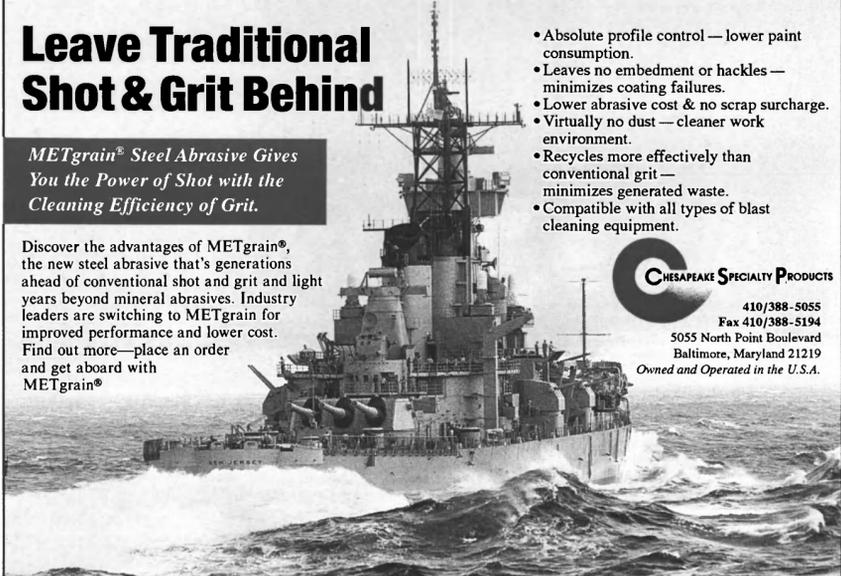
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Circle 291 on Reader Service Card

### ACL Appoints Larry Weas VP, Human Resources

American Commercial Lines Inc. (ACL) has announced the appointment of **Larry J. Weas** as vice president, human resources.

Mr. Weas will work closely with the senior managers of the company to develop and implement human resources strategies and activities that support the company's business objectives.

He previously served as assistant vice president, training and development, for CSX Transportation, Inc., (CSXT) in Jacksonville, Fla.



Larry J. Weas

ACL, a wholly-owned subsidiary of CSX Corporation, is headquartered in Jeffersonville, Ind., and operates one of the nation's largest fleets of inland river barges and towing vessels. CSX Corporation, headquartered in Richmond, Va., is an international transportation company offering a variety of rail, container shipping, intermodal and barging services.

### ABS Issues Rule Change Notice For 1992 Steel Rules

During December 1992, a new four-page Rule Change Notice No. 1 was issued for the ABS "Rules for Building and Classing Steel Vessels."

Along with this Rule Change Notice, a new 64-page addition to the "Rules for Building and Classing Steel Vessels"—Part 1 Appendix 1/B, Hull Surveys of Oil Tankers—was also distributed. Contact the Publications Department in New York or the nearest ABS office if you have not yet received copies of the changes. The new copies are being distributed at no charge and are now part of the Steel Rules.

**Despite Drain In Funds,  
MarAd Continues To Seek  
Additional Ships For RRF**

Although the Maritime Administration's (MarAd's) recent \$226 million purchase of 12 roll-on/roll-off vessels for its Ready Reserve Fleet (RRF), together with \$60 million in related U.S. shipyard repair work, has almost exhausted the agency's ship purchasing appropriations fund, MarAd is still seeking additional vessels.

In the meantime, MarAd is reported to have a "short list" of 29 vessels that are being considered for purchase for the RRF, including 20 RoRos and several tankers.

Two of those ships are RoRo/container vessels belonging to Crowley Maritime Corp., of San Francisco, the American Condor and the American Falcon. Both 15,636-gt vessels were built in 1981 and are presently chartered to the U.S. Navy's Military Sealift Command (MSC).

Not included however are five modern RoRo's belonging to Atlantic Container Line (ACL) Ltd. ACL's asking price of \$70 million each was much higher than the \$22.2 million average paid by MarAd.

However, MarAd's purchase of two RoRos from the National Shipping Company of Saudi Arabia (NSCSA) for \$25 million each, opens the possibility that NSCSA may buy at least two of ACL's vessels.

Additional ships available for sale include: three 31,000-ton ships owned by Ignazio Messina & C SpA, of Genoa; two 21,000-ton vessels owned by OT Africa Line, London; two 27,000-ton vessels belonging to the German company of Rukdolph Oetker; and two ships owned by Puerto Rico Marine Management, Inc. Compagnie Generale Maritime (CGM), of Paris, is also expected to have several RoRo vessels for sale.

**Move To Deepen Suez  
Deferred By Authorities**

A decision on whether or not to deepen and widen the Suez Canal to accommodate fully-laden 250,000 to 300,000-dwt ultra-large tankers has been deferred for one year by the Suez Canal Authority.

While the ambitious plan to increase the depth of the canal to a draft of approximately 68 feet was delayed, a current operation to increase its depth from 53 to 56 feet continues.

A group of international ship-owners who recently visited Egypt to lobby against the canal expansion plan welcomed the authority's decision.

The owners believe that deepening the Suez would weaken an already flat tanker chartering market. By being forced to avoid the canal because of its depth and make the journey around Africa to Europe, adding an extra 4,700 miles to the voyage, the demand for tanker tonnage increases.

According to Egyptian authorities, if the decision is finally made

to dredge the canal to the full 68 feet, the project is expected to cost approximately \$900 million, most of which will be financed from soft loans.

**Norwegian Owners  
To Spend \$30 Billion  
On New Tonnage**

Over the next decade, Norwegian shipowners are expected to spend nearly \$30 billion on new ship construction, according to industry sources. Norway currently has 82 ships of five million deadweight tons on order, ensuring its continued prominence as a leading commercial maritime nation.

It is likely that this large capital investment will be accompanied by some significant structural changes to the country's shipping industry, as smaller operators merge into larger units.

The Norwegian Shipowner's Association put the size of the country's owned or operated commercial fleet at 1,900 vessels of 65 million dwt. However, many of these ships are approaching the end of their operational life and must be replaced with new tonnage.

Because of the reluctance of many banks to invest this heavily in shipping, many smaller shipping companies will be forced to join with larger partners in order to afford expensive fleet replacement programs.

**American President Buys  
Two C9 Containerships**

American President Companies, the Oakland, Calif.-based parent company of ship operator American President Lines (APL), has completed the purchase of two C9-class containerships that had been leased under long-term charters.

In a press release, the company said that it paid a total price of \$197 million for three vessels, the two leased ships and a third that had been purchased in December.

The company also said that while the vessels were under charter, dividend payments to the company from its APL unit were subject to restrictions under the terms of its operating-differential subsidy agreement with MarAd. These restrictions have now been eliminated, American President said.

**Biospherics Awarded  
\$16 Million Navy Contract**

Biospherics, Inc., of Beltsville, Md., has been awarded a five-year contract valued at up to \$16 million from the Navy Public Works Commission.

In a press release, Biospherics said that the contract calls for it to sample and analyze wastewater treatment in plant effluents, other liquid wastes and drinking water.

In connection with this contract, the company has opened a regional office in Hampton, Va.

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### South Carolina's Ports Close To Securing Land For Proposed Box Terminal

Plans for a 287-acre, eight-berth container terminal on Charleston's Daniel Island are nearing completion, now that the South Carolina State Ports Authority is about to close on the proposed site located

between the Cooper and Wando rivers.

The port authority wants to build the terminal on the Cooper River side of the island, which offers 20,000 feet of waterfront and could ultimately cost \$500 million to develop.

A drawback to the location, however, is the relatively narrow Cooper River ship channel, which is restricted to one-way traffic. Although the Charleston Branch Pi-

lots Association is recommending that the Wando River side of the island be used as it allows two-way traffic, the authority is locked into the Cooper River site because of zoning regulations.

In a compromise worked out between local and state officials and the port, an agreement to purchase the Cooper River property for \$7 million is ready to be signed.

After the property is acquired,

the port intends to examine whether the channel should be widened where a turning basin ought to be constructed and how a river bend should be removed to facilitate ship traffic.

### Reduction In Harbor Tax Could Be Forthcoming

According to industry sources, several factors relating to the controversial harbor maintenance tax may eventually result in the first rate reduction.

First, Army Corps of Engineers spending for routine maintenance dredging has remained flat while tax collections have increased, primarily because of the rate hike from 0.04 percent to 0.13 percent.

A second factor is the recent tightening of Customs enforcement efforts aimed at domestic shippers, which is expected to create a windfall in profits similar to one reaped this year from audits of exporters.

Also, because of the growing surplus in the harbor maintenance tax trust fund, there is a risk that a complaint may be filed with the General Agreement on Tariffs and Trade (GATT) that the tax is not being used for its designated purpose. The U.S. has been forced by GATT in the past to cap its merchandise processing fee, a similar assessment which also grew too large.

These developments could signify the first hint of progress in a long campaign by ports and shippers to roll back the harbor tax to 1990 levels.

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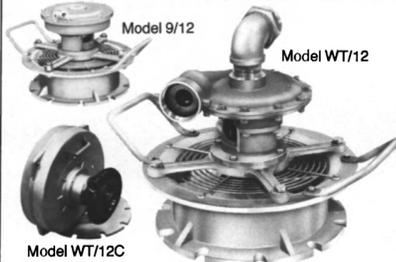


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### San Francisco Bay's Tug Escort Rules Opposed By Area Tanker Operators

A requirement for tankers operating in the San Francisco Bay area to have tug escorts, even those with double hulls, is expected to cost vessel operators about \$1 million a year in added expenses, according to industry sources. The tug escort rule designed by state authorities will go into effect by mid-January, despite opposition from the area's tanker operators.

After the Valdez spill, California passed a law designed to toughen standards for tanker operators in its harbors, through the state's new Office of Oil Spill Prevention. The legislation specifically directed San Francisco's harbor safety committee to develop a tug escort plan for tankers. The new escort regulations do not exempt vessels with double hulls, as hoped by the bay's major tanker operators, which include Chevron, Arco Marine and Exxon Shipping Company.

Based on the results of studies reportedly carried out on the escort versus double hulls subject, tanker operators claim that tug escorts can improve safety margins by eight to 11 percent, while double hulls can improve safety margins by 37 to 51 percent.

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**Seattle-Based Interior Design International Awarded Four Redesign Contracts**

A Seattle-based marine design firm, Interior Design International, Inc. (I.D.I.), was awarded four contracts.

The first contract is for work on the Alton Casino riverboat, a vessel designed by Rodney Lay & Associ-

ates and built by Atlantic Marine Shipbuilders.

I.D.I. also received the contract to design the interiors of the new Alaska State cruise ferries, which are being designed in cooperation with Glosten Associates.

Marine Atlantic of Nova Scotia hired I.D.I. to completely refurbish and design new interiors for five vessels in their cruise ferry fleet. The vessels range in size from 200 to 600 feet, and have full cruise ship

amenities including casinos.

Finally, Paradise Cruise Ltd. of Hawaii commissioned I.D.I. to design Starlite I and Starlite II dinner cruise boats. These boats will join the new "Star of Honolulu," which I.D.I. completed last summer.

For more information on the services of Interior Design International,

Circle 45 on Reader Service Card

**Reinbold Assigned To Folk's Milwaukee Office**

**John G. Reinbold** has been assigned to the Milwaukee district office sales staff of The Falk Corp., a Milwaukee, Wis.-based subsidiary of Sundstrand Corp. In his new position as a sales engineer, Mr. Reinbold will join district sales manager **Gerry A. MacDougall** in serving the company's customers in Wisconsin and Upper Michigan.



John G. Reinbold

Mr. Reinbold, a graduate of Marquette University, joined Falk in 1986 and was assigned to Foundry Sales. In 1989 he was appointed manager of open gearing sales and marketing. Falk is a major manufacturer of industrial power transmission machinery.

For additional information on The Falk Corporation,

Circle 46 on Reader Service Card

**Scully Offers New Terminal Overfill Prevention Control**

Scully Electronic Systems has introduced a marine shore controller to help prevent petroleum spills during the loading of vessels. The system automatically signals for product transfer shutdown if product level attempts exceed the cargo tank capacity.

The shore controller is installed at the loading dock to provide interface for vessels equipped with intrinsically safe level sensors. The controller connects to the vessel sensors prior to loading by means of cable with a Coast Guard-specified connector. Audible and visual alarm outputs are provided for notification of the overfill signal.

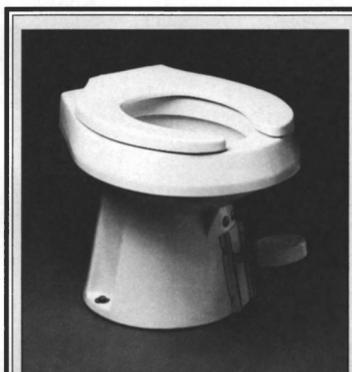
For additional information on the system from Scully Electronics,

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The Fincantieri-built Statendam, a 54,000-dwt, 2,100-passenger cruise ship, was delivered to Holland American Line.

## Seatrade Cruise Shipping '93

*Environmental, Economic Issues Added To Conference Seminar Program*

**T**he Seatrade Cruise Shipping '93 Conference & Exhibition, set for March 16-20 at the Miami Beach Convention Center, anticipates more than 5,000 participants at what has grown to be one of the cruise industry's largest forums.

The 1993 show combines an exhibition, with approximately 600 exhibition booths, and an educational conference, with sessions scheduled to cover the hottest topics of the day.

With the cruising industry's growing sensitivity to the environment, a new session entitled "Cruising and the Environment" is among dozens scheduled for the 1993 conference, the ninth annual such international forum sponsored by the Seatrade Organization. For the second year, the event is being co-sponsored by the Florida-Caribbean Cruise Association.

The show attracts worldwide industry leaders for a full slate of debates, discussions, ship inspections and exhibition floor interactions.

"As cruising continues to grow at a faster rate than any other leisure/vacation sector, those in the industry are looking to maximize

every business opportunity, and Seatrade Cruise Shipping '93 is specifically designed with this in mind," said **Christopher Hayman**, Seatrade's managing director. "This year's expanded program offers a range of operational, technical, marketing and financial themes reflecting the diverse needs and interests of the participants."

The 1993 keynote address is scheduled to be delivered by **Rod McLeod**, senior vice president of sales and marketing of Royal Caribbean Cruises Ltd. and current chairman of Cruise Lines International Association. The conference is scheduled to open with the usual "State of the Industry" debate.

Also new to the conference is a marketing forum let by **Robert H. Dickinson**, senior vice president of sales and marketing, Carnival Cruise Lines, a session which will examine industry challenges. Other topics on the conference agenda include itineraries of the future, fleet expansion, cruising in Europe, vessel design/refurbishment and the safety factor and on-board entertainment facilities for the whole family. Revisions to the schedule for 1993 were done to ensure maximum interaction between exhibitors and delegates.

"Exhibit-only" periods have been added to give delegates opportunities to view the exhibition without conflicting with conference sessions. Delegates may also register for cruise ship visits and social programs.

Exhibitors range from shipbuilding and capital equipment to port and tourism authorities to manufacturers of on-board furnishings and related services. The international exhibitor contingent includes companies from the U.S. West Coast, Italy, the Caribbean, Germany, Canada, France, Belgium, Norway, the U.K., Finland and Brazil.

For additional information, contact: The Seatrade Organization, **Gerry Milano**, Princeton Forrestal Village, 125 Village Blvd., Suite 220, Princeton, N.J. 08540-5703; tel: (609) 452-9414; fax: (609) 452-9374.

### CRUISE SHIPPING '93: EDUCATION & SOCIAL EVENTS

#### Tuesday, March 16

2:30 p.m. — Official Opening  
2:35-4 p.m. — CARIBBEAN FORUM: Development of the partnership between the cruise industry

and the Caribbean destinations.  
4 p.m. — Exhibition Opening  
4-7 p.m. — EXHIBITION HOURS  
5:30 p.m. — Welcoming Reception

#### Wednesday, March 17

9-11:30 p.m. — KEYNOTE ADDRESS: **Roderick McLeod**, senior vice president, sales and marketing, Royal Caribbean Cruises Ltd., and chairman, Cruise Lines International Association (CLIA)

"STATE OF THE INDUSTRY" Debate: Participants include: **Kirk Lanterman**, president, Holland America Line-Westours Inc; **Dermot McDermott**, chairman, Cunard Line Ltd.; **Arthur Rodney**, president, Crystal Cruises Inc.; and **Martin Saarikangas**, president, Kvaerner Masa-Yards Inc.

10:30 a.m.-6:30 p.m. — EXHIBITION HOURS

1 p.m. — Luncheon  
2:30-4:30 p.m. — CRUISING AND THE ENVIRONMENT: Chaired by **Richard Fain**, chairman and CEO, Royal Caribbean Cruises, Ltd.

1) "Cruising and Conservation" **Silvio Magalhaes Barros II**, secretary of tourism, Government of the State of Amazon.  
2) "Waste Disposal and Marpol V"

Maritime Reporter/Engineering News

**ochen Deereberg**, owner, ceberg-Systems.  
3) "A Green Image for Cruising" peaker TBA.

**Thursday, March 18**

9-11:30 p.m. — (Morning Sessions & II run concurrently)  
**Session I: MONEY AND CRUISE SHIPS**

1) "What the cruise industry can expect from a Clinton Administration" **Alberto Gonzalez-Pita**, partner, White & Case.

2) "The implications in IMO's decision to alter its policy on grandfathering in respect of safety issues" **Tor-Chr. Mathiesen**, president, Det Norske Veritas Classification AS.

3) "The former Soviet passenger fleet in a changed environment" **Yuriy Boulgakov**, chairman, CTC Cruise Lines.

4) "Defining the Coast Guard safety net and how it affects your wallet" **Brian Starer**, partner, Haight, Gardner, Poor & Havens.

**Session II: FOCUS ON EUROPE IN 1993**

A panel of cruise experts will look at the outlook for Europe both as a cruise destination and as a source market for cruise products worldwide. Panel members will include: **Herbert Karrenberg**, managing director, Seetours International GmbH & Co.; **Nigel Smith**, head of commercial relations, The Thomas Cook Group Ltd.; **Andre de Wilde**, director general, Port of Ghent; **Genevieve Petit**, Consultant, Paquet Cruises; and **Aris Zarpanely**, managing director, Equity Cruises and president, Cruise Europe.

10:30 a.m.-6:30 p.m. — EXHIBITION HOURS

12:30-2:30 p.m. — Cocktails and luncheon

2:30-4:30 p.m. — (Afternoon Sessions III & IV run concurrently)

**Session III: CRUISE ITINERARIES AND THE PORTS**

1) "Do cruise passengers return to destinations as land-based tourists?" **Anthony Hall**, lecturer, and **Ronald Braithwaite**, lecturer, Center for Hotel and Tourism Management, University of West Indies.

