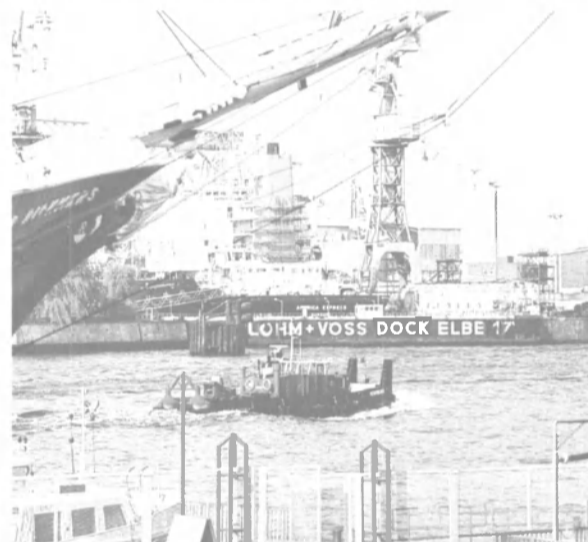
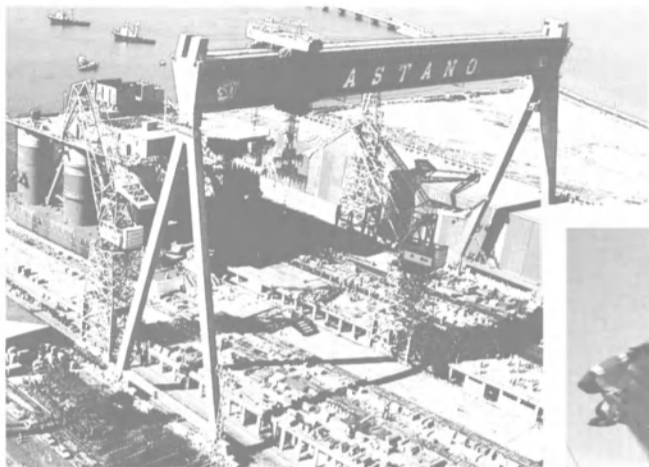


# MARITIME REPORTER AND ENGINEERING NEWS



## European Shipbuilding & Repair

Posidonia And Ro-Ro '90

**NAVAL TECHNOLOGY & SHIPBUILDING**

MAY 1990 ISSUE



OWNER	VESSEL DATA		
	VESSEL TYPE	SIZE	UNITS
Del Monte	Reefer	370.000 cu ft	4
	Reefer	580.000 cu ft	5
Knutsen	Tanker	112.500 DWT	3
	Chemical carrier	12.500 DWT	2
	Chemical carrier	14.625 DWT	1
C.N.N.	Tanker	140.000 DWT	2
Seatankers	Phosphoric acid carrier	25.000 DWT	2
	Tanker	140.000 DWT	2
Phiasud	Trawler	33,0 m. Lbp	5
	Trawler	33,0 m. Lbp	9
Albacora	Tuna purse seiner	91,0 m. Lbp	1
	Tuna purse seiner	66,6 m. Lbp	1

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In shipbuilding, as in almost any kind of business, satisfied clients represent one of your most valuable assets.

But how do you measure just how satisfied a client actually is?

There are many ways, but one of the most obvious (and reassuring) indications is the number of clients who return to place orders for further newbuildings.

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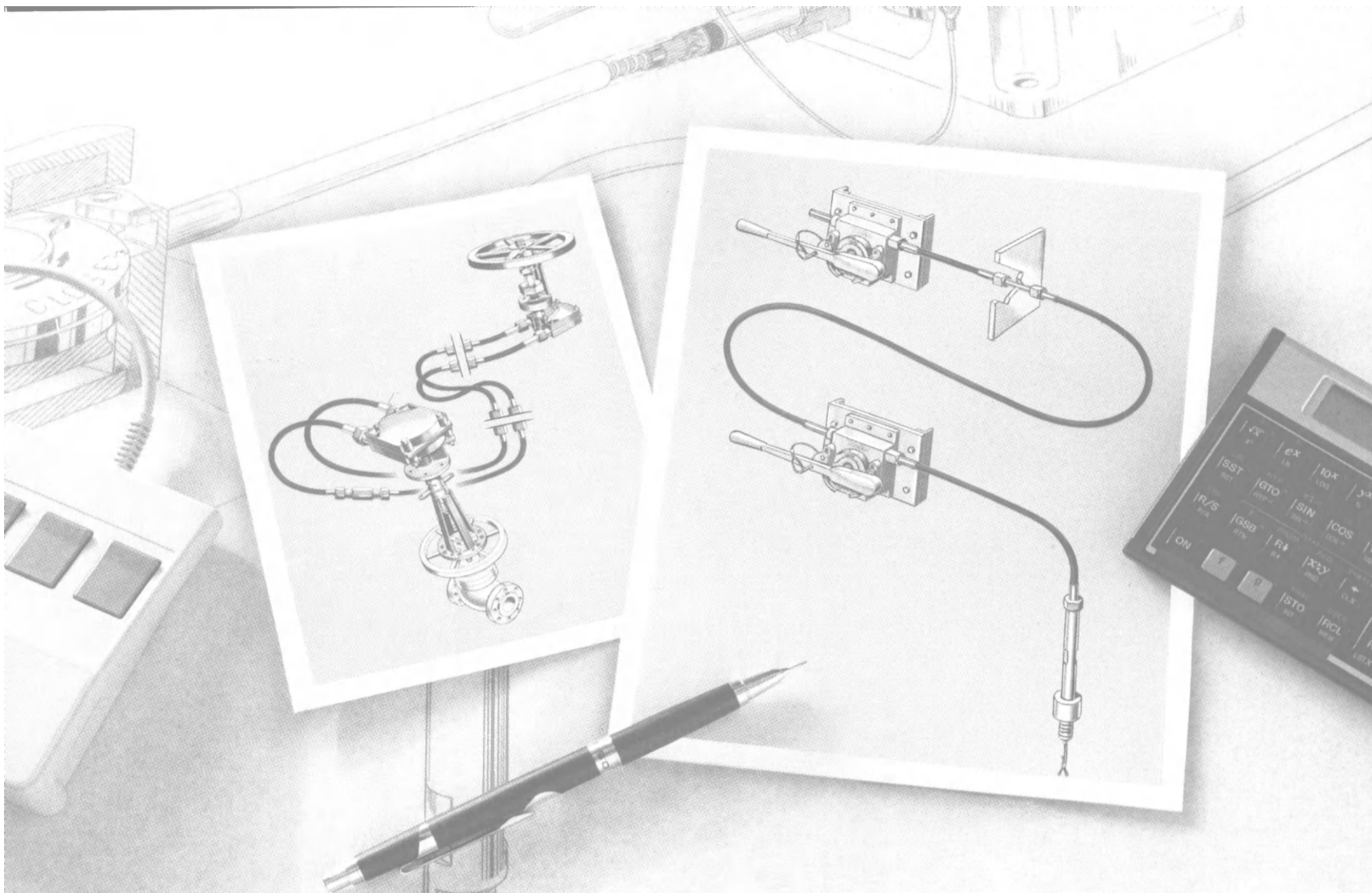
And of course, that's particularly satisfying for us.

# **ASTILLEROS ESPAÑOLES**

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**The Shipbuilders of Spain**



Left: Remote Mechanical Valve Actuator. Right: Remote Trip Valve Actuator.

## ***RMVA, and now RTVA Teleflex designs solutions for Remote Valve Operation***

Engineering solutions aren't born. They're carefully designed. Consider RMVA, the Remote Mechanical Valve Actuator System from Teleflex, Inc. Naval Technologies Division.

The RMVA System serves as the industry standard for quality and performance in remote valve operation, and has been installed on virtually every ship class in the U.S. Navy.