2) "Private Islands: Their contribution to the cruise product" **Murray Markin**, president, Strategic Decisions, Inc.; **Robert Sturges**, vice president, Carnival Cruise Lines; and **Michael Pawlus**, manager, business planning, Royal Viking Line.

3) "Port Choices: A panel discussion on the hot itineraries of the future and the factors influencing their selection"

**Session IV: CRUISE REVENUES**

1) "Cruise tariffs" **Stanley Buchin**, director, Arthur D. Little, Inc.; and **Don Tatzin**, director, Arthur D. Little, Inc.

2) "Cruise line travel insurance programs for passengers." **William Kavan**, president, Berkely Care Ltd.

3) "On-board revenue options."

4) "Shore-side revenue options."

**Philip Levine**, president, On-Board Promotions Group, Inc.

**Friday, March 19**

9 a.m.-1 p.m. — EXHIBITION  
9:30-11:30 a.m. — (Sessions V & VI run concurrently)

**Session V: MARKETING FORUM**

A forum, addressing marketing challenges. Participants include: **Robert H. Dickinson**, senior vice president, sales and marketing, Carnival Cruise Lines; **Al Wallack**, senior vice president, marketing and passenger services, Celebrity

Cruise Lines, Inc.; **Cheryl Myerson**, president, National Association of Cruise Only Agents (NACOA); and **Scott Koepf**, Cruise Holidays.

**Session VI: CRUISE VESSEL OPERATION**

1) "A common-sense approach to fuel purchasing." **Larry Messina**, director, Glander International Inc., Fuel Oil Broker.

2) "The implementation of new safety standards." **David Holland**, senior principal surveyor, Statutory Services, Lloyd's Register of Shipping.

3) "Refurbishment or conversion as an alternative to new building." **Markku Kanerva**, director, business development, Deltamarine Ltd.

4) "The green ship development program." **Einar Rod**, program manager, The Green Ships Program, Royal Norwegian Council for Scientific and Industrial Research.

Moderator: **John Rugg**, manager, marine marketing and business group, Lloyd's Register of Shipping.

1 p.m. — Luncheon  
Afternoon — Visit to the Port of Miami, Including Ship Inspections.

**JMS And Weeks Marine Provide Salvage Response**

Jamestown Marine Services Inc. (JMS) responded to a request for salvage advice and assistance from the Providence Marine Safety Office for help with the M/V Chiara, which had struck bottom in Buzzard's Bay.

Chiara holed two empty fuel tanks and assumed a 15-degree list, and was intentionally grounded to avoid sinking during one of the worst

northeastern storms in decades.

JMS, which reported to the command center the Coast Guard set up at the Massachusetts Maritime Academy, provided salvage advice and analysis.

Using HECSALV, a computer-based program for damaged vessel stability and strength calculations, JMS provided an assessment of the ship's condition, including ground reaction estimates, stability assessments, and the probability of the ship refloating and possibly regrounding during the storm.

On the advice of JMS, the vessel's agent retained Weeks Marine, Inc., which dispatched a 4,000-hp salvage tug from New York City. The Thomas was granted special permission from the Coast Guard to get underway, because the Port of New York had been closed by the storm.

For more information on JMS, Circle 42 on Reader Service Card

**Norwegian Telecom Intl. Offers New Brochure**

A new color brochure from Norwegian Telecom International, the Oslo, Norway-based satellite communications company, presents the latest information on utilizing the EIK coast earth station via Immarsat A in the Indian Ocean Region and Atlantic Ocean Region-East.

The brochure uses maps, diagrams, photographs and text to convey the vast coverage provided by the EIK earth stations, and the myriad of services available from the service via Norwegian Telecom.

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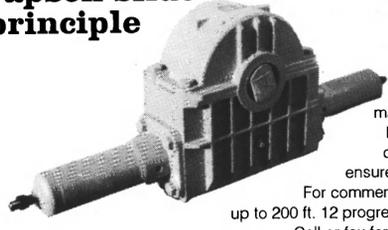


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### Magnum Builds Four Patrol Boats For National Park

Four 19-foot aluminum patrol boats have been delivered to the U.S. Park Service for use in Minnesota's Voyageurs National Park. The 343-square mile park includes numerous islands, waterways and nearly 30 lakes.

The boats built by the Bothell,



The Magnum 19-foot patrol boat

Wash., firm will be used in patrol, utility and rescue duties. The stan-

ard Magnum unsinkable 19-foot hulls are outboard engine powered and include: equipment chests; mechanical steering and propulsion control systems; windshield; forward deck; seats; and a convertible top and side curtains.

Magnum Boats builds boats with options such as cuddy cabins, steering consoles and pilothouses.

For information on Magnum,

Circle 52 on Reader Service Card

### SEA MEA Delivers Two Workboat Davits

SEA MEA, Inc. delivered two workboat davit systems to Consolidated Edison Co. of New York. The davits were installed at Narrows and Gowanus Gas Turbine Stations, and are currently used for the launching and retrieving of workboats.

SEA MEA provided the design, fabrication and installation of all equipment.

The boat davit frame allows the boat to swing through it, from the cradle to above the water. The swinging of the boat is achieved by two hydraulic cylinders, while the lifting and the lowering of the boat is achieved by a hydraulic winch. Two floodlights provide a daylight brightness for night operation.

Each davit is approximately 17 feet high and 32 feet long, with an operating time of approximately 40 seconds and a safe working load of 8,000 lbs. SEA MEA also offers custom-sized davits.

For information on the capabilities of SEA MEA, Inc.

Circle 43 on Reader Service Card

### Reed's Nautical Almanac Redesigned For 1993

London-based Thomas Reed Publications Ltd., in cooperation with Barnacle Marine Ltd., has opened a U.S. corporate office in Boston. Barnacle will serve as the exclusive North American distributor for all of Reed's marine titles, including Reed's Nautical Almanac. "The Almanac has been completely revised and redesigned for 1993, with extensively illustrated harbor chartlets, area maps and weather fax stations," said **Jerald D. Knopf**, who heads N. American operations.

In addition, the company is offering Reed's Nautical Companion free with a 1993 Almanac purchase. The Companion contains practical information on celestial navigation, first aid and emergency repairs.

For more information on the Almanac and the Companion,

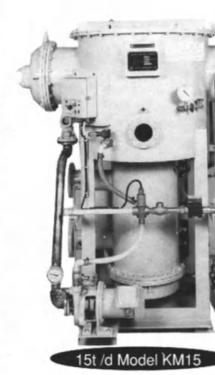
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### Auburn Offers Asbestos-Free, High-Temp Textiles

Auburn Manufacturing, Inc. has a full line of asbestos-free, high-temperature textiles for use in welding protection, pipe lagging and high-temperature gasketing in new installations as well as maintenance applications. The textiles are able to withstand temperatures from 650- to 3,000-degrees Fahrenheit and are available in woven, felted and knitted varieties. Tapes, cloth, tubing, rope, tadpole tapes, blankets/curtains, safety clothing and custom fabricated formats are available.

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Marine  
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For help contact the

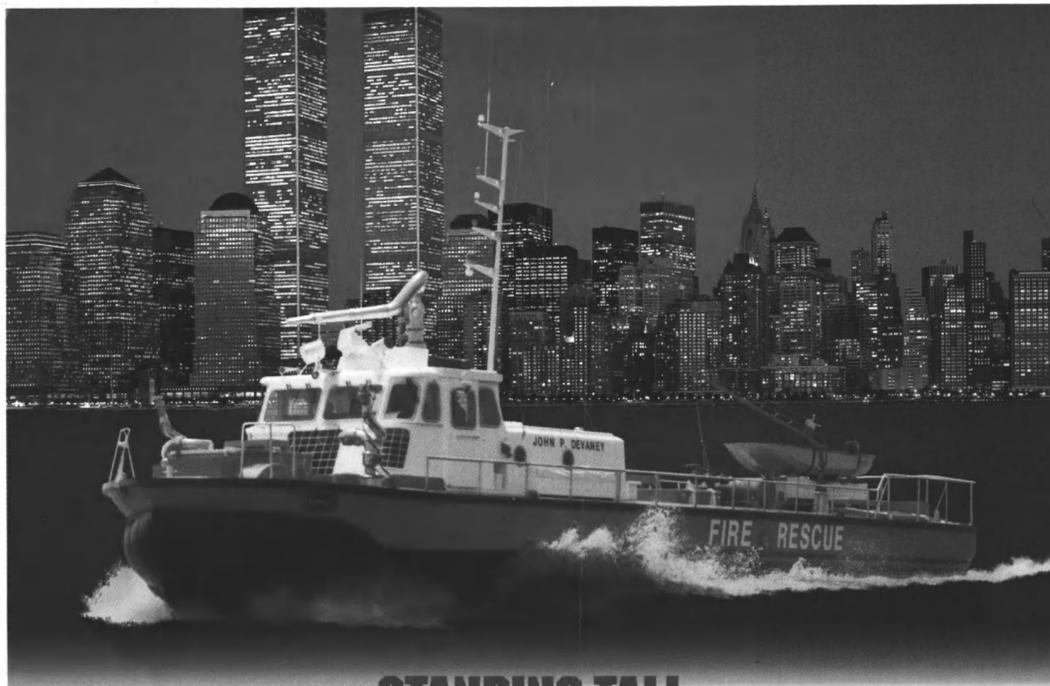
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## STANDING TALL IN THE BIG APPLE.

### NEW SES MULTIPURPOSE FIRE & RESCUE CRAFT ESCORTS LEAD SHIP IN JULY 4TH TALL SAILING SHIPS PARADE.

While celebrating the past, New Yorkers got a view of the future when the first of two Textron Marine Systems' fire and rescue craft sailed up the Hudson River with the tall ships commemorating Columbus' voyage to America.

Built by Textron Marine Systems, the 70-foot craft, named for fire fighter, John P. Devaney, represents a new era in ship and pier fire fighting and harbor rescue. The new boats are the first additions to New York's fireboat fleet in 31 years.

A surface effect ship (SES) design, the craft rides on a cushion of air trapped between flexible bow and stern seals and rigid catamaran-style side hulls. This technology provides high-speed capabilities to respond nearly four times faster than conventional fireboats. Able to operate in extremely shallow water, the new SES craft reduces total fireboat inventory requirements. Other operating costs are kept low through fuel-efficient diesel engines and small crew sizes.



The craft is equipped with five monitors which deliver as much as 5,500 gallons per minute and are remotely operated from inside an enclosed wheelhouse by one crew member, using an automated fire-fighting system. Total crew requirements range from three in the wheelhouse to three to six on deck. Rescue equipment, navigational and communications aids and pumping systems on the new craft all represent the latest in fire-fighting technology.

Like New York, any harbor-based city benefits from swift response across water in emergency situations. Tall ships come and go, but New York City's SES fireboats will lead the way in keeping the harbor in safe hands well into the next century.

#### TEXTRON Marine Systems

Textron Marine Systems/Division of Textron Inc.  
Textron Marine Systems, 6600 Plaza Drive,  
New Orleans, LA 70127-2584. Phone (504) 245-6600.  
FAX (504) 245-6634. Telex 6711199TMSNOLA



## Canadian Maritime Industries Association's 45th Annual Conference

*Event To Include Canadian Shipbuilding & Offshore Exhibition*

**T**he Canadian Maritime Industries Association (CMA) is busily gearing up for its 45th Annual Technical Conference, scheduled for Monday February 15 and Tuesday, February 16 at the Ottawa Congress Center and Westin Hotel, in Ottawa, Ontario.

The technical conference will again be complemented by the Canadian Shipbuilding & Offshore Exhibition (CSOE), an opportunity for leading suppliers to exhibit products and tout services.

"As a result of the resounding success of the exhibition, we have decided to include CSOE '93 on the program for our 1993 Conference," said CMA president **J.Y. Clarke**. "This added feature has resulted in a tremendous interest in the conference, which is the largest technical marine conference held in Canada."

Exhibiting hours are from 10 a.m. to 6 p.m. on Monday, February 15, and from 10 a.m. to 5 p.m. on Tuesday, February 16.

The technical conference's opening session starts at 9 a.m. February 17, and it and other sessions will be presented in the custom-built seminar rooms in the Congress Hall, together with CSOE '93.

The technical conference will, via the presentation of technical papers

from top industry officials, address some of the industry's most pressing issues, including: Diesel Engine Application Requirements for High-Speed Marine Transportation; Environmental Aspects on Marine Auxiliary Engines Burning Heavy Residual Fuels; and the Benefits of Engine Analysis.

All told, 16 papers will be presented. In 1992 the technical conference and exhibition (CSOE 92) attracted more than 1,200 persons from across Canada and around the world, including international media and government officials.

Registration for the show opens at 9 a.m. on Monday, February 15 on the Congress Hall level of the Ottawa Congress Center.

For further information on the conference and exhibition, contact: **Joy MacPherson**, director administration and finance, Canadian Maritime Industries Association, P.O. Box 1429, Station B, Ottawa, Ontario, Canada K1P 5R4; tel: (613) 232-7127; fax: (613) 232-2490.

### TECHNICAL PROGRAM

#### Seminar Room A

— Model Testing of the Remotely Operated Vehicle "Dolphin," by **C.J. Harris** and **G. Hermanski**, IMD/NRC; **V. Den Hertog**, I.S.E. Re-

search Ltd.; and **D.B. Muggerridge**, Memorial University of Newfoundland.

— A Practical Method of Conducting, Analyzing and Scaling Model Tests of Ships in Ice, by **D.B. Colbourne**, **D. Spencer**; and **S.J. Jones**, the Institute for Marine Dynamics.

— Resistance Standards for Canadian Fishing Vessels, by **D. Molyneux**, the Institute for Marine Dynamics.

— Application of Dynamic Positioning System to a Floating Crude Oil Storage Vessel, by **S. Barkhouse** and **Capt. J. Dudley**, LASMO Nova Scotia Ltd.

— New Propulsion Control System for the M.V. Hudson, **J. MacDonald**, Westinghouse Canada, Inc.

— Computer Numerically Controlled Milling of Mono Block Model Propellers, by **B. Gospodnetic** and **G. Gospodnetic**, Dominus Engineering Ltd.

— Human Powered Submarines—An Engineering Challenge, by **Dr. A.F. Aboulazm**, Marine Institute.

— Canada Looks Towards Paperless Applications for the Canadian Patrol Frigate (CPF), by **Grant W. Brown**, Paramax Systems Canada, Inc.

#### Seminar Room B

— Surveillance of the Exclusive Economic Zone, by **Dr. A.M. Ponsford** and **R.E. Moutray**, Raytheon Canada, Ltd., and **R. White**, Ultimateast Ltd.

— Improved Growler Detection in Sea Clutter Using Coherent X-Band Radar, by **Dr. T.J. Nohara**, Raytheon Canada Ltd.

— The Benefits of Engine Analysis, by **J. Wiles**, German & Milne Ltd.

— The Westinghouse Rolls-Royce WR-21 ICR Gas Turbine - An Introduction to the Future, by **D.J. Pratley** and **M.J. Duckworth**, the Rolls-Royce Industrial Marine Gas Turbines Ltd.

— Environmental Aspect on Marine Auxiliary Engines Burning Heavy Residual Fuels, by **Ole Schnohr**, MAN B&W Diesel A/S.

— Diesel Engine Application Requirements for High-Speed Marine Transportation, by **W.A. Sprogis**, KHD Canada, Inc.

— Fuel Treatment - An Intricate Part of Your Fuel Management System, by **G. Frielipp**, XRG International Inc., and **Kerry Barnum**, BMK Fuel Catalysts Distributors, Inc.

— An ACE Electric Propulsion Concept for TRUMP Replacement, by **W. Reinhardt** and **M. Tinhey**, National Defence, and **J. Hensler**, Integral Dynamics.

**CSEO '93 Exhibitors**

antic Research Canada Inc.  
 sic Technologies Corporation  
 E Electronics Ltd.  
 nadian Institute of Marine Engineering  
 nadian Marconi Company  
 nadian Welding Bureau  
 L. Inc.  
 Tech Ltd.  
 hn Crane Marine Canada  
 C.N. International  
 minis Engineering Ltd.  
 nar Services  
 virovac Inc.  
 rman & Milne  
 ilfax/Dartmouth Industries  
 rmont/B. Fortin  
 dal Technologies Inc.  
 dustry Science & Technology  
 stitute for Marine Dynamics (NRC)  
 ernational Paints (Canada) Limited  
 umont Schneider Industrie Canada Inc.  
 C Canada-Joiner Systems  
 rupp MaK Diesel, Inc.  
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 arine Institute of Memorial University  
 he MIL Group  
 lavy League of the United States  
 orris Warming Canada Limited  
 ockwell International Corporation  
 iemens Electric Limited  
 imrad Mesotech Systems Ltd.  
 St. Lawrence College  
 Supply & Services Canada  
 thordon Bearings Inc.  
 ibbets Paints, Ltd.  
 ickers Shipbuilding & Engineering Ltd.  
 Westinghouse Canada Inc.

**IMSSCO Offers Maverick Firefighting System**

International Marine Supply & Service Co. (IMSSCO) of San Diego, is the worldwide commercial distributor of Maverick Fire System Corp.

Designed to be worn as a vest and operated by one person, the Maverick system puts instant foam operation into the hands of the firefighters on the end of the hose line.

The system was recently demonstrated at the Seafarers International Union school at Camp Springs, Md. "The new vest is capable of holding five gallons of foam and can be used to smother benzene and other hazardous vapors, as well as fight fires," said **Bryan Cummings**, firefighting instructor. "This takes the place of five or six men passing foam buckets to a dangerous area. One man can use the vest, even with life support equipment, and it can save time when seconds are valuable.

IMSSCO offers a four-page color brochure and video tape explaining the Maverick Foam Vest System.

For information on the Maverick firefighting system,

Circle 34 on Reader Service Card

**Toastmaster Adds Hatchable, 36-Inch Wide Range To Line Of Marine Galley Equipment**

A manufacturer of commercial cooking and warming equipment for more than 75 years, Toastmaster of Elgin, Ill., has introduced the addition of a hatchable 36-inch wide range to its line of marine galley equipment.

Five different range top configurations are available with either deck-oven or convection-oven bases. Ranges are broken down into two pieces that pass through standard 26-inch hatches. The range tops or the convection ovens can be purchased as independent units. The convection ovens can be stacked two high.

Other standard features include all stainless steel exteriors and door



Toastmaster's 36-inch wide range

linings, adjustable bolt-down legs, heavy duty sea rails, grab bars and oven latches.