Teleflex engineers solve problems using first-hand knowledge gained through years of experience on Naval vessels.

Teleflex has now found the solution to the problems long associated with Trip Valve Operators: the Remote Trip Valve Actuator System, or RTVA.

The RTVA System is designed first for survivability, as it eliminates shock-induced valve closures associated with the current cable/pulley systems.

The RTVA System is cost effective. It is completely sealed, permanently lubricated and corrosion resistant.

It's maintenance-free operation saves valuable manpower—allowing the ships' force to work on more critical tasks.

Design simplicity assures ease of installation with minimal labor requirements. Installation may be accomplished during overhaul, repair, or new construction.

Specify Teleflex for remote valve operators.

Call or write today for your free RMVA or RTVA Design brochure.

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naval technologies division

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For RMVA Brochure, circle 319 on Reader Service Card. For RTVA Brochure, circle 320 on Reader Service Card.

# ON THE COVER

Photos, clockwise, from left of logo: Wartsila Diesel-powered Railship III, built by Schichau Seebeckwerft, FRG; Hamburg-based Blohm + Voss shipyard; aerial view of Lisnave's Margueira yard in Portugal; ship under construction at Italy's Fincantieri; the Astano shipyard of Astilleros Espanoles; and (center) the excursion/dinner boat Spirit of Boston being launched at Blount Marine Corporation, Warren, R.I.

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### Daewoo Receives \$400-Million Order To Build Four VLCCs

South Korea's Daewoo Shipbuilding & Heavy Machinery Ltd. recently received a \$400-million contract to construct four Very Large Crude Carriers (VLCCs) for Gotaas-Larsen Shipping Corporation.

The 300,000-dwt vessels will be of double-hull design and will be built at the company's Okpo shipyard. The vessels are scheduled for delivery in 1992 and 1993.

### Tracor Wins \$4.5-Million Contract For Navy Surface Ship Programs

Tracor Applied Sciences, Inc., a subsidiary of Tracor, has received a contract from the Naval Underwater Systems Center (NUSC) to provide engineering and technical services to its antisubmarine warfare advanced development programs. This three-year contract has a total value of \$4.5 million.

K.B. Hamilton, group vice president for Tracor, said the company will provide engineering and technical support services involving design, installation, and test of low-frequency hull-mounted and towed sources, and multiline towed arrays. The work will also include efforts associated with the Navy's USS Glover initiative which provides a test platform for sonar development programs.

## MARITIME REPORTER and Engineering News

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

ISSN-0025-3448

No. 5

Volume 52

118 EAST 25th STREET  
NEW YORK, N.Y. 10010  
(212) 477-6700  
Telex: MARINTI 424768  
Telefax: (212) 254-6271

ESTABLISHED 1939

Maritime Reporter/Engineering News is published monthly by Maritime Activity Reports, Inc. Mailed at Second Class Postage Rates at Waterbury, CT 06701 and additional mailing offices.

Postmaster send notification (Form 3579) regarding undeliverable magazines to Maritime Reporter/Engineering News, 118 East 25th Street, New York, NY 10010.

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Safety is the most important consideration in our bridge designs. In every Sperry Marine configuration, from the first one-man bridge on the "Petrobulk Mars," to the many new tankers, containerships, ro-ros and passenger ferries fitted with Sperry Marine's Integrated Bridge Systems, vessel safety is the prime consideration.

Our concern for safety has been recognized by the Seatrade Safety at Sea Award presented to Sperry Marine for its touchscreen control technology, the same technology used extensively in many of our integrated bridge equipments.

## Flexible!

Designed to provide ultimate versatility to meet any operational need. The unique Navigation Workstation tailors all planning functions according to voyage requirements. Sperry Marine's SeaNET integrates all essential sensors to assure maximum usefulness.

And Sperry Marine's Integrated Bridge design provides for the future, too. The exceptional flexibility of a Sperry Marine Bridge will readily accept additional sensor inputs whenever they are installed to meet future requirements.



**For additional information on this and other Sperry Marine products contact:**

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Subsidiary of  
Newport News Shipbuilding  
A Tenneco Company



## \$1.5-Million Contract For Navy Anchor Chain Awarded To Lister

Lister Chain & Forge Inc., Blaine, Wash., was recently awarded a \$1.5-million contract by the Naval Fleet Engineering Command, Port Hueneme, Calif., for the supply of anchor chain to replace and upgrade existing fleet moorings throughout the

world.

Lister manufactures stud link anchor and mooring chain to D.O.D. MIL specifications, ABS, Lloyd's and A.P.I. requirements, and supplies these products to the U.S. Navy, U.S. Army and the U.S. shipbuilding industry.

For more information and free literature on Lister anchor chain,

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## ADVERTISE IN THESE SPECIAL ISSUES



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HONORING TWO CENTURIES OF SERVICE

### U.S. COAST GUARD 200th ANNIVERSARY EDITION

**JULY 1990**

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- **NAVAL TECHNOLOGY & SHIPBUILDING**  
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- **Marine Fuels, Lubricants & Additives**

### ANNUAL NWC EDITION AUGUST 1990

Advertising Closing Date - July 2

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With Full Cooperation of NWC

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Annual Meeting Review Feature
- ★ • **AWO - American Waterways Operators**  
Fall Convention & Directors Meeting Feature
- ★ • **INTERNATIONAL TUG CONVENTION & IMSC '90**  
11th Annual Tug Convention & Exhibition and International Marine Salvage Conference
- **U.S. SMALL & MEDIUM-SIZED YARDS REVIEW**  
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## 21-Percent Increase In World Shipbuilding Output Reported

The latest world shipbuilding statistics published by Lloyd's Register (LR) show an increase of 2.3 million gross tons (gt) (21.3 percent) in new ship completions in 1989 from the previous year and up by almost 1 million gt from 1987.

The total output in 1989 amounted to 13.2 million gt, while new orders reported placed in 1989 totaled 19.3 million gt—approximately 6.1 million gt more than the deliveries during the same period, according to LR's Annual Summary of Merchant Ships Completed during 1989.

A further, bigger increase in completions is projected for 1990 as a result of the recent big increase in new orders. Of the 31.1 million gt total order book at the end of 1989, 17.8 million gt was scheduled for delivery in 1990, representing an increase of 34.1 percent in output compared with 1989. In addition, some of the new orders placed in the first two months of 1990 and amounting to 5.7 million gt (provisional) are also scheduled for delivery in 1990.

Japan accounted for 40.5 percent of the total output in 1989, with South Korea in second place with 23.4 percent, compared with 37 and 29 percent, respectively, in 1988. In third position were People's Repub-

lic of China and Taiwan, followed by Yugoslavia, West Germany, Denmark and Italy.

In terms of tonnage, Japan's output totaled 5.4 million gt (up by 1.3 million gt). Of this, 2.2 million gt (40.2 percent) was ore and bulk carriers and 1.7 million gt (31.6 percent) oil tankers.

The tonnage delivered by South Korea fell by 73,000 gt to 3.1 million gt. Of the total, 2.2 million gt (72.4 percent) was oil tankers.

Worldwide, tankers represented 37.9 percent (unchanged) of all completions. In terms of tonnage, the output increased by 882,000 gt to 5 million gt, of which 2.3 million gt (44.8 percent) was built in South Korea.

Bulk carrier output amounted to 3.9 million gt (up 1.6 million gt), representing 29.4 percent of the total. Japan's contribution (2.2 million gt) accounted for 55.6 percent of this tonnage.

General cargo ship output fell by 715,000 gt to 1.2 million gt, while containership completions were down by 225,000 gt to 1.2 million gt.

Liquefied gas and chemical tankers completed showed a significant increase, from 153,000 gt in 1988 to 653,000 gt in 1989.