The range and oven are completely front serviceable with the terminal block near the front of the control chamber. The oven door is designed as a loading platform and can support 200 pounds of dead weight. The range series meets the requirements of UL197-S1, including the marine supplement.

For additional information on the new line of 36-inch wide ranges from Toastmaster,

Circle 37 on Reader Service Card

**First Thermal Offers New Thermal Fluid Heater**

First Thermal Systems, Inc. introduced the Villam Silver MHEHC thermal fluid heater for the heating of liquid cargo aboard ships. Villam

Silver delivers up to 18,750,000 BTU/hr. at efficiencies up to 87 percent.

"The Villam series of liquid cargo heaters has made thermal fluid technologies affordable and reliable," said **Rudy Leak**, vice president and secretary of the board of directors, First Thermal Systems. "We intend to release Villam Gold during the first quarter of 1993, delivering 24,000,000 BTU/hr., followed by the release of the Villam Platinum in the early fall, a unit which will deliver 30,000,000 BTU/hr."

The Villam series is a marine high efficiency helical coil (MHEHC) heater for cost-effective liquid cargo heating aboard ships and barges.

For more information on the new Villam Silver from First Thermal Systems,

Circle 38 on Reader Service Card

**Stam Supply Now Offers Francis Searchlights**

Francis Searchlights is now available through Stam Supply Company of Seattle.

A full line is offered from nine- to 22-inch versions, featuring non-leaking cabin control design, one wheel control for instant horizontal and vertical movement, and brass and A4 stainless steel construction.

Shock-mounted lamp, socket and pure silver backed mirror, 360 degree horizontal rotation, tungsten halogen and xenon lamps, plus no exposed gears are a few of the features of this product line.

For a free color catalog on the complete Francis Searchlights line from Stam Supply,

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 207-721-8200

1126 JACKSON AVENUE  
 PASCAGOULA, MS 39567  
 601-762-0081

Circle 25 on Reader Service Card

## THE TANKER CHARTER MARKET: Structure, Participants And Trends



Tanker chartering reflects both the needs of the oil industry to balance demand and supply, and the desires of the ship owners to maximize their cash flows and hence profitability. Using unique, comprehensive and proprietary data covering the last decade, Drewry has analyzed in detail this complex and exciting market.

The relationship between, and importance of, chartering activity and freight rates may be highlighted by making reference to Figure 1. This shows the correlation between tonnage spot chartered from the Arabian Gulf and the corresponding freight rates for a VLCC on an AG-West voyage.

The post-1973 oil crisis era saw an expansion of spot oil market trading, and this in turn led to a substantial growth in spot market chartering. Between 1986 and 1991, reported dirty spot market fixtures grew further, from 374 million dwt to 593 million dwt. By contrast, clean spot chartering has been more volatile and was recently buffeted by the Gulf crisis, dipping sharply to 36 million dwt in 1990 only to rebound to 57 million dwt in 1991.

Prior to the first oil crisis, oil price stability and the dominance of the major oil companies had provided the platform for an active and stable long term period charter market. Although short-term charters relating to the Gulf crisis have recently boosted activity, this should not conceal the fact that underlying growth for tonnage taken in excess of four

years is good, and totalled 8 million dwt in 1991. In the future such activity may become a prerequisite for facilitating financing deals on newbuildings.

During the 1980's it is evident that oil companies have placed greater reliance on chartering, simultaneously reducing their dependence on owned tonnage. This reflects the substantial tanker over-

supply which had dominated the market, resulting in a persistently unfavorable trading environment. Ship owners, meanwhile, have had to rely as much on asset play as the freight market to generate satisfactory operating incomes.

Since 1981 most of the major players have remained active, but there have been numerous new chartering companies emerging and others

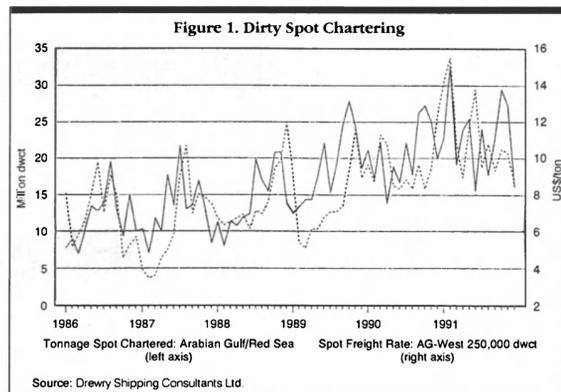
disappearing over the same period. This report reviews all these companies, including their chartering hats, and is backed up by detailed and comprehensive statistical appendices.

The dominance of the integrated oil companies is shown in their 41 percent share of all forms of chartering activity in 1991. The oil majors lead the way, Exxon alone accounting for 9 percent of dirty spot charters in that year. Amongst the state controlled companies, which made up a third of the total, the National Iranian Tanker Co. (NITC) and Vela (the shipping arm of Saudi Aramco) are prominent, although regionally companies such as Statoil and Lagoven are also important.

The oil refiners tend to be dominated by Far Eastern enterprises such as Ssangyong and Showa Shell. Oil traders represent the most fluid category, and perhaps only Vitol and Scandports can be consistently said to have stood the test of time alongside some of the international oil companies. Independent ship owners are most active in the period market, but notwithstanding this, they can be active spot charterers—for example, Fleet Trade & Transport.

For further information regarding "The Tanker Charter Market," please contact:

Drewry Shipping Consultants Ltd.  
11 Heron Quay  
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Circle 246 on Reader Service Card

### For The Record

In the November 1992 issue of *Maritime Reporter & Engineering News*, a story on the new Wartsila Vasa 20 auxiliary engine was incorrectly identified as the M20. R/EN regrets this error. For full information on Wartsila and its new Vasa 20 engine,

Circle 36 on Reader Service Card

### Spray-On Corrosion Block Offered By Lear Chemical Research

The spray on Corrosion Block product from Lear Chemical Research Corp., is a product designed to penetrate corrosion cells, effectively separating water and metal, and stopping corrosion.

A corrosion cell acts as a miniature battery.

It transfers electrons from the base metal to the surface where they combine with oxygen to form corrosion.

Since salt water is an ideal electrolyte, the metals most often found aboard ships are perfect targets for this type of damage.

Nearly all corrosion inhibitors are sealants which lay on top of corrosion, effectively sealing moisture out, but also possibly sealing moisture in.

Corrosion Block has a powerful affinity for metal and it shuts down the deepest corrosion cell, the manufacturer said.

By doing this, Corrosion Block displaces corrosion-causing electrolytes and prevents corrosion from starting and cures corrosion in progress.

For additional information on Corrosion Block,

Circle 50 on Reader Service Card

### Drew Ameroid Offers Brochure On Magnakote Rust Preventative

A brochure from Drew Ameroid Marine, a subsidiary of Ashland Oil, Inc., discusses the overall performance of Drew's Magnakote rust preventative, with special attention to other factors that should be considered, such as ease of application, availability, product life, value-added service, follow-up, inspections and warranty.

Magnakote rust preventative was developed with these criteria in mind.

The formulation is patented in 11 countries.

February, 1993

Because of its polar characteristics, Magnakote rust preventative actually bonds to the steel.

Its crystalline molecules form layers of overlapping platelets that effectively give and flex with the movement of the ship.

For a brochure on Magnakote from Drew Ameroid Marine,

Circle 63 on Reader Service Card

### Thermal Spray And Corrosion Control Offered By ISA

Integrated Systems Analysts (ISA) specializes in helping companies establish or expand thermal spray and corrosion control in-plant facilities.

The company's services include: recommendations or process selection; site selection and survey; assistance in purchasing equipment and supplies; equipment installations and checkout; operator, inspector, planner and supervisor training; environmental and safety permit acquisition; and preparation of shop process and quality assurance instructions.

For more information on the corrosion control solutions from Integrated Systems Analysts,

Circle 121 on Reader Service Card

### Oil Mop, Inc. Develops And Manufactures Spill Recovery Equipment

A 22-year-old company based in New Orleans, Oil Mop, Inc. specializes in the development and manufacture of oil spill recovery equipment and any other types of equipment and sorbents for a complete line of pollution control products.

Since 1970, the company has delivered more than 10,000 systems worldwide, and reportedly the company's equipment can operate in climates from arctic to tropical.

Oil Mop stocks its complete line in its plant, and products constantly on hand include: more than 5,000 feet of rope mop; absorbents; boom; containment booms and pads for instant response; and oil mop machines of varying speeds and capacities, including the Mark II 9D which cleans at a rate of more than 3,000 gallons per hour.

For additional information on Oil Mop and its entire line of spill recovery developments,

Circle 122 on Reader Service Card

### Sea Recovery's Desalinators Incorporate Reverse Osmosis Technology

Reverse Osmosis systems, developed, designed and manufactured by Sea Recovery Corp., are available in models capable of producing from 1,300 to 4,000 gallons per day from either sea or brackish water sources.

The company's most compact commercial R.O. desalinator is designed to suit the needs of megayachts, as well as onshore facilities.

Constructed with a lightweight, epoxy-coated frame, each unit utilizes only the highest quality marine-grade materials and components.

Features include a booster pump, oil/water separator, two commercial-grade prefilters for added membrane protection and extended filter life.

For information on Sea Recovery's reverse osmosis desalinators,

Circle 123 on Reader Service Card

### Circle Seal Controls Offers Eight-Page Brochure On Pressure Regulators

Circle Seal Controls, based in Anaheim, Calif., is offering an eight-page, four-color brochure which provides the recipient with technical data and specifications on the company's standard line of pressure and back pressure regulators.

Circle Seal regulators are available with outlet ranges up to 10,000 psi in .25- to .5-inch pipe sizes.

In all the brochure highlights 18 different regulators.

Each product is described using a black and white photograph, full technical data and text describing each product's specific properties and features.

Also, full information is included on how to accurately order the correct regulator.

For a copy of the brochure from Circle Seal,

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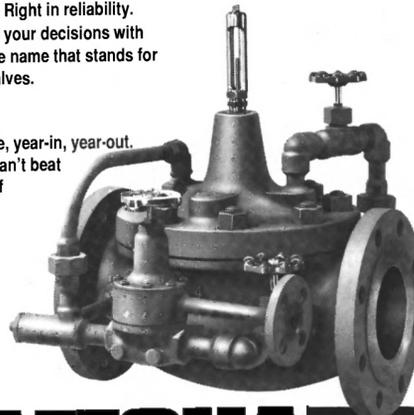
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## CALENDAR

### FEBRUARY

**Canadian Shipbuilding & Offshore Exhibition '93 (CSOE): February 15-16, Ottawa, Ontario**  
Ottawa Congress Center. Contact: **Joy MacPherson**, Canadian Maritime Industries Association, P.O. Box 1429, Station B, Ottawa, Ontario K1P 5R4; tel: (613) 232-7127; fax: (613) 232-2490.

**Gastech '93: The 15th International LNG/LPG Conference & Exhibition: February 16-19, Paris**  
Contact: **Hazel MacBride**, Gastech '93 Secretariat, Suite 508, Glen House, 200/208 Tottenham Court Road, London W1P 9LA, England; tel: 44 71 436 9774; fax: 44 71 436 9774.

### MARCH

**Metalform '93: March 14-17, Rosemont, Ill.**  
Rosemont/O'Hare Exposition Center. Contact: Precision Metalforming Association, 27027 Chardon Road, Richmond Heights, Ohio 44143; tel: (216) 585-8800; fax: (216) 585-3126.

**Seatrade Cruise Shipping '93 Conference & Exhibition: March 16-20, Miami Beach, Fla.**  
Miami Beach Convention Center.

Contact: **Michael Kazakoff**, The Seatrade Organization, 125 Village Blvd., Suite 220, Princeton, N.J. 08540-5703; tel: (609) 452-9414; fax: (609) 452-9374.

**ASNE Logistics Symposium '93: March 17-18, Seattle, Wash.**  
Contact: **Don Eason**, exhibits chairman, tel: (206) 479-8828; fax: (206) 479-8563.

**Coastal Ocean Space Utilization (COSU III): March 30-April 2, Santa Margherita Ligure, Portofino, Italy**  
Contact: In Italy: **Dr. Mario Petrillo**, COSU III coordinator, Istituto Di Scienze Ambientali Marine, University di Genoa, C.P. 79-Corso Rainusso, 14, 16038 Santa Margherita Ligure (GE); tel: 0039 185-286195; fax: 0039 185-281089. In the U.S.: **Joan Sheridan**, vice president, New Jersey Marine Science Consortium, Fort Hancock, N.J. 07732; tel: (908) 872-1300; fax (908) 291-4483.

### APRIL

**Safety at Sea and Marine Electronics Conference & Exhibition (SASMEX) International '93: April 6-9, Miami, Fla.**  
Sheraton Bel Harbour Hotel. Contact: **Gillian Jones**, in the U.K.; tel: +44 737 768611; fax: +44 737 760564; or **Kristina Hagman-Goldfield** in the U.S.; fax: (215) 564-2175.

**AWO Annual Meeting: March 30-April 1, Washington, D.C.**  
Contact: **Jeffrey Smith**, AWO, 1600 Wilson Blvd., Suite 1000, Arlington, Va. 22209; tel: (703) 841-9300; fax: (703) 841-0398.

### MAY

**OTC '93: May 3-7, Houston, Texas**  
Contact: **Fred Herbst**, Offshore Technology Conference, 222 Palisades Creek Drive, Richardson, Texas 75080; tel: (214) 952-9494; fax: (214) 952-9435.

**ASNE: May 6-7, Washington, D.C.**  
Contact: **Rick Ottinger**, ASNE, 1452 Duke St., Alexandria, Va., 22314; tel: (703) 836-6727; fax: (703) 836-7491.

**Forest Products Transpo '93: May 9-11, Portland, Ore.**  
Portland Marriott. Contact: **Sheldon Meyer**, Journal of Commerce Conference Program director; tel: (212) 837-7145; **Mark Stone**, Maclean Hunter Presentations, Inc.; tel: (303) 696-6100.

### JUNE

**Nor-Shipping '93: June 8-11, Oslo, Norway**  
Sjolyst Exhibition Center. Contact: Norwegian Trade Fair Foundation, P.O. Box 130 Skoyen, N-0212, Oslo, Norway; tel: +47 243 9100; fax: +47 243 1914. (After January 28, 1993: tel: +47 22 43 9100; fax: +47 22 43 1914).

### Offshore Expo '93 Set For Russia, September 14-18

The commercial opportunities in Russia and the Republics now available to international maritime industries are keys to the fast growing support for the NEVA '93 Shipping and Offshore Exhibition, scheduled to be held in St. Petersburg, Russia September 14 to 18, 1993.

Recent developments to be highlighted at the show encompass the wide interest developing in the new offshore sector, which is now included in the exhibition. Similarly, representatives from the fisheries vessel and equipment industries will exhibit full-scale for the first time in conjunction with NEVA '93.

National Export and Fairs organizations of Denmark, Finland, Germany, Italy and Norway will have national pavilions, and groups of leading maritime companies from France, Greece, Holland, Poland and the U.K. are expected to attend.

Organizers are working with senior shipping organizations in the Far East and the U.S. to ensure that the trading opportunity at NEVA '93 is taken globally by shipbuilders, manufacturers and service industry.

A three-day conference will be held and accompanied by an intensive seminar program for technical and specialist subjects. The program is being jointly arranged by Wessex Institute of Technology in England and NEVA '93 organizers. Sessions covering computer assisted design, arctic transportation, offshore energy, safety at sea and advanced marine vehicles are included.

For information on NEVA '93,

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Maritime Reporter/Engineering News

## Astilleros Espanoles Delivers Marie Knutsen, A 124,000-dwt Double-Bottom Shuttle Tanker



The Marie Knutsen, a double-bottom shuttle tanker from Astilleros Espanoles.

Built by Astilleros Espanoles' estao factory and delivered to Knutsen Boyelaster I of Norway in December 1992, the Marie Knutsen is a 265-meter, 124,000-dwt double-bottom shuttle tanker.

The vessel is powered by a MAN 3&W 6S70MC diesel engine, which generates 20,000 bhp at 88 rpm. The diesel power plant drives a manual-made, controllable pitch propeller.

Propulsion and maneuverability

is aided by three C.P.P.-supplied thrusters, two fore, each driven by a 1,600-kW engine, and one aft, driven by a 1,000-kW engine.

Four Alconza, 1,200-kW generators provide the ship with electrical power. Each is driven by a Bergen KRG-8 type, 1,800-bhp engine.

The Marie Knutsen is equipped with two combined windlasses, five mooring winches and two chain stoppers, supplied by Aquamaster Rauma, Rapola and Navacel.

Electronics equipment onboard includes: Furuno FM 7000 VHF radio, M1940 radar and LC 90 loran; SAI TRP 3000 VHF radio and TRP 87515 SSB radio; a Thomson Trepac AE 180 compass; Simrad Albatros DPS 702 Dynamic Positioning System; and Sperry SRP 686 autopilot.

The ship was finished with coatings from Hempel.

For additional information on the shipbuilding capacity of Astilleros Espanoles,

Circle 22 on Reader Service Card

## Navy Awards Litton \$15.5 Million Contract For Aegis Support

The U.S. Navy has awarded Litton's Ingalls Shipbuilding division, Pascagoula, Miss., a \$15.5 million contract modification to continue providing engineering and planning support to the Navy's Arleigh Burke- (DDG 51) class Aegis guided missile destroyer program.

Ingalls currently has construction contracts for nine of the 504-foot, 8,300-ton warships. The first Ingalls-built Aegis destroyer, USS Barry (DDG 52), was commissioned into active service in December 1992.

The Ingalls support contract is now in the fourth element of a six-year program which began in December 1988.

The program has a total projected value of about \$120 million. Approximately 300 Ingalls employees perform technical, engineering and design tasks under the contract.

### MARIE KNUTSEN Equipment List

Main engines.....	MAN B&W
Thrusters.....	C.P.P.
Generator engines.....	Bergen
Engine controls.....	D.N.V.
Steering controls.....	Porsgrunn
Deck machinery.....	Aquamaster Rauma, Rapola, and Navacel
Shafting.....	Ulstein
Coatings.....	Hempel
VHF radios.....	Furuno
SSB radios.....	SAIT
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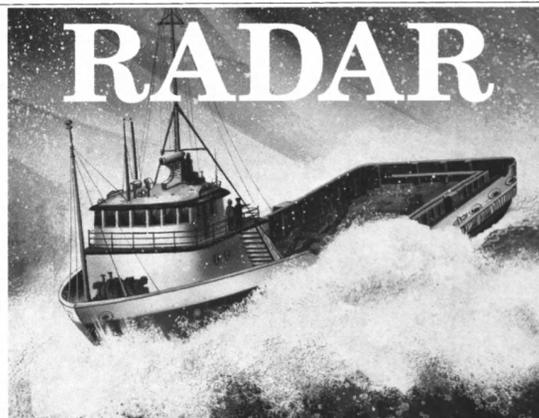
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February, 1993



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61

# GASTECH '93

The 15th International LNG/LPG Conference & Exhibition  
Paris, France, February 16-19

**W**ith the increased pace of LNG project developments around the world, there are forecasts for the potential need for hundreds of LNG carrier newbuildings over the next decade, a fact which makes the upcoming Gastech '93 all the more important.