## MSI-Operated CAORF Facility Selected To Assess Operational Impact Of New BC Superferries

—Free Literature Available—

The Computer-Aided Operations Research Facility (CAORF) operated by MarineSafety International (MSI) at Kings Point, N.Y., has been selected by the British Columbia Ferry Corporation, Victoria, B.C., to assist their new construction division in assessing the operational impact of planned new superferries on existing marine facilities.

The Superferries are approximately 100 feet longer than the largest ferries presently operated by the corporation. The superferries will increase vehicle capacities by 40 percent over the largest existing ferries.

The operations and design analysis will include preparing a precision response model of an existing V Class ferry and a new superferry. Visual, depth, bank, current and radar simulations will be prepared for two terminals and specific waterways. Experienced B.C. Ferry Masters will pilot the existing and new ferries during a carefully designed and controlled real-time si-

mulator test program. Data collected during the test program will be reduced and analyzed. These findings will be combined with subjective data to produce a final report.

The operations and design study will be completed in approximately six months. It will provide the new construction division with a solid basis for planning and while offering maximum safety and service for the users.

Using the same simulations, training courses will be provided by MarineSafety for BC Ferry Masters just prior to arrival of the new superferries.

MarineSafety is a wholly owned subsidiary of FlightSafety International, a leading simulator training organization for the aviation industry.

For free literature detailing the simulation services offered by MarineSafety International,

Circle 93 on Reader Service Card

## New Fuel And Marine Marketing Department Formed By Texaco Inc.

Texaco Inc., White Plains, N.Y., recently announced the formation of the Texaco Fuel and Marine Marketing Department. Formerly known as the Texaco International Marine Sales Department, the restructured department will more clearly define the organization's expanded and diverse business activities, said **William S. Barrack Jr.**, senior vice president of Texaco Inc.

Mr. **Barrack** also announced that **James J. Bartell** will continue to head the department as its general manager.

"The original business lines of the department were based on the traditional role of supplying petroleum products solely to the marine industry. The scope of marketing activity now covers the worldwide marketing and trading of fuel oil to all classes of fuel users, as well as the sales of selected diesel fuels, lube oils and greases," said Mr. **Barrack**.

For free literature detailing the fuel and marine services offered by Texaco Fuel and Marine Marketing Department,

Circle 85 on Reader Service Card

## Lykes Names Senior VPs In Planning And Finance

To meet the changing demands of the industry and position itself for the future, **W. James Amoss Jr.**, chairman and chief executive officer of Lykes Bros. Steamship Co., Inc., has announced the election of a new senior vice president of planning and analysis and the election of a new chief financial officer.

**J.T. Lykes III**, formerly senior vice president and chief financial officer, has been named senior vice president, planning and analysis.

**John D. List**, formerly senior vice president, planning and analysis, has been named senior vice president and chief financial officer.

Both Mr. **Lykes** and Mr. **List** will report to president and chief operating officer **Eugene F. McCormick**.

## Wallenius Motorships Names Raymond Ebeling Executive Vice President

Wallenius Motorships, Inc., the U.S. subsidiary of Wallenius Lines of Sweden, has announced the appointment of **Raymond P. Ebeling** as executive vice president.

**Udo Reif**, president of Wallenius Motorships, stated that Mr. **Ebeling's** responsibilities would include marketing, sales, traffic and customer service.

Mr. **Ebeling** has held several senior management positions with Sea-Land Service, Inc. and Seatrain Lines, most recently serving as vice president, pricing and marketing for Sea-Land's Atlantic division.

Circle 314 on Reader Service Card

May, 1990

## PBI Awards \$2.8-Million Order To MagneTek ALS

MagneTek, Inc., a leading manufacturer of electrical equipment, recently announced that MagneTek ALS received an order from Peterson Builders Inc. (PBI) for equipment exceeding \$2.8 million.

MagneTek ALS will provide the shipbuilding company with nine SCR motor drives and six solid state pulse generators. The equipment will be installed aboard the mine countermeasure ships MCM-12, -13 and -14.