Gastech '93, the 15th International LNG/LPG Conference & Exhibition, is scheduled for February 16-19 in Paris. More than 2,000 attendees, gas executives representing every area of marine and land-based liquefied gas operations, are expected at the show.

According to show organizers, with the pace of LNG projects in Europe, the Middle East, South America and the Asia/Pacific region, there are forecasts of a requirement for six 125,000-cubic meter LNG carrier newbuildings a year for the next 10 years, and substantial increases in Japanese LNG import levels alone may require 50 to 60 new ships. All of this, should it come through, is a bright light indeed for shipbuilders and suppliers around the world. The exhibition will be held at



Gastech '93 will be held at CNIT-La Defense, in Paris.

the new Center for New Industries and Technologies (CNIT) and feature companies displaying a wide variety of products and services, from countries across the globe (See Exhibitor List following this story). Gastech '93 is designed to bring together senior gas officials and industry suppliers in an atmosphere conducive for business.

The seminar portion of Gastech is stocked with a plethora of subjects and speakers, to provide the widest yet most focused coverage available. In all, there are eight main sessions, each including various subtopics. A sampling of the sessions includes: Session 1, "World Gas Supplies," which focuses on ongoing LNG projects throughout the world; Session 2, "LPG

Production and Trade," which is panel discussion/public debate on the future trends in the LPG business; Session 3, "Petrochemical Gases Trading Prospects and Developments," which will include shipping and transportation developments; Session 4, "Safety and Training," with an updated report on the LNG/LPG fleet safety record and tanker training.

Session 6 is an all-day affair and is entitled "Transportation Technology and Operations." Topics to be covered include design and construction of the first LNG carrier of the Technigaz Mk III Membrane design, reactivating and bringing into service laid-up LNG carriers, and cargo pump requirements for the next generation of LNG carriers. Finally, Session 8, "The LNG Trades," takes a look at the prospect for LNG trades in the year 2000 and beyond, and examines new economics and LNG shipping costs.

Full details on all eight conference sessions, including time, date, exact topics covered and speakers scheduled, are available from the show organizers.

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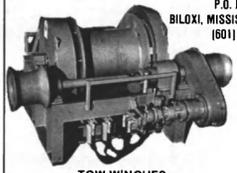
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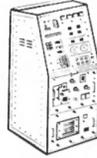
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July 20, with the cooperation of Gaz de France and Chantiers de l'Atlantique, is a technical tour of the GDF Terminal Methanier de Montoir-de-Bretagne, and the Chantiers de l'Atlantique shipyard. For full details on the Gastech '93 International Conference & Exhibition, please contact: Gastech '93 Secretariat, Gastech RAI Ltd., Glen House, 200/208 Tottenham Court Road, London W1P 9LA, England; tel: +44 (0)71 436 9774; fax: +44 (0)71 436 5694.

**Gastech '93 Exhibitors \***

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# SOUTHERN UPDATE

## Builders, Suppliers Voice 'Cautious Optimism' For New Year.

It seems not long ago that the success of southern vessel builders and suppliers was proportionally parallel to business conditions in the Gulf of Mexico offshore sector. Thus, the steady decline in offshore-related business forced builders and suppliers to search for work elsewhere. Many have, as has been well recorded, found a silver lining in the construction and supply of casino boats, as well as the repair and conversion of vessels of all types.

The following is a review of some of the companies which have accepted an active role in reshaping and revitalizing the Southern marine industry.

### 1993: Yards Face New Year Cautiously, Optimistically

In general, Southern vessel builders are looking to 1993 with caution and hope, a conclusion surmised through an informal survey of a handful of Southern yards.

For example, at Freeport Shipbuilding & Marine Repair, Inc., based in Freeport, Fla., the work log has been and is looking promising. In 1992 the yard delivered the Prototype, a 70-foot aluminum coastal cruiser; the Barefoot Princess, a 65-foot steel passenger vessel; and the Star of America, a 124-foot aluminum charter yacht.

On the books at Freeport Shipbuilding for 1993 is the Island Spirit, a 65-foot aluminum sport fishing boat due for delivery in March 1993; the Lady Anderson, a 130-foot steel passenger vessel scheduled for delivery in May 1993; and a yet to be named, 65-foot steel passenger vessel, for delivery in April 1993.

Atlantic Marine, Inc., in Jacksonville, Fla., delivered the Empress, a 222-foot gaming vessel to the Des Plaines River Entertainment Group, in May 1992; and the Tambor, a 130-foot passenger/vehicle ferry to Naviera Tambor, S.A., in September, 1992.

For 1993 the yard is putting the finishing touches on the Alton Belle, a 222-foot gaming vessel, scheduled to be delivered in May 1993 to the Alton River Boat Gambling Partnership; and the Martha's Vineyard, a 230-foot passenger/vehicle vessel slated for a November 1993 delivery to Woods Hole, Martha's Vineyard & Nantucket Steamship Authority.

Avondale Shipyards Division had a busy 1992, which included two keel layings, three launchings, five builders trials, three accep-



SeaArk's new Dauntless vessel is a deep vee hull design.

tance trials and deliveries of five ships and one floating prison. Avondale's Boat Division also delivered the towboat Elizabeth Dewey and the tug, Captain Bud Bisso. For 1993, the Boat Division is scheduled to deliver, in July, a Viking Maritec-designed, 168-foot towboat.

Finally, SeaArk Marine, Inc. of Monticello, Ark., had several new product developments in 1992. The yard introduced the new "Dauntless" line of deep vee hull vessels, designed by C. Raymond Hunt Associates and available in lengths from 28 to 44 feet.

Several 40-foot versions of the Dauntless were sold and delivered in 1992, including two patrol boats to the Jamaican Coast Guard, one to the Corps of Engineers in St. Louis and one for the Corps of Engineers in Boston, and one to the U.S. Border Patrol.

Another new model introduction, the "Commander" series, is also a deep vee hull design and is available in lengths of 21-, 23- and 25-feet. A 21-foot Commander was delivered in January 1993 to the Texas Parks & Wildlife Department, which will utilize it as a patrol boat.

SeaArk's third new product, the "Barracuda," is available in sizes from 30 to 35 feet designed for law enforcement and patrol.

Aside from the yard's new offerings, SeaArk recently delivered eight 21-foot "Navigators" to the Port Security Division of the U.S. Coast Guard, and several utility "Roustabouts" were sold to oil companies for boom-towing operations. The yard, which is "cautiously optimistic" according to marketing director Robin A. McClendon, also has other boats recently delivered, ordered or in progress.

### SUPPLIERS: Products & Services

Metairie, La.-based Robertson Marine Systems, Inc. has developed a new dynamic positioning system (DPS), the Robmaster I, which meets classification requirements for a single computer DPS, eg. DnV AUT class.

Robertson's cost-effective modular hardware is supplied in a central DP console. The Robmaster I is supplied with a list of standard features which incorporate a track ball for easy operator interface to the navigation software programs; pooling, weighing and filtering of position reference information base on repeatability, scatter and probability; automatic reallocation of thrust to operative propulsion units; and much more.

Robmaster I is simple to upgrade by adding "off the shelf" software modules which provide job specific operational functions.

Since 1937 Cospolich Refrigerator Co., of Kenner, La., has supplied refrigerators, freezers and other galley equipment to the marine industry.

Cospolich perfected the modular refrigerator, which can be broken down and put back together, ideal and cost effective when supplying a new refrigeration unit on a vessels refit or repair.

According to Eddie Luquette, national sales manager, 1992 was poor compared to 1991, yet the company still experienced growth. The coming year, by all indications, should be good, Mr. Luquette reports. Pending defense department cutbacks are of little concern to Mr. Luquette, as he reasons, although there will be fewer new ships built,

there will be more repairs and refits an ideal market situation for the company's modular refrigerator.

A company not physically located in the South but which has been able to capitalize on the yards' new types of business is R.W. Fernstrum & Co., of Menominee, Mich.

Fernstrum, which supplies a full line of keel coolers, has worked closely with top Southern builders to outfit the latest casino boats and ferries, including the Nichols Brothers-built 72-foot ferry, Klondike.

According to Sean Fernstrum, the Southern industry represents approximately 50 percent of the it's business. Mr. Fernstrum, who points out his company's products have been used by the Army and Coast Guard for more than 20 years, said the chief advantage Fernstrum products hold over a competitor's is that Fernstrum products are delivered "ready to install."

Another out-of-region company profiting from the Southern industry is Frank W. Murphy Manufacturing, based in Tulsa, Okla.

The company offers a full line of controls and instrumentation for the marine market. The company offers a 12-page catalog entitled "Monitoring and Protection for Marine Engines and Equipment," which includes full-color photographs, drawings and descriptions of more than 60 products.

New on the Southern supply scene is Barrataria Lofting Company.

Established in 1992, Barrataria offers small shipbuilders a cost-effective way to enjoy the benefits of computer lofting and numerically controlled plate cutting technologies.

The company offers services for lines fairing, offsets, shell plate development, burning machine code, production related data and CAD drawings of lofted contours.

Founder and president, Christopher A. Barcelona Sr., a loftsman with more than 12 years experience in the industry, explained that previously only the larger operations had the financial stability to invest in the equipment and personnel required to effectively incorporate an NC application in fabrication procedures. Today, utilizing a firm specializing in computer lofting along with an outfit supplying plate cutting, a shipbuilder can evaluate the costs effectiveness on a per contract basis. "Overall employment in our industry is on the decline and the day may come when retaining skilled workers with experience in shipbuilding disciplines will be difficult," said Mr. Barcelona. "The modern shipyard cannot afford to waste man hours with outdated, labor intensive manual methods to cut plates."

### Atlas Minehunting System Passes RAN Sea Trials

The new Minehunting Weapons System (MWS) 80-5 from Atlas Elektronik, of Bremen, Germany, recently passed its sea acceptance trials aboard the Australian minehunting catamaran HMAS Bushcutter. According to the contract, Atlas will now be delivering three systems to the Royal Australian Navy (RAN) by 1993. The German Navy will be using a total of ten systems of type MWS 80-4, the version from which the RAN's MWS 80-5 was derived, on their new MJ 332 minehunting vessels.



The RAN's inshore minehunting (MH) catamaran equipped with Atlas Elektronik's new Minehunting Warfare System 80-5.

Atlas reports that it is the first supplier to offer a software-based minehunting sonar for computer-aided detection and classification of mines, making the MWS a completely new sonar concept that can be specifically adjusted to suit prevailing environmental conditions.

Some special features of Atlas's MWS are: minimized personnel requirements; use of pull-down menus for easy operator interface; reduced logistics; and an enlarged sonar search area to reduce search times.

For more information about Atlas Elektronik's MWS 80-4 or -5,

Circle 130 on Reader Service Card

### Chinese Plan to Build Over 40 Bulk Ships During Next Seven Years

Shipping sources in Hong Kong have reported that China is developing a newbuilding program of more than 40 specialized bulk carriers of up to 100,000 dwt in size over the next seven years.

The new vessels will help the country keep pace with its increasing demand for coal.

Another long-term, Chinese ship construction project entails a series of enormous tankers and gas carriers to transport oil from China's northeastern fields to the south for refining and processing.

Analysts believe that the majority of ships will be built in China, the Dalian Shipyard being one of the newbuilding program's major beneficiaries, but with the assistance of foreign shipyards. The country will also receive assistance from the United Nations in the areas of vessel design, training and technological development.

A U.N. report stated that the Chinese will require the following size-ranges of newbuildings: four 12,000-

dwt vessels; three of 27,000 dwt; 34 ships of 35,000 dwt; one 60,000-dwt vessel and one of 100,000 dwt.

China's booming economy has increased its volume of coal production by 15 to 20 million tons each year, outrunning the ability of the country's transportation network to meet demand.

China's coal is produced in the northern part of the country and shipped from its Qinhuangdao terminal to a number of power stations

located in the south.

The new bulk ships will therefore be designed to operate in the shallow waters off the coast of China.

According to the report, the majority of the country's existing tanker fleet amounts to less than 500,000 dwt and consists of vessels in the 15,000- to 24,000-dwt range with an average age of 15 years. The ships are unable to comply with IMO regulations and shipboard explosions and fires are common.

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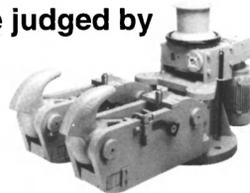
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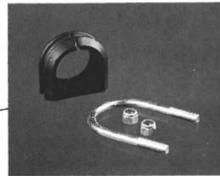
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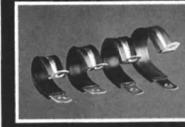
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## PROPULSION UPDATE



The 300-passenger Han Ma Eum Ho catamaran passenger ferry is powered by Paxman Diesel 18CM engines.

### Paxman Diesel Helps Power Hyundai-Built 147.6-Foot Ferry

Paxman Diesel has sold two Valenta 18CM engines to Hyundai Heavy Industries for use on the new 45-meter catamaran passenger ferry, the "Han Ma Eum Ho" (Big Heart).

Paxman reports that design improvements on the 18CM, as well as the powerplant's established reputation, was key in winning the order in the very competitive high speed ferry market.

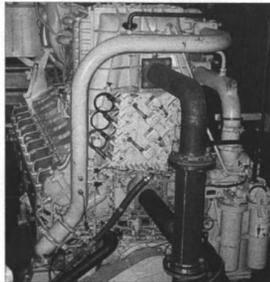
Design improvements include an SG iron crankcase, which is signifi-

cantly stiffer; fuel pump camshaft, governor drive and idler gears had all bearing areas improved, to give greater overall stability to the gear train; and a stiffer valve gear camshaft was fitted, and bearing areas on the rocker gear were increased, to provide longer life.

A single Elliott turbocharger is now fitted, to facilitate the high engine rating, giving approximately nine percent improvement in specific output over the earlier Valenta 18RP200CM range.

The two Valenta engines for the Han Ma Eum Ho are continuously rated at 4,050 bhp at 1,550 rpm, driving through twin Niigata 1.95:1, reverse reduction gearboxes and KaMeWa 80S waterjets.

Full engine protection is provided by a Kidde Graviner oil mist detection unit and Amot protection switches. Regulateurs Europa controls are used for bridge instrumentation and local alarm panels. Engine control is also provided by Regulateurs Europa with the Viking 22 digital electronic control system.



A Paxman Valenta

The 300-passenger catamaran, which is scheduled to enter service in March of 1993 with the Hyundai Transportation Company, can carry 20 tons of fuel in two tanks and has

a range of 800 nautical miles. It is designed for a continuous speed of 35 knots, and has a displacement of 230 tons.

For more information,  
Circle 136 on Reader Service Card

### Odense Steel Christens Double-Hulled Supertanker

Odense, Denmark-based Odense Staalskibsvaerft, A/S, recently christened one of the world's first double-hulled supertankers, the 298,900-ton Eleo Maersk.

The double-hull concept, which is already in use on many smaller tankers and cargo ships, is that in the event the ship's outer hull is breached during a collision or grounding, the inner hull will escape serious damage and prevent a catastrophic oil spill.

Spurred by U.S. ship safety legislation included in the Oil Pollution Act of 1990, naval architects from Japan to Denmark are now competing to develop ways to build a safer supertanker.

While no ship is unsinkable, many marine experts are convinced that the world tanker fleet would be significantly safer and fewer oil spills, such as the "Braer" grounding off the Shetland Islands, would occur if this type of construction becomes standard.



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**Teamship Lines Plan  
or Expanded U.S. Trade  
With Indian Subcontinent**

Industry sources have indicated that despite the region's political instability and religious violence, at least six major shipping companies are preparing for an increase in trade volume between the U.S. and India.

Neptune Orient Lines (NOL), Ltd., of Singapore, and Nippon Yusen Kaisha (NYK Lines), Ltd., of Tokyo, plan to expand their service between Singapore and New York by adding a midway stop at Colombo, Sri Lanka.

The companies plan to offer connections from Colombo to India, Pakistan and other neighboring countries.

NOL and NYK have said that textile imports will take only 19 days to arrive from Sri Lanka, with transshipped goods from India or Pakistan requiring 25 to 30 days. U.S. importers routinely wait 35 days or more to receive transshipped Indian goods.

**JJMA Appoints  
Dave F. McMullen VP  
Of Business Development**

John J. McMullen Associates, Inc. (JJMA), one of the largest firms of naval architects, marine engineers and transportation consultants in the U.S., has appointed **David F. McMullen** as vice president of business development.

Mr. McMullen has been in the marine industry for over 34 years and brings with him a wealth of experience. His last position was executive vice president of JJH, Inc., where he was responsible for business development and contract management.



David F. McMullen

One of Mr. McMullen's primary duties will be to oversee and coordinate JJMA's sales and marketing activities in the important market segments of commercial ship design and shipyard support services.

Although he will operate out of JJMA's New York office, Mr. McMullen will work closely with sales and management personnel working in all ten of JJMA's offices located throughout the U.S. He will report directly to **Tom Diamant**, the president of the firm.

February, 1993

**ETS Introduces Test Strip  
For Fuel Contamination**

Environmental Test Systems, Inc., of Elkhart, Ind., has introduced a new, 75-cent test strip that can identify seawater contamination in fuel tanks.

The test strip was developed by Environmental Test Systems at the request of the U.S. Navy. The Navy strips can reportedly identify water contamination in fuel tanks as fresh,

brackish or seawater in less than seven minutes.

The product is now being used as a standard component of fuel tank contamination testing kits aboard 200 ships in the U.S. Atlantic Fleet. The strips are said to have applications for all ships carrying jet or diesel fuel.

The test strips require no technical training or special equipment. The user places a strip in a water sample and waits as fluid rises up the strip by a capillary action and a

white column appears in the center of the strip. When a signal stripe indicates the test is completed, the user notes the color-coded region on the strip where the white column ends. In addition to testing for the presence of seawater in fuel oil, the test strips also provide a permanent record of the test.

For more information about the ETS test stripe,

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## Port Of Miami Has Record Year In FY'92

During the fiscal year ending September 30, 1992, the Port of Miami saw one of the most dynamic periods of growth in its history. The Florida port set new records in cargo tonnage and economic impact, handling

a total of 3,095,487 cruise passengers, 166,955 more than the previous year.

The Port of Miami reportedly contributed nearly \$6.1 billion to the South Florida economy, an increase of 15 percent from fiscal year 1990 to 1991. Total operating revenues rose 10 percent to a new high of nearly \$39.7 million.

The Port of Miami also set a new cargo tonnage record in FY92 of

4,596,481 tons, an 18.4 percent increase. Cargo handling expansion plans include four new RoRo cargo berths, bringing the port's total to 14, and the seventh and eighth post-Panamax container cranes.

Currently home to 20 cruise ships, the Port of Miami is reviewing plans for increasing its contingent of 12 passenger terminals in anticipation of a major boom in sailings between Florida and Cuba as soon as Fidel

Castro's government steps down from power.

## IMO To Step Up Fight Against Substandard Ships

The International Maritime Organization (IMO) intends to establish a special subcommittee to study flag state compliance with international ship safety regulations.

In cases where countries that operate open registries are unable to comply with international shipping regulations, the IMO wants the committee to develop ways in which flag states could receive assistance in raising their safety standards.

William O'Neil, secretary-general of the IMO, announced during the "Flag and Quality" conference in London that the organization also plans to establish a centralized database that would record all serious ship deficiencies and defects in order to help identify substandard vessel owners, operators, flag states and classification societies. According to Mr. O'Neil, while this type of information is presently available from various sources, the data is not shared.

The secretary-general also told the conference that steps are being taken to extend the port state control system, under which countries check the condition of ships calling at their ports, to Asia, the Pacific region and Latin America. As soon as circumstances permit, port state control may also be extended to the African region, Mr. O'Neil added.

## Electronic Marine Systems Assumes Marketing Duties For SteenHansen Line

Electronic Marine Systems (EMS), Inc., of Rahway, N.J., has assumed the marketing responsibility from San Francisco-based Furuno USA for the SteenHansen product line of sound powered phones, intercoms, public address and telephone exchanges, PBX and PABX systems in marine applications. These proven marine products can be found on more than 5,000 vessels worldwide since 1947.

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To receive additional information about the SteenHansen marine internal communications product line from EMS,



## OUTLOOK FOR REPAIR AND MODERNIZATION OF U.S. NAVY SHIPS

### NEW 1993 EDITION

Report No. 7121 — Now Available

IMA has just completed a detailed assessment of the U.S. Navy ship maintenance and modernization market. The new, 181 page report provides details needed for long range planning and market positioning in the annual \$4.2 billion Navy ship repair business. In the report is up-to-date information vital to keeping abreast of the rapidly changing Navy business environment.

#### CONTENTS

Sec. 1 - Size and Composition of the Business Base ..... (12 pp)	Sec. 8 - Scheduled MSC Ship Maintenance ..... (3 pp)
Navy downsizing and budget constraints will heighten competition for available work—but naval shipyard closures will channel more overhauls and short term work to the commercial sector.	113 Maintenance and repair jobs are scheduled on MSC ships over the next two years (complete details are in the report).
Sec. 2 - Geographical Distribution of Business Opportunities ..... (7 pp)	Sec. 9 - RRF Ship Deactivation and Maintenance Schedule ..... (4 pp)
Two-thirds of the Navy fleet are homeported in five locations—and Navy practice of placing short term jobs in homeport area yards will increasingly distort market competition.	173 Deactivation or maintenance jobs are scheduled on ready reserve fleet ships managed by the Maritime Administration (details in report).
Sec. 3 - Maintenance and Planning Practices ..... (9 pp)	Sec. 10 - Sealift Ship Conversions ..... (18 pp)
Recent maintenance practices have emphasized the use of frequent short duration maintenance periods in place of lengthy overhauls—changing the pattern and availability of work.	This activity represents the best conversion opportunity for U.S. shipyards over the next 6 to 12 months—with multiple awards planned and up to 8 ships chosen for conversion.
Sec. 4 - Navy Ship Maintenance Schedule ..... (17 pp)	Sec. 11 - Component Replacement and Ship System Upgrades ..... (7 pp)
780 Ship maintenance jobs have been scheduled over the four year period 1990-1993 (a complete breakdown of scheduled maintenance by individual ship is provided in the report).	Navy plans to spend \$5.9 billion in fiscal year 1993 for ship support equipment, communications and electronics systems, ordnance support, spares and other components (details in report).
Sec. 5 - Composition of Scheduled Maintenance Jobs ..... (22 pp)	Sec. 12 - Ship Maintenance Contracts Performed by Commercial Yards ..... (26 pp)
Of the 780 jobs, 90 are overhauls or other long term availabilities, 276 are short term jobs involving drydocking and the balance are short term jobs involving topside work only (details in report).	Details for approximately 1,000 scheduled Navy ship maintenance contracts over the past nine years are provided for each commercial shipyard.
Sec. 6 - Work Loading by Homeport ..... (19 pp)	Sec. 13 - Ship Repair Performed in Navy-owned Facilities ..... (9 pp)
90 Of the 780 scheduled jobs will be bid or assigned coastwide—the remaining 690 jobs will be reserved for shipyards in homeport areas (complete details by homeport are provided in the report).	Naval shipyards and ship repair facilities will perform scheduled work on 97 submarines and 183 surface ships over the four year period 1990-1993 (complete details in the report).
Sec. 7 - Navy Maintenance Available to Commercial Yards ..... (3 pp)	Sec. 14 - MSC Ship Repair Contracts ..... (12 pp)
Of the 157 jobs scheduled in fiscal year 1993, 104 will be open to commercial ship repair yards and the balance will be assigned to naval shipyards (complete details are in the report).	Details for approximately 500 awards for ship repair by MSC over the past eight years are provided—broken down by ship repair firm.
	Sec. 15 - Market Share Analysis ..... (13 pp)
	A statistical summary showing the number of short and long duration jobs and percentage market share for each shipyard—both commercial and public—from 1985 through the third quarter of 1992.

Report No. 7121 is available for \$575. The report will be sent the day the order is received. Purchasers of the report will receive an update in March 1993 as part of the initial purchase price.

To order please contact:

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Maritime Reporter/Engineering News

### SCG Extends Period for Industry Comments on Double-Hull Standards

Concerns that some existing ships may not comply with standards proposed by the U.S. Coast Guard have delayed a final ruling on double-hulled vessel dimensions mandated by the Oil Pollution Act of 1990 (OPA 90).

As a result, the agency has reopened the industry comment period regarding its proposed double-hulled tanker standards. Comments on the rule had been due before October 13, 1992, but the industry now has until February 26, 1993 to submit new or additional comments.

The Coast Guard issued the Interim Final Rule (IFR) regarding OPA 90 mandated double-hull standards on August 12, 1992, and it became effective on September 11, 1992. The IFR set double-hulled dimensional standards for new vessels carrying oil in bulk, as OPA 90 did not cover ships built after passage of the Act.

According to the agency, it "concurrent with comments that existing double-hulled tank vessels be permitted to continue operating even if such vessels do not meet the dimensions adopted in the IFR for new tank vessels." As a result, the Coast Guard has incorporated several sections into the IFR that provide for existing vessels with double-hull dimensions "consistent with their existing construction."

### MarAd Prepares Study On Expanded Americas Trade, Workshop Set For March

U.S. Maritime Administrator Captain **Warren G. Leback** announced a new Maritime Administration (MarAd) research program to help the maritime industry prepare for expanded trade within the Western Hemisphere.

Prospects of increased trade between the U.S. and Mexico resulting from the North American Free Trade Agreement (NAFTA) prompted the initiative, according to Capt. **Leback**. Mexico is already the U.S.'s fastest growing export market and its third largest trading partner after Canada and Japan.

"As a result of this new agreement and our existing trade agreement with Canada, trade with Mexico and Canada may grow at an even greater rate in the future," the Administrator said. "Growing commerce within the Americas means new opportunities for U.S. merchant vessels and American seafarers."

Called "The Maritime System of the Americas," the new MarAd program will examine four approaches to transporting increased Western Hemisphere commerce. All of the efforts are within the existing framework of U.S. cabotage laws.

The agency and Louisiana State University's National Ports and Waterways Institute are planning an international workshop on the study to be held in New Orleans, March 25-26, 1993, at the Hotel Inter-Continental. Further information on the study, "The Feasibility of Ocean/River/Lake Traffic," is available from Dr. **Anatoly Hochstein** or Dr. **Charles Wright**, at (703) 276-7101.

### American Shipyard Corp. Awarded USCG Contract To Repair Tall-Ship Eagle

The U.S. Coast Guard Maintenance and Logistics Command Atlantic has awarded American Shipyard Corporation, of Newport, R.I., an \$886,000 contract for the drydocking and repair of the sailing

barque *Eagle*.

Major repairs to "America's Tall Ship" include renewal of hull rivets, overhaul of the main mast and rigging and replacement of the original manually operated warping capstan.

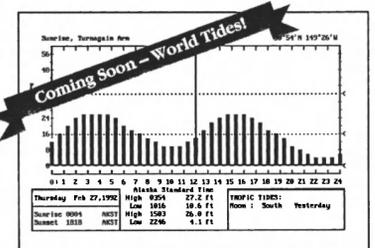
The cutter *Eagle* was built in 1936 at the Blohm & Voss shipyard, Hamburg, Germany, and currently serves as the sail training vessel for the U.S. Coast Guard Academy, New London, Conn.

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## MaK-Propelled Container Vessel Built For U.S.-Based Owner, Christened 'Tropic Sun'

Singapore Shipbuilding & Engineering Ltd. (SSE) christened BO 320, one of two 392-teu RoRo/LoLo container vessels built for American-based Tropical Shipping & Construction Co. Ltd.

Christened "Tropic Sun," the vessel was ready a month ahead of schedule and was delivered at the end of January. The vessel joins Tropical's 12 other vessels in serving 18 ports in the Caribbean, the Bahamas and Central America from its base in the Port of Palm Beach, Fla.

Powered by two MaK type 9M 453C, four-stroke, turbocharged and intercooled engines driving Lohmann & Stolterfoht Navilus reduction gears, the Tropic Sun has a service speed in excess of 15 knots.

Two Lips type 4L9/VL80, controllable-pitch propellers, each fourblade with a 3,500 mm diameter, were also supplied.

Lips also supplied shafting and a bowthruster to increase maneuverability.

Electrical power onboard is supplied by two Caterpillar 3508 TA/SR4 main diesel alternators, a Cat-

erpillar 3408 TA/SR4 harbor diesel alternator and a Caterpillar 3304 TA emergency unit.

The vessel, which was designed completely by SSE's team of naval architects and engineers, was tailored to meet Tropical's specific operating requirements and service standards, with a design providing a combination of stevedoring accessibility, maneuverability, speed and shallow draft capability. The hull design incorporates a well-flared stern with bulbous bow, a long parallel midbody and a streamlined aftbody and twin rudders.

The ship measures 121.2 meters with a 22-meter breadth and a 6.2-meter draft. The vessel features an open, flush-deck design with the wheelhouse forward. Two 40-ton, O&K type KL 40-30m (aft) and KL 40-28.5m (forward) deck cranes provide lift-on lift-off capabilities while a MacGregor-Navire stern ramp supports roll-on roll-off capabilities.

Classed by Bureau Veritas, the vessel also meets the new IMO 1992 Rules on damaged stability for RoRo vessels.

The contract was won against stiff



The RoRo/LoLo "Tropic Sun"

competition from yards in Europe, the U.S. and Japan. Apart from this vessel, SSE has built and delivered 16 similar container vessels to German, Greek, Indonesian and Singapore shipowners.

### TROPIC SUN Equipment List

Main Engines.....Krupp MaK	Deck machinery.....Brattvag
Reduction gears.....Lohmann & Stolterfoht Navilus	Main switchboard.....Terasaki
Propellers.....Lips	Bowthruster.....Lips
Shafting.....Lips	Steering gear.....MarinProdukt
Generators.....Caterpillar	HFO purifier.....Westfalia
Boiler.....Aalborg	Lube oil purifier.....Westfalia
Deck cranes.....O&K	FW generator.....Alfa-Laval
Stern ramp.....MacGregor-Navire	Radar.....Raytheon
	Gyro compass.....Yokogama

## BOATS AND BARGES



The Kenai Explorer from Westport

### Westport Shipyard To Deliver 90-Foot, 149-Passenger Kenai Explorer This Spring

Westport Shipyard, Inc. expects to deliver the M/V Kenai Explorer this spring to Kenai Coastal Tours in Alaska. The vessel will measure 90-feet by 22-feet, and be certified to carry 149 passengers.

The vessel was designed by Jack Sarin and built using a Westport "Monk" design hull, which is constructed of Airex core and fire retardant resin.

The boat will be powered by twin Detroit Diesel 16V92TA engines rated at 1,300 hp at 2,300 rpm. Rudders are cast urethane "Westport" foil rudders. Propellers are Michigan Wheel 42- by 44-inch Maxima Nibrall wheels.

Shipboard power will come from two Northern Lights sets, a model M964 30-kW, 1,800 rpm unit and a model M843, 12-kW, 1,800 unit.

The vessel's bowthruster from Wesmar is a dual prop, 25-hp unit with hydraulic pump, driven off of one main engine.

A 220-volt heat and ventilation system is provided for the main cabin, upper interior passenger cabin, VIP lounge and wheelhouse. The wheelhouse features Micro Commander single lever engine controls from MMC.

For additional information on Westport Shipyard,

Circle 29 on Reader Service Card

### KENAI EXPLORER Equipment List

Main engines.....Detroit Diesel
Propellers.....Michigan Wheel
Generators.....Northern Lights
Bowthruster.....Wesmar
Engine controls.....MMC

### Runyan Shipyard Appoints Fred Y. Martin As VP & General Manager

Ronald C. Rasmus, president of Runyan Shipyard, Inc., of Pensacola, Fla., announced the appointment of Fred Y. Martin as vice president and general manager.

Mr. Martin, most recently the yard's vice president of business development and estimating, has over 27 years of management and administrative experience in the shipbuilding and repair industry. During his career, he has worked at several shipyards, including: Bender Shipbuilding, Mobile, Ala.; Fredeman Shipyard, Sulphur, La.; Gulf & Intercoastal Shipbuilding, Lake Arthur, La.; Zigler Shipyard, Jennings, La.; Equitable Shipyards, New Orleans, La.; and Ingalls Shipbuilding, Pascagoula, Miss.

The new Runyan Shipyard complex with its machine shops and three marine railways, encompasses more than 15 acres on the north bank of Bayou Chico. Also known as "RUNSHIP," the new facility will revitalize and expand Runyan's traditional ship repair and machine shop businesses to include new vessel and barge construction, and a new marine industrial park for various specialized repair businesses in Pensacola.

RUNSHIP was acquired in 1992 and is part of a group of companies which includes Admiral Towing and Barge Company, Pensacola, and The Great Lakes Towing Company, Cleveland, Ohio. The group's representative in Pensacola is Captain Mark A. Hall, vice president.

For additional information from Runyan Shipyard,

Circle 129 on Reader Service Card

**Kollmorgen Corporation Awarded  
\$4.7 Million Navy Contract**

Kollmorgen Corporation announced that its Electro-Optical Division received a contract modification of \$24.7 million from the Naval Sea Systems Command to produce 16 additional EX46 Mod Optical Sights plus spares for the U.S. Navy's DDG-181 Arleigh-Burke class guided-missile destroyers.

**Singmarine Wins \$4.53 Million Ferry,  
Yacht Retrofit Contract**

Shipyards group Singmarine Industries, Ltd., announced its wholly-owned subsidiary, Aluminum Craft Co., Ltd., has won two shipbuilding and repair contracts worth 7.5 million Singapore dollars (\$4.53 million U.S.). The contract calls for the company to build two passenger ferries for Singapore's Penguin Boat Services Pte. Ltd., and retrofit a 28-meter, Greek-owned luxury yacht. All three are scheduled to be delivered in the second half of 1993.

**Textron Marine Systems Awarded  
\$117,384 Million Navy Contract**

A U.S. Navy contract totaling \$117,384 million was awarded to Textron Marine Systems of New Orleans, for the production of seven Landing Craft, Air Cushion (LCAC) vehicle and related equipment. This work continues production activity at TMS well into 1996, the company reports. "Today's announcement proves that the Navy has placed Textron at the top of the list in productivity," said U.S. Senator J. Bennett Johnston (D-La.), and U.S. Representative Bob Livingston (R-Metairie).

**Portland Repair Yard Uses Program  
To Train New Workers, Upgrade Skills**

The Portland Ship Repair Yard (PSRY) is offering a new educational program to train new workers and upgrade the skills of those already there. This training center is undertaking what is called the Coordinated Shipyard Training Project, funded by a \$140,000 State of Oregon Key Industries Training Grant through Portland Community College. "Our training program will build a diverse work force and upgrade skills to keep pace with changes in technology," said Brian Severns, president of the new training center.

**Two More Orders Placed For IHI's  
Future 32A Handysize Bulker Class**

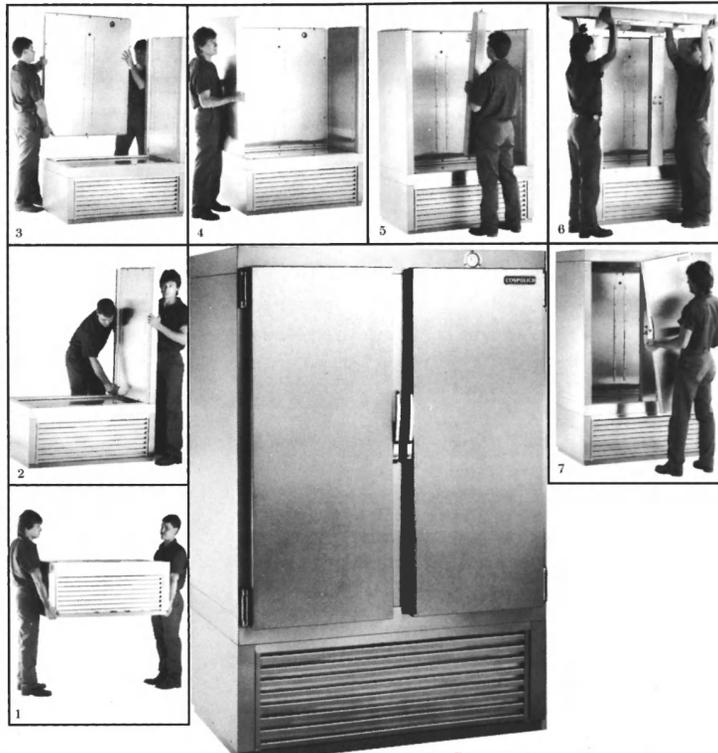
Ishikawajima-Harima Heavy Industries, of Aichi, Japan, has received two orders for its Future 32A handysize, geared bulk carrier design. The two 38,600-dwt bulkers are scheduled for delivery in January and February 1994. The total number of orders received by the shipyard for its Future 32A design now stands at over 30.