MagneTek ALS, a MagneTek Defense Systems company, designs and develops custom and standard power-conversion and conditioning equipment for demanding govern-

ment and military applications. Among this leading power-conversion specialist's most notable accomplishments are the pioneering and perfecting of the use of high-level, precise transistorized power converters and innovations for power distribution systems.

For free literature on MagneTek electrical equipment,

Circle 55 on Reader Service Card



## Stolt Partner To Purchase Six Ships For \$111 Million

Stolt Partner S.A., a new company being launched on the Oslo Stock Exchange, will use the \$63 million raised by share offering in conjunction with bank financing to purchase six ships from Stolt Tankers for a price of \$111 million. All aspects of marketing, operations and ship management will be provided by Stolt Tankers under contract and the ships will continue to trade in the Stolt Tankers Joint Service for the account of Stolt Partner.

## Tidewater Equipment Names McMichael President And GM

**James A. McMichael** has been named president and general manager of Tidewater Equipment Corporation in Chesapeake, Va.

Mr. McMichael was formerly vice president of production with the barge building and steel fabrication company. He succeeds **J.L. Freeman**, who has retired after 29 years of service.

## Free Literature Offered On New Navy-Approved Fire Retardant Coating

Last year the U.S. Navy approved Hamilton Chemical Corporation's Formula #303 to protect PVC cable which normally ignites at 300 degrees F from flame and temperatures exceeding 2,000 degrees F for periods in excess of 60 minutes, according to the New York-based firm.

Formula #303 passed all of the U.S. Navy fire, shock, salt water and abrasion tests required of a cable coating on a vessel in a combat situation. Formula #303's fire retardant capabilities are coupled with characteristics that make this product suitable for use in industrial and consumer markets. Formula #303 is considered nontoxic in all forms and water- and weather-resistant. The fire retardant does not decompose when saturated with hydrocarbons and its ability to withstand multiple fires makes it a protective coating that can be relied on for years.

As of January 1, 1990, Hamilton Scientific & Development Corporation was created to introduce this environmentally safe fire retardant technology to the industrial, consumer and maritime markets. Formula #303's ability to coat steel and wood in addition to its thermal conductivity rating of only eight percent make this product completely versatile for all types of non-military applications from construction to telecommunications to electric generation. Ease of application is another major attribute for this barrier coating as it may be applied through readily available and unsophisticated equipment from a sprayer to a paint brush.

For free literature detailing Formula #303 from Hamilton Scientific & Development,

Circle 10 on Reader Service Card

## NASSCO Awards PacOrd Major Waveguide Contract

PacOrd, a unit of the Philadelphia-based SPD Technologies, has been awarded a major waveguide contract by National Steel and Shipbuilding Co. (NASSCO) of San Diego, Calif.

One of the nation's premier producers of waveguide, PacOrd will

fabricate and install all waveguide for the new construction of AOE-6 and AOE-7 U.S. Navy replenishment ships being built by National Steel in San Diego.

Located in National City, Calif., PacOrd's waveguide shop has been in operation since 1971 and offers full service, customized waveguide capabilities from targeting to testing for rectangular and elliptical copper, bronze and aluminum wave-

guide. The company, which is headquartered in San Diego, also provides complete refurbishment of existing waveguide runs.

SPD Technologies is a world leader in the development, manufacture and service of shipboard systems protection equipment.

For further information and free literature,

Circle 22 on Reader Service Card





**INDASA Names T.A.S.T.  
North American Agent  
—Literature Available**

Industrial De Acabados, S.A. (INDASA) has selected T.A.S.T. Corporation of Fairfield, N.J., to be their exclusive representative for the U.S. and Canada, according to

an announcement by T.A.S.T. president Alfred E. Stanford.

INDASA, founded in 1968, is a premier ship coating contractor for major shipyards throughout Spain.

For free literature detailing the equipment and high quality control standards and services of INDASA,

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## Now only one desalination source on earth offers so much at sea.