Based on the prices paid for preceding Future 32A vessels, the newly signed contract between IHI and the Panamanian registered companies purchasing the ships could be worth approximately seven billion Yen (\$51,184,000).

Main propulsion will consist of a six-cylinder diesel engine of the Sulzer RTA52 type, which will be manufactured under license at Aioi by Diesel United.

The two-ship contract is the first awarded to Aichi since the yard received an order from New York-based Orion & Global Chartering last June for a 150,000-dwt, double-hulled tanker. The suezmax crude carrier is scheduled for delivery in February 1994.

February, 1993



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# BUYERS DIRECTORY

**his 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.**

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Barton Mines Corp., 1658 Cole Blvd., Golden, CO 80401  
Bourg Drydock, P.O. Box 1852, Houma, LA 70361  
Chesapeake Specialty Products, 5055 Northpoint Blvd., Baltimore, MD 21219  
Ervin Industries, Inc., 3893 Research Park Drive, P.O. Box 1168, Ann Arbor, MI 48106-1688

## IRCONDITIONING AND REFRIGERATION—Repair & Installation

Bailey Group, 2323 Randolph Ave., Avenel, NJ 07001  
Callenberg Engineering, 2010 North Miami Ave., FL 33127  
Carrier Transicold, P.O. Box 4805, Syracuse, NY 13221  
Maritime Services Corp., 3457 Guignard Drive, Hood River, OR 97031  
Stal Refrigeration AB, Butangsgatan 16, S-601 87 Norrköping, SWEDEN

## IRLIST

Chesapeake Specialty Products, 5055 Northpoint Blvd., Baltimore, MD 21219  
Genstar Stone Products, Executive Plaza IV, Hunt Valley, MD 21031  
Mineral Research & Recovery Inc., P.O. Box 986, Sonoma, AZ 85637

## IRBARGE BUILDING

Conrad Industries, P.O. Box 790, Morgan City LA 70381  
Zidell Marine Corp., 3121 S.W. Moody Ave., Portland, OR 97201  
Zidell Marine Corp., 3121 S.W. Moody Ave., Portland, OR 97201

## IRBARGE COVERS

Syntech Inc., FRP div. 700 Terrace Lane, Paducah, KY 42003

## IRBARGE—Leasing

McDonough Marine Service, 2300 Surekote Road, New Orleans, LA 70117

## IRBASKET STRAINERS

Beard Industries, P.O. Box 31115, Shreveport, LA 71130

## IRBEARING—Rubber, Metallic, Non-Metallic

B.F. Goodrich, Engineered Polymer Products, 150 Division Dr., Wilmington, NC 28401  
Bohm & Voss AG, P.O. Box 100720, D-2000 Hamburg 1, GERMANY  
U.S.A. Repps: Simplex-Turner Inc., P.O. Box 168, Little Neck, NY 11363-0168  
Kahlerberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241  
Orkot Engineering, 2535 Prairie Road-Unit D, Eugene, OR 97402  
Tenmat Inc., 511 Interchange Blvd, Newark, DE 19711  
Thorndon Bearings Inc., 3225 Mainway, Burlington, Ont., CANADA L7M 1A6

## IRBOAT STORAGE

Miracal Steel, Waterford Tower, Ste. 500, 503N. Hwy 169, Minneapolis, MN 55441

## IRBOLERS—Manufacturers

Aalborg Cisen (Miami) Inc., 2449 Northeast 13th Avenue, Ft. Lauderdale, FL 33305

## IRBROKERS

151 Maritime Services, 34062 El Encanto/B, Dana Pt. CA 92629  
Captain Astad Company, Inc., P.O. Box 350486, Ft. Lauderdale, FL 33335  
Jack Pauliner, 2419 Caddy Lane, P.O. Box 371, Fossmoor, IL 60422  
Mowbray's Tug & Barge Sales Corp., 35 De Hart St., Morristown, NJ 07960

## IRBUKBERING

Crowley Maritime, 155 Grand Ave., Oakland, CA 94612  
Zidell Marine Corp., 3121 S.W. Moody Ave., Portland, OR 97201

## IRCABLE ASSEMBLIES

Revere Aerospace, 845N. Colony Rd., Wallingford, CT 06492

## IRCARGO HANDLING EQUIPMENT

Smith Berger Marine Inc., 516 South Chicago St., Seattle, WA 98108

## IRCHAIN

Crandall Dry Dock Engineers Inc., Marit Chain, 21 Pottery Lane, Deetham MA 02026  
Miligan Marine Supply Inc., 5832 Harvey Wilson, Houston TX 77020  
G. J. Wortelboer, J.B.V., Postbus 5003, 3008 AA Rotterdam, NETHERLANDS

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Gasser Chair Co., 4136 Loganway, Youngstown, OH 44505

## IRCHEMICALS

Unitor Ships Service, Inc., 2375 W. Esther St., Long Beach, CA 90813

## IRCLAMPING—Pipes, Tubes, Hoses

ZSI, 12740 Richfield Ct., Livonia, MI 48150

## IRCLASSIFICATION SOCIETY

American Bureau of Shipping, 2 World Trade Center, 106th Fl, New York, NY 10048

## IRCOMPACTORS

A/S Vestia, Skudehavsvej 27, DK-2100 Copenhagen, DENMARK  
Sales Agents: American United Marine Corp., 5 Broadway, Rt 1, Saugus, MA 01906

## IRCOMPOUNDS

ITW Philadelphia Resins, 130 Commerce Dr., Montgomeryville, PA 18936

## IRCOMPUTERIZED INFORMATION SYSTEMS

Coastdesign, Inc., Unit 201, 12837 76th Avenue, Surrey, BC CANADA V3W 2V3  
TIMSCO, P.O. Box 91360, Mobile AL 36691

## IRCONDENSER SEPARATORS

Beard Industries Inc., P.O. Box 31115, Shreveport LA 71130  
Standard Refrigeration Co., 2050 N. Ruby, Melrose Park, IL 60160  
Wright Austin Co., 3250 Franklin St., Detroit MI 48207

## IRCONTROL SYSTEM—Monitoring

American United Marine Corp., 5 Broadway, Rt. 1, Saugus, MA 01906  
Autronica Marine A/S, Drammensveien 126, N-0277 Oslo 2, NORWAY  
Henschel, Inc., 9 Hoyt Drive, Newburyport MA 01950  
IMO Industries, Gems Sensors Division, One Cowles Rd., Plainville CT 06062  
Lyngso-Valmet Marine A/S, P.O. Box 130, N-3430 Spikkestad, NORWAY  
MMC International, 60 Inp Dr, Inwood NY 11696  
Marine Electric RPD, Inc., 50 Carol St., P.O. Box 1135, Clifton, NJ 07014-1135  
Norcontrol A/S, P.O. Box 1024, N-3191 Horten, NORWAY  
Robertson Marine Systems, 3000 Kingman St., Suite 207, Metairie, LA 70006  
Row Technology, P.O. Box 265, Littlestown, PA 17340  
Siemens Energy & Automation, Inc., Systems Div., Marine Systems No. America (A23N), 100 Technology Drive, Alpharetta, GA 30202  
Talefax Naval technologies, 205 Church Rd., North Wales, PA 19454

## IRCOUPLINGS

Lo-Roz Vibration Control Ltd., 156 West 8th Avenue, Vancouver, BC CANADA V5Y 1N2

## IRCRANE—HOST—DERECK—WHIRLES

Bisso Marine Co. P.O. Box 4113, New Orleans, LA 70178  
The Crosby Group, Inc., P.O. Box 3128, Tulsa OK 74101

Del Gavio Marine Hydraulics Inc., 619 Industrial Rd., Carlstadt, NJ 07072  
Hagglunds Inc., Marine Div. Headq., 50 Chestnut Ridge Rd, Montvale, NJ 07645  
Liebherr-Werk Nenzing GmbH, P.O. Box 10, A-6710 Nenzing, AUSTRIA  
Marine Travelift, Inc., 49 E. Yew St., Sturgeon Bay, WI 54235  
J.D. Neuhaus Hebezeugue GmbH, D-5810 Witten, GERMANY

McEroy Machine & Mfg Co., Inc., P.O. Box 4454, Biloxi MS 39535-4454  
New England Trawler Equipment Co., 291 Eastern Avenue, Chelsea, MA 02150  
Petibone-Tiffin Corp., 235 Miami St., Tiffin, OH 44883  
Smatco Industries, P.O. Box 4036, Houma, LA 70361  
Westmont Inds, 10805 Painter Ave, Santa Fe Springs, CA 90670  
Zidell Explorations, Inc., 3121 SW Moody Ave., Portland OR 97201

**DECK MACHINERY—Cargo Handling Equipment**  
Braden Cargo Gearmatics, P.O. Box 547, Broken Arrow, OK 74013  
MacGregor-Navre Group, 34 Bedford Rd., Clapham North, London SW47HH  
Markey Machinery Co., Inc., P.O. Box 4454, Biloxi MS 39535-4454  
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Skookum Rope Master, P.O. Box 280, Hubbard, OH 97032  
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Nordic Machine Mfg., 4700 Ballard Ave., NW, Seattle, WA 98107  
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Smith Berger Marine Inc., 516 South Chicago St., Seattle, WA 98108

**DIESEL ACCESSORIES**  
Coltec Industries Fairbanks Morse Engine Div., 701 Lawton Ave., Beloit, WI 53511  
Gearhardt's Inc., P.O. Box 10161, Jefferson, LA 70181  
General Thermodynamics Corp., 210 South Meadow Rd., P.O. Box 1105, Plymouth, MA 02960  
Kiene Diesel Accessories, 325 S. Fairbanks St., P.O. Box 386, Addison, IL 60101  
Pow-R-Quik, 5518 Micheldale, Houston, TX 77092

**DIESEL ENGINE—Spare Parts & Repair**  
Aalborg Cisen (Miami) Inc., 2449 Northeast 13th Avenue, Ft. Lauderdale, FL 33305  
Caltex Marine Diesel B.V., Stationsweg 6a, 4416 ZhKruiningen, THE NETHERLANDS  
Caterpillar, Inc., Engine Div., P.O. Box 610, Mossville, IL 61552-0610  
Coltec Industries, Parts & Service Div., 701 Lawton Ave., Beloit, WI 53511  
Cummins Engine Co., Mail Code 60011, Box 3005, Columbus, IN 47202-3005  
John Deere, John Deere Rd., Moline, IL 61265  
Global Marine Services, 247 SW 33 Court, Ft. Lauderdale, FL 33315  
Golden Marine Company, Inc., 160 Van Buren St., Brooklyn, NY 11231  
Hall-toledo, Inc., 525 West Sophia St., Maumee, OH 43437  
Hatch & Kirk, 5111 Leary Avenue NW, Seattle, WA 98107  
Kim Holstad Mfg Co., E5724 Broadway Ave., P.O. Box 42, Spokane WA 99210  
Klattenberg Marine, 17 Grandview Ave., W. Orange, NJ 07052

**MAN B&W Diesel AG, Stadthausstrasse 1, D-6900 Augsburg 1, GERMANY**  
**MAN B&W Diesel, 17 State St., New York, NY 10004**  
MTU of North America, 10450 Corporate Dr., Houston, TX 77478  
Markisches Werk GmbH, P.O. Box 1442, D-5884 Halver 1, GERMANY  
National Maintenance & Repair, Foot of Hawthorne, Hartford, IL 62048  
New Sulzer Bros., Inc., 200 Park Ave., New York, NY 10166  
Pacific Rim Diesel, 3842 W. Margal Way SW, Seattle, WA 98106  
Paxman Diesels, P.O. Box 8, Paxman Works, Colchester, Essex, CO1 2HW, ENGLAND  
Paxman Diesels USA, (A Div. of Ruston Gas Turbines, Inc.), 15950 Park Row, Houston, TX 77064  
Wartsila Diesel, 708 Morgan Rd., Chestertown, MD 21620

**DIESEL ENGINE (Volvo Penta) Spare Parts and Repair**  
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Mudson Marine Services, Inc., P.O. Box 3221, Terminal Island, CA 90731

**DRILLING & BLASTING**  
Marine Drilling & Blasting, PO Box 10455, Jacksonville, FL 32247-0455

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Curacao Drydock (USA), PO Box 3012, Curacao, Netherlands Antilles  
Ferrostaal AG, D-4300 Essen, Hohenzollernstrasse 24, GERMANY  
Marine Design Services, P.O. Box 928, Bonita CA 92002

**ELECTRICAL EQUIPMENT**  
Bender Inc., 400 Gordon Dr., Bligg 501, Exton, PA 19341  
Callenberg Engineering, 2010 North Miami Ave., Miami, FL 33127  
L.F. Gaubert & Co., Inc., P.O. Box 50500, New Orleans LA 70150  
MMC International, 60 Inp Dr, Inwood NY 11696  
Row Technology, P.O. Box 265, Littlestown, PA 17340  
SPD Technologies, 13500 Roosevelt Blvd., Philadelphia PA 19116  
Siemens Energy & Automation, Inc., Systems Div., Marine Systems No. America (A23N), 100 Technology Drive, Alpharetta, GA 30202  
Universal Marine Electric Co., Inc., P.O. Box 266-923, Houston, TX 77027-6923

**ELECTRONIC DISPLAY**  
Scandinavian Micro Systems, P.O. Box 155, N-1411, Kolbotn, NORWAY

**ELECTRONIC ENCLOSURES**  
A&J Manufacturing, 14131 Franklin Ave., Tustin CA 92680

**ELECTRONIC INFORMATION SUPPORT**  
Inventory Locator Service, 3965 Mendenhall Rd. S., Suite 10, Memphis, TN 38115  
Scandinavian Micro Systems, P.O. Box 155, N-1411, Kolbotn, NORWAY

**ENGINE TEST EQUIPMENT**  
Annot Controls, PO Box 1312, Richmond, CA 94802  
General Thermodynamics Corp., P.O. Box 1105, 2105 Meadow Rd., Plymouth, MA 02260  
Instruments, Computers, & Controls, Inc., 6942 Haven Creek Dr., Katy, TX 77449

## IRPIPS

ACR Electronics, Inc., 5757 Ravenswood Rd., P.O. Box 5247, Ft. Lauderdale FL 33310-5247  
Alden Electronics, 40 Washington St., Westborough, MA 01581  
Liton Special Devices, 750 W. Sprout Road, Springfield, PA 19064

## IREQUIPMENT Marine

Byrne, Rice & Turner, Inc., 1172 Camp St., New Orleans, LA 70130  
Maritime Power Corp., 200 Henderson Street, Jersey City, NJ 07302

## IREVAPORATORS

Alfa-Laval Separation, Inc., 955 Mearns Rd., Warrminster, PA 18974  
Aqua-Chem, Water Technologies Div., P.O. Box 421, Milwaukee, WI 53201  
Beard Industries Inc., P.O. Box 31115, Shreveport, LA 71130

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Caring Turbine Blower Co., 8 Nebraska St., P.O. Box 15048, Worcester, MA 01615  
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## IRFASTENERS

Jameson Distributors, 28 Narragansett Ave., P.O. Box 348, Jamestown, RI 02835  
Reveal Fasteners, P.O. Box 345, Roanoke, VA 24003  
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Miligan Marine Supply Inc., 5832 Harvey Wilson, Houston, TX 77020  
Rowe Bumpers, Conveyors & Caster Corp., 3501 Detroit Ave., Cleveland, OH 44113  
Seaward International, Inc., Clearbrook Industrial Park, P.O. Box 96, Clearbrook, VA 22604  
Standard Refrigeration Co., 2050N. Ruby, Melrose Park, IL 60160  
Ultra Poly Inc., 2926 South Steele, Tacoma, WA 98409  
Viking Fender Co., 50 Church Street, Sea Bright, NJ 07760

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Unitor Ships Service, Inc., 2375 W. Esther St., Long Beach, CA 90813

## IRFIRESTOP PRODUCTS

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## IRFRICTION COMPONENTS/PARTS

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## IRGALLEY EQUIPMENT

Atlas Marine Services, 6960 NW 46th St., Miami, FL 33166  
Cospolch Refrigerator Co., 949 Industry Rd., Kenner LA 70062  
Gaylord Industries, 10900 S.W. Aveny St., P.O. Box 1149, Tualatin, OR 97062  
Lang Manufacturing, P.O. Box 905, Redmond, WA 98073  
Maritime Services Corp., 3457 Guignard Dr., Hood River, OR 97031  
Toasmaster, 1400 Toasmaster Dr., Egin, IL 60120-9272

## IRGANGWAYS/LADDERS

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Sea Systems Inc., 65 Avco Road, Ward Hill, MA 01835  
Woolster Products Inc., 1000 Spruce St., P.O. Box 896, Wooster, OH 44691

## IRGENERATORS

Tech Systems, 401 Waterford Rd., Thomaston, CT 06787

## IRGROUND FAULT PROTECTION & LOCATION EQUIPMENT

Bender, Inc., 400 Gordon Drive, Bldg. 501, Exton PA 19341

## IRHATCHES

L.S. Baler, 7527 NE 33rd Dr., Portland, OR 97211

## IRHEAT EXCHANGERS

Alfa Laval Separation, Inc., 955 Mearns Rd., Warrminster, PA 18974  
American United Marine Corp., 5 Broadway, Rt. 1, Saugus, MA 01906  
A/S Vestia, P.O. Box 548, DK-9100, Aalborg, DENMARK U.S. Agent: Aalborg Cisev

## IRHORN/WHISTLES

Kahlerberg Bros Co., P.O. Box 358, Two Rivers, WI 54241

## IRHYDRAULICS

Aeroleap Corporation, 3000 Strayer, P.O. Box 631, Maumee, OH 43537-0631  
American United Marine Corp., 5 Broadway, Rt. 1, Saugus, MA 01906  
Cunningham Marine Hydraulics Co., 201 Hancock St., Hoboken, NJ 07030  
Del Gavio Marine Hydraulics Inc., 619 Industrial Rd., Carlstadt, NJ 07072

## IRINCINERATORS

American United Marine Corp., 5 Broadway, Rt. 1, Saugus, MA 01906  
A/S Vestia, P.O. Box 548, DK-9100 Aalborg, DENMARK U.S. Agent: Aalborg Cisev

## IRINSULATION

Branton Industries, Inc., 1101 Edwards Ave., Hanahan, LA 70123  
Soundcoat Company, 11 Burt Drive, Deer Park, NY 11729  
Maritime Services Corp., 3457 Guignard Dr., Hood River, OR 97031

## IRINTERIORS

Maritime Services Corp., 3457 Guignard Dr., Hood River, OR 97031

## IRJET PROPULSION SYSTEMS

North American Marine Jet, P.O. Box 1232, Benton, AR 72015

## IRJOINER—Waterlight Door—Paneling—Ceiling System—Docking

Branton Industries, Inc., 1101 Edwards Ave., Hanahan, LA 70123  
GEC-Marconi Electronic Systems Corp., 5505 Fulton Ave., Mt. Vernon, NJ 10550  
IMAC AB, Bergs Alle 1, S-25255 Helsingborg, SWEDEN  
U.S. Rep: Hageman Brothers, Inc., P.O. Box 820, Waynesboro, VA 22980  
Jamestown Metal Marine Sales, Inc., 4710 NW Second Ave., Boca Raton, FL 33431  
Marine Accommodations Inc., 8535-3 Baymeadows Rd., Se 140, Jacksonville, FL 32256  
Maritime Services Corp., 3457 Guignard Drive, Hood River, OR 97031  
Walz & Krenzer, Inc., 90 Forest Ave, Locust Valley NY, 11560

**KEEL COOLERS**

R.W. Ferris & Co., 1716 Eleventh Ave., Menominee, MI 49858  
Kohlsberg Bros. Co., P.O. Box 353, Two Rivers, WI 54241  
The Walter Machine Co., Inc., 84-98 Cambridge Avenue, Jersey City, NJ 07307

**LEAK DETECTION**

U.E. Systems, 12 West Main St., Elmford, NY 10523

**LIQUID CARGO HEATERS**

American United Marine Corp., 5 Broadway, Rt. 1, Saugus, MA 01906  
Boston Whaler, Inc., Commercial Products Div., 1149 Hingham St., Rockland, MA 02370  
Wildard Marine Co., Inc., 1250 N. Grove St., Anaheim, CA 92806  
Zodiac of North America, P.O. Box 400, Stevensville, MD 21666

**LIGHTING EQUIPMENT—Lamps, Fixtures, Searchlights**

ACH Electronics, Inc., 5757 Ravenswood Rd., P.O. Box 5247, Ft. Lauderdale, FL 33310-5247  
Archway Marine Lighting, 4501 Swan Ave., St. Louis, MO 63110  
The L.C. Doane Co., P.O. Box 975, Essex, CT 06426  
Nauticus Equipment Ltd., P.O. Box 66, Station M, Halifax, Nova Scotia B3J2L4, CANADA  
Phoenix Products, 6161 N. 64th St., Milwaukee WI 53218

**LINE BLINDS**

American Piping Products, Inc., 22 S. 9th St., New Hyde Park, NY 11040  
Stacey/Felton, P.O. Box 103, Skippack, PA 19474

**LIQUID CARGO HEATERS**

First Thermal Systems, Inc., P.O. Box 4756, Chattanooga, TN 37405

**LIQUID OVERFILL PROTECTION SYSTEMS**

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**LOGISTICS**

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OED, 4646 N. Witchduck Road, Virginia Beach, VA 23455

**MACHINERY MAINTENANCE, REPAIR, OVERHAUL, AND TESTING**

Del Gaudio, 619 Industrial Rd., Carlstadt, NJ 07072  
Global Maritime Services, 247 SW 33 Court, Ft. Lauderdale, FL 33315  
Golfen Marine Company, Inc., 150 Van Brunt Street, Brooklyn, NY 11231  
New England Trawler Equipment Co., 291 Eastern Avenue, Chelsea, MA 02150

**MACHINERY MONITOR AND CONTROL SYSTEMS**

Electronic Marine Systems, 800 Fendale Pl., Eahway, NJ 07065

**MACHINING—On Site Repair**

Global Maritime Services, 247 SW 33 Court, Ft. Lauderdale, FL 33315

**MARINE ACCOMMODATIONS**

Directions in Design Inc., 633 Emerson, Suite 100, St. Louis, MO 63141  
Hopeman Brothers, P.O. Box 820, 435 Essex Ave., Waynesboro, VA 22980  
Jamestown Metal Marine Sales, Inc., 4710 NW Second Ave., Boca Raton, FL 33431  
Marine Accommodations, Inc., 8535-3 Baymeadows Rd., Ste 140, Jacksonville, FL 32256  
Maritime Services Corp., 3457 Guignard Dr., Hood River, OR 97031

**MARINE FURNITURE**

Directions in Design, 633 Emerson, Ste 100, St. Louis, MO 63141  
Jamestown Metal Marine Sales, Inc., 4710 NW Second Ave., Boca Raton, FL 33431  
Marine Accommodations, Inc., 8535-3 Baymeadows Rd., Ste 140, Jacksonville, FL 32256  
Maritime Services Corp., 3457 Guignard Dr., Hood River, OR 97031  
Wilson & Hayes, 101 Eastlake Avenue, East, Seattle, WA 98102

**MARINE SHIP MANAGEMENT**

Athlon Corp., 1810 Chapel Ave. West, Cherry Hill, NJ 08002

**METAL PRODUCTS**

Jamestown Metal Marine Sales, Inc., 4710 N.W. Second Ave., Boca Raton, FL 33431  
Harrington Metal Fabrication, P.O. Box 410, 6720 M 89, Fennville, MI 49408

**MOTORS**

Tech Systems, 401 Waterford Rd., Thomaston, CT 06787

**MULTI-CABLE PENETRATION DEVICE**

NMP, 1243 E. 60th St., Tulsa, OK 74153

**NAVAL ARCHITECTS, MARINE ENGINEERS, SURVEYORS**

Advanced Marine Enterprises, Inc., 1725 Jefferson Davis Hwy., Arlington, VA 22202  
CDI Marine Co., 9487 Regency Square Blvd., Ste. 500, Jacksonville, FL 32225  
Childs Engineering Corp., Box 333, Medfield, MA 02052  
Coral Dry Dock Engrs., Inc., 21 Pottery Ln., Dedham, MA 02026  
Cone Consultants, 15301 Frisco St., Seattle, WA 98148  
C.R. Lush, 18 Vessey St., New York, NY 10007  
Arthur D. Darden, 3200 Ridgeland Dr., Suite 403, Metairie, LA 70002  
Design Associates Inc., 14360 Chel Menteur Highway, New Orleans, LA 70129  
Diversified Technologies, 812 Live Oak Dr., Chesapeake, VA 23320  
Encon Mgmt. & Engineering Consultant Services, P.O. Box 7760, Beaumont, TX 77706  
GHM Inc. (Ind. Measurement Consultants), P.O. Box 1836, Newport News, VA 23601  
Gibbs & Cox, Inc., 50 West 23rd St., New York, NY 10010  
The Glaston Assoc., Inc., 600 Mutual Life Bldg., 605 First Ave., Seattle, WA 98104  
Morris Gurnick Associates, Inc., 130 Sutter St., Ste. 400, San Francisco, CA 94104  
C. Raymond Hunt Associates, 69 Long Wharf, Boston, MA 02110  
Hydrocomp, Inc., 45 James Farm Lee, P.O. Box 865, Durham, NH 03824  
J.H. Inc., No. 4 Executive Campus, Culbert Blvd. & Route 70, P.O. Box 5031, Cherry Hill, NJ 08034  
R.D. Jacobs & Associates, 11405 Main St., Roscoe, IL 61073  
James S. Kroger, 1515 NW 7th St., Ste. 124, Miami, FL 33125  
Rodney E. Lay & Associates, 13891 Atlantic Blvd., Jacksonville, FL 32225  
David P. Levy Enterprises, 527 Legendra Dr., Slidell, LA 70460  
MCA Engineers, Inc., 2960 Arway Ave., #4-103, Costa Mesa, CA 92626  
Alan C. McClure Associates, Inc., 2600 South Gessner, Houston, TX 77063  
John V. McCollum, Inc., 1199 Long Point Road, Mt. Pleasant, SC 29464  
McEroy Machine & Mfg Co., Inc., P.O. Box 4454, Biloxi, MS 39535-4454  
John J. McMullen Associates, Inc., 1 World Trade Ctr., Ste. 3000, N.Y. NY 10048  
MacPherson Maritime Services, 141 Jefferson Ave., Westfield, NJ 07090  
Fendall Marbury, P.O. Box 2321, Annapolis, MD 21401  
Marine Design & Operations, Inc., 226 Chestnut St., Roselle Park, NJ 07204  
Marine Management Systems Inc., 102 Hamilton Ave., Stamford, CT 06902  
Marine Power Associates, 1010 Turquoise St., Ste. 217, San Diego, CA 92109  
Maritech, Seacraft, Bay Road, Newmarket, NH 03857  
Maritime Design, Inc., 3020 Hartley Rd., Jacksonville, FL 32257  
R.J. Meilus & Co., 71 Hudson St., New York, NY 10013  
Nautical Design, Inc., 210 S. Andrews Ave., Suite 202, Ft. Lauderdale, FL 33316  
Northern Marine, P.O. Box 1169, Traverse City, MI 49685  
Ogden Government Services, 3211 Jernamtown Rd., Fairfax, VA 22030  
Olsen Marine Surveyors Co., P.O. Box 283, Port Jefferson, NY 11777  
Omiga Marine Engineering Systems, Inc., 11757 Katy Freeway, Ste 1100, Houston, TX 77079  
OED Systems Inc., 4646 Witchduck Rd., Virginia Beach, VA 23455  
M. Rosenblatt & Son, Inc., 350 Broadway, New York, NY 10013 and 620 Fulson St., Ste. 301, San Francisco, CA 94107  
Sargent & Herkes, 225 Baronne St., Suite 1405, New Orleans LA 70112  
Sea School, 10812 Gandy Boulevard, St. Petersburg, FL 33702  
Seaworthy Systems Inc., P.O. Box 965, Essex, CT 06426; 17 Battery Pl., New York, NY 10004; P.O. Box 975, Bamegal Light, NJ 08006; 2 Skyline Pl., 5203 Leeburg Pike, Suite 700, Falls Church, VA 22041; 1305 Franklin St., Suite 210, Oakland, CA 94612  
George G. Sharp, Inc., 100 Church St., New York, NY 10007  
R.A. Steam, Inc., 253 N. 1st Ave., Sturgeon Bay, WI 54235  
TIMSCO, P.O. Box 91360, Mobile AL 36691

**NAVIGATION & COMMUNICATIONS EQUIPMENT**

**ANSCHUTZ & COMPANY, ONE MADISON ST., EAST RUTHERFORD, NJ 07073**

AT&T, High Seas Dept., 412 Kemble Ave., Room C380, Morristown, NJ 07960  
Autronic Marine A/S, Drammensveien 108, N-2027 Oslo 2, NORWAY  
Cellnet Corp., 400 Main St., Stamford, CT 06901-3004  
Comsat Maritime Services, 9501 Entant Plaza SW, Washington DC 20024  
C. Plath, 2222 Severn Ave., Annapolis, MD 21403  
EDO Corporation, 2645 S 300 West, Salt Lake City, UT 84115  
Electronic Marine Systems, 900 Fendale Pl., Railway, NJ 07065  
Fairdie Enterprises, Inc., 2536 Sonata Dr., Columbus, OH 43209  
Furuno U.S.A., 271 Harbor Way, S. San Francisco, CA 94080  
Hose McCann, 9 Smith St., Englewood, NJ 07631  
Herschel, Inc., 91 Hoyt Drive, Newburyport, MA 01950  
IDB Aero-Nautical Communications, 15245 Shady Grove Rd., Rockville, MD 20850  
Kenwood USA Corp., Marine Prod. Div., 2201 E. Dominguez St., Long Beach, CA 90810  
Mackay Communications, 44 US Highway #1, P.O. Box 331, Elizabeth NJ 07027  
Marine Electric RPD, Inc., 50 Canal St., P.O. Box 1135, Clifton, NJ 07014-1135  
Megapulse, Inc., 8 Preston Court, Bedford, MA 01730-2380  
Nautronix, 15401 Vantage Pkwy W., Houston, TX 77032  
Naval Electronics, 5417 Jetview Circle, Tampa, FL 33634  
Norwegian Telecom, P.O. Box 6701, Oslo 1, NORWAY  
Novatech, 820 Comoran St., Victoria, BC V8W 1R1, CANADA  
Raytheon Marine Co., 46 River Road, Hudson, NJ 07035  
Robertson Marine Systems, 3000 Kinyard Street, Suite 207, Metairie, LA 70006  
SPD Technologies, 13500 Roosevelt Blvd., Philadelphia, PA 19116  
Scandnavian Marine Systems, P.O. Box 155, N-4111, Koblenz, NORWAY  
Smrad, 19210 33rd Avenue West, Lynnwood, WA 98036  
Sperry Marine, Inc., 1070 Seminda Trail, Chantokville, VA 22301  
Standard Communications, P.O. Box 92151, Los Angeles, CA 90009  
Summer Equipment Ltd., 24 West 4th Ave., Vancouver V5Y 1G3, CANADA  
Trimble Navigation, 585 North Mary Avenue, P.O. Box 3642, Sunnyvale, CA 94086  
Waterway Communications System, Inc., 453 E. Park Pl., Jeffersonville, IN 47130

**NOZZLES**

Harrington Metal Fabrication, P.O. Box 410, 6720 M 89, Fennville, MI 49408

**OIL—Marine—Additives**

Mobil Oil Corporation, 3225 Galois Road, Fairfax, VA 22037-0001  
Shell Oil, P.O. Box 2463, Houston, TX 77252  
Texaco International, 2000 Westchester Avenue, White Plains, NY 10600

**OIL/WATER SEPARATORS**

ACS Industries, Inc., 14208 Industry Rd., Houston, TX 77053  
Alla-Laval Separation, Inc., 955 Meams Rd., Warrminster, PA 18974-0556  
Blom & Voss AG, P.O. Box 1007 20, D-2000 Hamburg 1, GERMANY  
Blom & Voss-Simplex-Turnar, Inc., P.O. Box 168, Little Neck, N.Y. 11363  
U.S.A. Repe-Simplex-Turnar, Inc., P.O. Box 168, Little Neck, N.Y. 11363-0168  
Centrico, Inc. (Westfalia Separators), 100 Fairway Court, Northvale, NJ 07647  
Fast Systems, 3240 North Broadway, St. Louis, MO 63147  
MMC International, 60 Hamp Dr., Inwood, NY 11696  
National Fluid Separators, 8774 Industry Ct., St. Louis, MO 63144  
Nelson Industries, Highway 51 West, Stouton, WI 53589

**PAINT—COATING—CORROSION CONTROL**

Andean Coating Removal, 12205 S.W. 96th Ave., Miami, FL 33176  
Ameson, 201 N. Berry St., Brea, CA 92622  
The Amersent Corp., Corrosion Dynamics Div., 1100 Walnut St., Rosell, NJ 07203  
Esgard, Inc., P.O. Drawer 2698, Lafayette, LA 70502  
Gobal Tech, 9001 Westheimer St., Ste. 202, Houston, TX 77042  
Jamestown Distrib., 26 Narragansett Ave., P.O. Box 348, Jamestown, RI 02835  
Hampel Coatings, Foot of Cuse Avenue, Wallington, NJ 07067  
Melvin Pierce Marine Coating, Inc., P.O. Box 93, Sermes, AL 36575  
Microphor, Inc., Marine Div., 452 E. Hill Rd., P.O. Box 1460, Willis, CA 95490  
Sigma Coatings, 8979 Market St., Houston, TX 77029, 330 Rover Rd., Harvey, LA 70059, 1100 Adams St., Hoboken, NJ 07030

**PIPE FITTING/CONNECTING SYSTEMS**

Aerogrip Corp., 1695 Indian Wood Cir., Maumee, OH 43537-0631  
Deutsch Metal Components, 14605 Figueroa Gardens, CA 90248  
Loring, 396 Hatch Drive, Foster City, CA 94040  
Stanley G. Flagg Co., 1022 W. High St., Stowe, PA 19464

**PORT SERVICES**

Port of Portland, 5555 N. Channel Ave., Portland, OR 97217

**PRE-LUBE**

Florida Horizon Distribution, 13750 NW 4th Street, Suite 111, Fort Lauderdale, FL 33325

**PROPELLION EQUIPMENT—Screw Drives, Diesel Engines, Gears, Propellers, Shafts, Turbines**

Avondale Industries, Harvey Quick Repair, P.O. Box 116, Harvey, LA 70058  
American Air Filter, P.O. Box 35690, Louisville, KY 40432  
ASEA Brown Boveri, 1460 Livingston Ave., Newark, NJ 08602  
ASEA Brown Boveri (Stromberg), Inc., P.O. Box 185, 00381 Helsinki, FINLAND  
Argo International, 140 Franklin St., New York, NY 10013  
Aquamaster-Raumla Ltd., Box 220, SF-26101, Rauma, FINLAND  
Bergen Diesel A/S, P.O. Box 924, N-5002, Bergen, NORWAY  
Bird Johnson Company, 110 Norfolk St., Walpole, MA 02081  
CWF Hamilton & Co., Ltd., P.O. Box 709, Christchurch, NEW ZEALAND  
Caterpillar, 100 NE Adams Street, Peoria, IL 61629-2320  
Cotec Industries (Fairbanks Morse Engine Div.), 701 Lawton Ave., Beloit, WI 53511  
Cummins Engine Company, Mail Code 600 11, Box 3005, Columbus, IN 47302-3005  
Electro-Motive, div. General Motors, 3301 W. 5th St., La Grange, IL 60525  
Fincantieri, Diesel Engines Div.—G.M.T., Bagnoli della Rosandra 334, Trieste, ITALY  
Funciones RICE, AV Rios Espinoza No. 88, COL BENITO JUAREZ, Mazatlan, GE Naval & Drive Turbine Systems, 166 Boulder Dr., Fitchburg MA 01420  
Hatzomaster Marine, Kahlerberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241  
Krupp Mak, 7555 Danbro Crescent, Mississauga, Ontario, CANADA L5N 6P9  
Mapeco Products Inc., 90 Forest Ave., Locust Valley, N.Y. 11560  
Marine Gears, Inc., P.O. Box 689, Grenville, MS 39307  
Markischesch Werk, P.O. Box 1442, D-5884 Halver GERMANY  
MAN B&W Diesel, 17 State St., New York, NY 10004  
MAN B&W Diesel A/S, Ostervej 2, DK-4960 Høleby, DENMARK  
MAN B&W Diesel AS, Alpha Diesel, Nels Juels Vej 15, DK-9600 Frederikshavn DENMARK  
MAN B&W Diesel GmbH, Stadtbachstrasse 1, D-8900 Augsburg 1 GERMANY  
MKW Power Systems, 301 S. Church St., Rocky Mount, NC 27801  
New Sulzer Diesel Ltd., CH-9401, Winterthur, SWITZERLAND  
Nydans Marine Service A/S, P.O. Box 130, N-4818 Faeravik, NORWAY  
OmniTrust Inc., 9515 Sorenson Ave., P.O. Box 214, Santa Fe Springs, CA 90670  
Ovako Steel Couplings AB Sweden, S-813 00 Hofors SWEDEN  
Rohla SP Propellers SA, Via Silva 5, P.O. Box 251, 6828 Balaia SWITZERLAND  
Rohla SP Propellers USA, 4020 Mustang Road, Melbourne, FL 32934, USA  
Karl Senner Inc., 25 W Third, Kenner, LA 70062  
Schottel-Werft, D-5401 Spay, GERMANY  
Siemens Energy & Automation, Inc., Systems Div., Marine Systems no. America (A23N), 100 Technology Dr., Alpharetta, GA 30202  
Stewart & Stevenson, 1400 Desfrhan, P.O. Box 8, Harvey, LA 70059-0008  
Textron Lycoming, 550 Main St., Stratford, CT 06497  
Thrustmaster of Texas, 12227 K.F.M. 529, Houston, TX 77041  
J.M. Voith GmbH, Marine Division, Postfach 1940, D-7920, Heidenheim/Brenz,