**N**ever before have such an extensive, high-quality product range, competitive pricing structure, global service and comprehensive expertise in marine desalination been provided by one single source.

Desalt — the company which has moulded together the combined resources of Atlas and Nirex — must be welcome news for the entire maritime industry.

Whatever capacity of constant fresh water you need on board, Desalt can deliver. Whether the requirement is for tankers and trawlers. Fish factory and surimi ships. Cruise liners, coasters, container vessels. Offshore rigs and platforms. New-build or retrofit. And our spares and service back-up is established in every major port on earth.

From developing plate heat exchanger technology to our pioneering work in cooling water system optimisation, we have made a major contribution to lower operating costs for all types of maritime enterprise.

As for the future, we're investing heavily right now in improving even further the present Atlas and Nirex technology and in evolving still more efficient, cost-effective techniques. For example, we've perfected a remarkable multi-stage, low-maintenance, highly corrosive-resistant Desalt distiller about half the size of plant with similar capacity.

So today, wouldn't it be wise to discover more about Desalt? Make contact by phone, fax, telex or letter with your local Alfa-Laval Desalt representative or direct to the address below.

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**Don't put to sea  
with anything less.**

Circle 203 on Reader Service Card

May, 1990

## ELECTRONICS UPDATE

### DRS Offers Advanced Sonar Signal And Video Processing Systems

Free Color Literature Available

Diagnostic/Retrieval Systems, Inc. (DRS), Oakland, N.J., is a prime defense contractor designing and manufacturing advanced systems for signal processing, video-image display, data recording, storage and playback, and training for undersea warfare, command, control, communications and intelligence (C<sup>3</sup>I) and other military and governmental applications. The company's systems are deployed aboard surface ships and submarines, as well as in the air and on land for target detection, classification, localization and attack involved in a number of strategic and tactical military initiatives.

DRS is a major supplier of integrated signal processing, display, recording and trainer systems for Anti-Submarine Warfare (ASW) surface and subsurface fleets and coordinates shipboard-technology developments with air programs for the integrated operation of ships with aircraft.

DRS pioneered passive sonar detection for surface ships with the AN/SQS-54—the original acoustic signal processor deployed on U.S. Navy aircraft carriers.

Since then, DRS has become the Navy's prime contractor for the AN/SQS-17 sonar signal processing system, one of the company's major systems on board over 100 Navy ships, and its more advanced version, the AN/SQR-17A.

The AN/SQR-17A, a totally integrated submarine detection, classification, display and recording system for ships, is the sixth generation in this product line. It includes the Sonar Signal Processor and Display System, the RD-420B Tape Recording System, the AN/ARR-75 Sonobuoy/Receiver Interface Unit and an antenna unit. The system analyzes and displays eight channels of processed information from a num-

ber of the most advanced helicopter-deployed and ship-launched sonobuoys, as well as passive sonar data from hull-mounted and towed-array sonars.

Other advanced electronic equipment from DRS includes the signal processor of the AN/SQR-18A Tactical Towed Array Sonar System (TACTAS), which processes signals received from sensors towed behind a ship and the Advanced Video Processor (AVP), a display unit selected for the AN/UYQ-21 acoustic display stations in the AN/SQQ-89 sonar suite, planned for deployment on board most U.S. Navy ASW ships. Designated the "OJ-653/UYQ-21(V) Integrated Display Console" for this application, it can process and display sonar, radar and infrared images for electronic countermeasures (ECM) and strategic and tactical C<sup>3</sup>I. This display console is expected to become the standard bus, hardware and software modules with high-speed, high-data-rate video processing.

DRS has emphasized the need for on-board training for many years. The company's ASW acoustic simulator systems were developed for training new military personnel and for maintaining the skills of veteran sensor operators at all proficiency levels.