**GERMANY U.S. Rep. Voith Schneider America Inc., 121 Susquehanna Ave., Great Neck, NY 11021**

Oy Wartsila Ab, Vasa and Abo Divisions, P.O. Box 244, SF-65100 Vasa, FINLAND  
West Tech Gear Corp., 2600 E. Imperial Highway, Lynwood, CA 90261  
Westinghouse Marine Div., 401 E Hendy Ave., Sunnyvale, CA 94088  
ZF of North America, Marine Sales, 500 Barclay Blvd., Lincolnshire IL 60069

**PROTECTIVE WRAPS**

PAVAFIB (Fiberglass Applications of North America), 1260 E Woodland Ave., Springfield PA 190

**PUMP—Repair—Drives**

Beckson Marine, 165 Holland Ave., Bridgeport, CT 06605  
Coffin Turbo Pump, Inc., 326 S. Dean Street, Englewood, NJ 07631  
Del Gaudio, 619 Industrial Rd., Carlstadt, NJ 07072  
Dresser Pump 401 Worthington Ave., Harrison, NJ 07029  
Golfen Marine Company Inc., 160 Van Brunt Street, Brooklyn, NY 11231  
Jim's Pump Repair, 48-55 36th St., Long Island City NY 11101  
Leistritz Corporation, 165 Chestnut Street, Allendale, NJ 07401  
Via Motivator, 99 W Hawthorne Ave., Suite 622, Valley Stream NY 11580

**REFRIGERATION EQUIPMENT/SERVICES**

Bailey Refrigeration Co., 2323 Randolph Ave., Avenel, NJ 07001  
Unitor Ships Service, Inc., 2375 W. Esther St., Long Beach, CA 90813

**REMOTE VALVE OPERATORS**

American United Marine Corp., 5 Broadway, Rt. 1, Saugus, MA 01906  
Teleflex, Inc., 771 First Ave., King of Prussia, PA 19406

**ROPE—Marine—Nylon—Hawser—Fibres**

Allied Signal Inc., Fibers Division, 1411 Broadway, New York, NY 10018  
American Manufacturing Co., 2005 Park Rd., P.O. Box 52125, Lafayette, LA 70505  
Dupont, Montgomey 405, 1011 Centre Road, Wilmington, DE 19805  
United Ropeworks (USA), Inc., 151 Commerce Dr., Montgomeryville, PA 18936

**SANITATION DEVICE—Pollution Control**

Jared Brown Brothers, 56 South Squirrel Rd., Auburn Hills, MI 48326  
Byrne, Rice & Turner, Inc., 1172 Camp Street, New Orleans, LA 70130  
Envirovac, Inc., 1260 Turret Dr., Rockford, IL 61111  
Fast Systems, 3240 North Broadway, St. Louis, MO 63147  
Microphor, Inc., 452 E. Hill Rd., P.O. Box 1460, Willis, CA 95490

**SCALE MODELS**

Sturgeon Bay Model Shop, 187 N Ninth Ave., Sturgeon Bay WI 54235

**SCUTTLES MANHOLES**

L.S. Baker & Assoc., 7527 NE 33rd Dr., Portland OR 97211

**SHIPBUILDING EQUIPMENT**

NEI Synmitt, Inc., 6970 S.W. 87th Ct., Miami FL 33176

**SHIPBUILDING—Repairs, Maintenance, Drydocking**

Aslomas Espanoles S.A., Pavia 17, 28003 Madrid, SPAIN  
Atlantic Marine, Inc., P.O. Box 3202, Mobile, AL 36652  
Atlantic Marine, Inc., 3500 Hoescher Dr., Jacksonville, FL 32226  
Avondale Industries Inc., P.O. Box 50280, New Orleans LA 70150  
Bender Shipbuilding & Repair, P.O. Box 42, Mobile AL 36601  
Bender Inc., 400 Gordon Drive, Bldg 501, Exton, PA 19341  
Bender Ship Repair, 120 NE 20th St., Miami, FL 33137  
Bisso Marine Co., P.O. Box 4113, New Orleans, LA 70178  
Bollinger Lockport & Larose, P.O. Box 250, Lockport, LA 70374-0250  
Boston Whaler, Inc., Commercial Products Div., 1149 Hingham St., Rockland, MA 02370  
Bourg Drydock, P.O. Box 1852, Houma, LA 70361  
Hitachi Zosen, Hitachi Shipbuilding & Engineering Co., 1-1 H-1 Tokyobashi, Chiyoda-ku Tokyo 100, JAPAN  
In-Place Machining, 1929 N. Buffum St., Milwaukee, WI 53212  
Institute for International Research, 437 Madison Ave., N.Y., N.Y. 10022  
Jacksonville, Shipyards, 750 E. Bay St., Jacksonville, FL 32202  
Jefcoat, Inc., P.O. Box 610, Jeffersonville, IN 47130  
Kvichak Marine, 615 N 34th St., Seattle, WA 98103  
Leevac Shipyards, P.O. Box 1190, HWY 90 East, Jennings, LA 70546  
Linaeve, Aparado 2138, 1103 Lisbon, Codex PORTUGAL  
M.L. Davis, Inc., P.O. Box 130, Lewis, Quebec, CANADA  
Marco, Inc., 2300 W Commodore Way, Seattle, WA 98109  
Munson Manufacturing, 150 Dayton, Edmonds WA 98020  
National Maintenance & Repair, Inc., P.O. Box 38, Hartford, IL 62048  
Newport News Shipbuilding, 4101 Washington Ave., Newport News, VA 23607  
Nichols Brothers Boat Builders, 5409 South Cameron Rd., Freeland, WA 98249  
Norcross Engineering Co., Inc., P.O. Box 529, 5785 Plantation Rd., Theodre, AL 36582  
Protecon, Ltd., Rua Eugenio Castro, 13A-rc, 2800 Almada, PORTUGAL, U.S. Rep.: Walter Thorsen, Inc., 79 Owens Rd., P.O. Box 755, Mahwah, NJ 07430-0755  
Thomsen Marine, 37 Brandford Street, Palatogue, NY 11772  
SeaArk, P.O. Box 210, Monticello, AR 71655  
SeaFab, P.O. Box 1651, 4111 Cedar St., Pascagoula, MS 39567  
Service Marine Industries, P.O. Box 3608, Morgan City LA 70381  
Skipper Shipyards, 621 Park Plaza Dr., Dept 21, LaCrosse WI 54601  
Southwest Marine, Foot of Sampson St., San Diego, CA 92113-0308  
Steiner Shipyard, Inc., P.O. Box 742, Bayou la Batre, AL 36509  
Swath Ocean, 979 G Street, Chula Vista, CA 92011  
Textron Marine Systems, 6800 Plaza Drive, New Orleans, LA 70127-2584  
Trinity Marine Group, Box 3029, Gulfport, MS 39505-3029  
Viking Marine, 301 Montour Pl., Ste 211, Oakdale, PA 15071  
Willard Marine, Inc., 1250 N. Grove St., Anaheim, CA 92806  
Zidell Marine Corp., 3121 S.W. Moody Street, Portland, OR 97221  
Zodiac of North America Inc., Thompson Creek Rd., P.O. Box 400, Stevensville, MD 21666

**SHIPYARDS**

Balehi Marine Inc., P.O. Box 600, Lacombe, LA 70445

**SIMULATOR TRAINING**

Houston Marine Training Services, 1600 20th Street, Kenner, LA 70062  
Marine Safety International, Marine Air Terminal, LaGuardia Airport, NY 11371

**SILENCERS**

Beard Industries Inc., P.O. Box 31115, Shreveport LA 71130

**STABILIZERS**

Blom & Voss-Simplex-Turnar, Inc. PO Box 168, Little Neck, N.Y. 11363  
Nasaf Stabilizers, Van Dusen & Meyer Inc., P.O. Box 558, Shelton, CT 06484

**STERN TUBE SEALS**

Blom & Voss AG, P.O. Box 1007 20, D-2000 Hamburg 1, GERMANY  
Blom & Voss-Simplex-Turnar, Inc. PO Box 168, Little Neck, N.Y. 11363  
U.S.A. Repe-Simplex-Turnar, Inc., P.O. Box 168, Little Neck, NY 11363-0168  
Roland Marine Inc., 90 Broad St., New York, NY 10004

**STUFFING BOXES**

Kahlerberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241

**SURVIVAL EQUIPMENT**

Parkey/Imperial, 241 Paritan Street, South Amboy, NJ 08879  
Schal Watercraft, P.O. Box 7008, Newark, DE 19714  
Viking Life Saving Equipment, 1625 N Miami Ave., Miami FL 33136

Buyer's Directory Continues on page

Maritime Reporter/Engineering News

## FOR MORE INFORMATION ON EQUIPMENT AND SERVICES ADVERTISED IN THIS ISSUE

CIRCLE THE APPROPRIATE NUMBER ON READER SERVICE CARD OPPOSITE

ADVERTISER	EQUIPMENT /SERVICE	CIRCLE NO.	ADVERTISER	EQUIPMENT /SERVICE	CIRCLE NO.
A & J MANUFACTURING	ELECTRONIC ENCLOSURES	255	IDB AERONAUTICAL	SATELLITE COMMUNICATION	267
ALDEN ELECTRONICS	ELECTRONICS	258	IMA	MARKETING INFORMATION	288
ALLIED SIGNAL	ROPES/FIBERS	262	INPLACE MACHINING	REPAIRS/SERVICES	305
AMCLEAN	POWER CLEANING SYSTEMS	260	JEAMAR WINCHES	WINCHES	221
AMERICANWELDING SOCIETY	EXPOSITION	201	JEFFREY'S STEEL	FULL SERVICE STEEL COMPANY	269
AMVER	SAFETY EQUIPMENT	295	JIMS PUMP	PUMP REPAIR	222
AN TRAC GROUP INC.	CORROSION DEOXIDIZER	296	KAHLENBERG BROTHERS	HORNS	276
AQUAMASTER-RAUMA LTD	PROPULSION EQUIPMENT	286	KLATTENBERG MARINE	SPARE PARTS/REPAIRS	302
ASTILLEROS ESPANOLAS	SHIPBUILDING	202	KVCHAK MARINE	SHIPBUILDERS	282
ATLANTIC MARINE, AL	SHIPBUILDING	298	LANG MANUFACTURING	MARINE COOKING EQUIPMENT	223
ATLAS MARINE SERVICES	GALLEY EQUIPMENT	272	LAQUE CENTER FOR CORROSION TECHNOLOGY		224
BARATARIA LIFTING COMPANIES INC.	COMPUTER LIFTING	278	LEEVA SHIPYARDS	SHIPBUILDING/REPAIRS	225
BEARD INDUSTRIES	MAXIM DESALINATORS	203	MARCO POLLUTION (SEATTLE)	SPILL RESPONSE VESSEL	226
BENDER SHIPBUILDING	SHIPBUILDING	253	MARINE SAFETY INTERNATIONAL	SAFETY	273
BOSTON WHALER	'IMPACT 21' WORKBOAT	204	MARINE TRAVELIFT	CRANES/HOIST	274
BRITISH TELECOM	TELECOMMUNICATIONS	205	MCLEROY MACHINE	DECK EQUIPMENT	271
JERED BROWN BROTHERS	MARINE SANITATION EQUIPMENT	304	MEGAFILM	TEMPORARY FLOOR & WALL PROTECTION SYSTEM	227
CARLING TURBINE CO.	MARINE BLOWERS/EXHAUSTERS	206	MICRONAUTICS	IBM COMPATIBLE SOFTWARE	263
CAST, INC.	AUTOMATIC DEPENDENT SURVEILLANCE	257	MICROPHOR	SANITATION DEVICES	228
CENTERLINE POWER	DIESEL FUEL INJECTION	207	MINERALS RESEARCH & RECOVERY	PERMA BALLAST	297
CHESAPEAKE SPECIALTY PRODUCTS	METGRAIN STEEL ABRASIVES	290	FRANK MURPHY MFG.	GAUGES/SWITCHES	275
CLA-VAL	VALVES	291	NEVA	EXHIBITION	299
COMSAT MARITIME SERVICES	SATELLITE COMMUNICATIONS	301	NEWPORT NEWS SHIPBUILDING	SHIPBUILDING/REPAIRS	229
CORROSEAL, INC.	MARINE COATINGS	261	ORION CORPORATION	BEARINGS	230
COSPOLICH	REFRIGERATION	292	PHILADELPHIA RESINS	MARINE COATINGS/COMPOUNDS	231
C. PLATH	STEERING SYSTEM	268	POLARMARINE	TANK CLEANING EQUIPMENT	232
CRAFT AMERICA	SKILLED LABOR COMPANY	208	RAYTHEON MARINE	PATHFINDER/ST RADIO	233
J. CRANE MARINE USA	SEALS	209	ROBERTSON MARINE	ELECTRONICS	277
CREATIVE SYSTEMS	HYDROSTATICS SOFTWARE	251	SASAKURA ENGINEERING	FRESH WATER GENERATOR	234
CRUISE & FERRY	EXHIBITION	210	SASMEK EXHIBITION	EXHIBITION	200
DEL GAVIO	MARINE HYDRAULICS	211	SEAARK MARINE	BOAT BUILDERS	235
DREW AMERIOD	MAGNAKOTE RUST PREVENTATIVE	250	SEA FAB	SHIPBUILDING	289
ELTECH INTERNATIONAL	MARINE SANITATION DEVICE	281	SEA RECOVERY	REVERSE OSMOSIS DESALINATION SYSTEM	266
EMS/TRACOR MARCON	NAVIGATION/COMMUNICATIONS	294	KARL SENNER	PROPULSION EQUIPMENT	236
EMS/TRACOR MARCON	NAVIGATION/COMMUNICATIONS	293	SIGMA COATINGS	COATINGS/CORROSION CONTROL	237
ENVIROVAC	MARINE SANITATION SYSTEMS	303	SIMRAD	MARINE ELECTRONICS	238
ESGARD	BALLAST/TANK COATINGS	213	SPD TECHNOLOGIES	SHIPBUILDING/REPAIRS/DRY DOCKING	239
R.W. FERNSTRUM	GRID COOLERS	252	SUMMER EQUIPMENT	HYDRAULIC STEERING SYSTEM	256
FLORIDA HORIZON DISTRIBUTION	PRE-LUBE	214	TEXTRON MARINE	SES MULTIPURPOSE VESSEL CONSTRUCTION	240
FURUNO	COMMERCIAL RADARS	215	THRUSTMASTER OF TEXAS	OUTBOARD PROPULSION UNIT	241
L.F. GAUBERT	ELECTRICAL CABLES	216	TODD PACIFIC SHIPYARDS	SHIPBUILDERS/REPAIR	242
GAYLORD INDUSTRIES	GALLEY EXHAUST HOODS	270	TRIMBLE NAVIGATION	GLOBAL POSITIONING SYSTEM	243
GENERAL THERMODYNAMICS	BMEP BALANCER	254	TRIMBLE NAVIGATION	GLOBAL POSITIONING SYSTEM	244
GIBBS & COX	NAVAL ARCHITECTS/MARINE ENGINEERS	265	TRINITY MARINE	SHIPBUILDING	287
GRAVES & SCHNEIDER	BROKERAGE	279	UNIVERSAL DISTRIBUTION	GAMBLING/CASINO	280
HAGGLUNDS DENISON	HYDRAULIC PUMPS	217	VM TRUCKING	AIR FREIGHT TRUCKING	249
HAMILTON JET	WATER JETS	218	WARTSILA DIESEL OY	DIESEL ENGINES	245
HANJIN HEAVY INDUSTRIES	SHIPBUILDING	219	WASHINGTON CHAIN & SUPPLY	DECK EQUIPMENT	283
HAZ-MAT RESOURCES	ON BOARD SPILL KIT	284	WESTERN MACHINE WORKS	HYDRAULIC TOW PINS	246
HEMPEL COATINGS	HEMUCRYL WATER-BORNE PAINTS	264	WILLARD MARINE	RIGID INFLATABLE BOATS	259
H.M. HILLMAN BRASS & COPPER	MARINE ALLOYS	220	G.J. WORTTELBOER	ANCHORS/CHAINS	247
HYDRA-SEARCH	VALVES/FITTINGS	300	ZSI	CLAMPING SYSTEM	248

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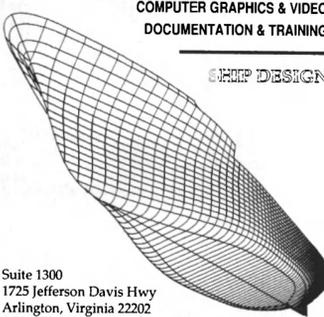
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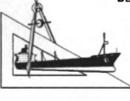
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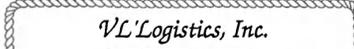
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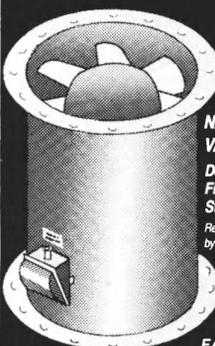
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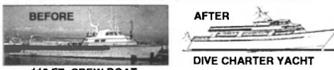
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