Diagnostic/Retrieval Systems' AN/SQR-17A(V) On-Board Trainer is embedded in the AN/SQR-17A Processor for use on U.S. Navy FF-1052 Class frigates. A high-fidelity, modular, acoustic simulator, it sharpens the skills of sonar operators through target identification, analysis and classification.

For free color literature detailing the advanced sonar signal processing systems and advanced display systems from DRS,

Circle 94 on Reader Service Card

### Conoco Inc. Orders Two Double-Hull Tankers From Samsung Shipbuilding

U.S. oil producer Conoco Inc., Houston, Texas, recently ordered two double-hulled 95,000-ton tankers from South Korean Samsung Shipbuilding & Engineering for operation in the Gulf of Mexico.

The double-hull tanker contract represents a break by Conoco from other U.S. oil firms, which have resisted ordering such type vessels.

At present, bills have been passed by both the House and the Senate concerning the fitting of double bottoms and double hulls on all tankers and tanker barges operating in

domestic ports.

The House version of the bill would require that existing vessels be retrofitted with double bottoms over seven years and double hulls over 15 years.

The Senate version calls for further study before passing any legislation.

Both bills are currently under review by the House-Senate Conference Committee.

The legislation would not only affect the 153 U.S.-flag tankers and 1,800 oil barges, but also the 200 to 300 foreign tankers serving U.S. ports. The American Petroleum Institute estimates that it would cost more than \$16.6 billion to retrofit all of these vessels.

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## International Marine Awarded \$170.5-Million MSC Contract

The U.S. Navy's Military Sealift Command (MSC) awarded a fixed-price-plus-cost reimbursables contract totaling \$170,484,164 to International Marine Carriers, Inc. of Mineola, N.Y., for the operation and maintenance of nine Sealift Class tankers: USNS Sealift Antarctic, USNS Sealift Arabian Sea, USNS Sealift Arctic, USNS Sealift Atlantic, USNS Sealift Caribbean, USNS Sealift Indian Ocean, USNS Sealift China Sea, USNS Sealift Mediterranean, and USNS Sealift Pacific. These ships are part of MSC's Strategic Sealift Force and are used to distribute Department of Defense petroleum products worldwide.

## Guthans Elected AWO Chairman Of The Board; Farrell Re-elected President



Robert A. Guthans



Joe Farrell

**Robert A. Guthans**, president and chief executive officer of Mobile, Alabama-based Midstream Fuel Services, Inc., and its two subsidiary companies, Tenn-Tom Towing Company, and Petroleum Energy Products Company, was elected chairman of the board of the American Waterways Operators (AWO)—the national trade association of the inland and coastal barge and towing industry—at the association's annual meeting in Washington, D.C.

Mr. Guthans brings to AWO vast experience and expertise in the maritime field. In 1953, he joined Southern Industries Corporation and subsequently held the position of vice president, corporate development. In 1971, he became president of B-R Dredging Company, a worldwide dredging operation, before assuming his current position in 1973.

Mr. Guthans served as vice chairman of the board of AWO in 1989 and has served a number of terms on the executive committee and board of directors of AWO before assuming the chairmanship.

The association also re-elected **Joe Farrell** as president. Mr. Farrell has served in that capacity since 1983.

Founded in 1944, AWO represents over 300 companies involved in commercial transportation of goods by water, including small- and medium-sized shipyards that build and repair the industry's vessels.

## Wartsila Marine-Powered Floating Power Plant Barge Built By Conrad Industries, Outfitted By Bollinger

Wartsila Marine Inc. of Vancouver, Canada, together with Wartsila Diesel Inc. recently completed a design and construction supervision contract for a 40-MW floating power plant.

In order to meet the very short design and procurement time, the program was broken into two phases: Phase I—Barge Construction, which was carried out by Conrad Industries of Morgan City, La.; and Phase II—Power Plant Installa-



The completed barge operating on the Ozama River, Santo Domingo.

tion and Outfit, carried out at Bollinger Machine Shop & Shipyard Inc., Lockport, La.

After completion, the power plant barge was loaded onto a submersible barge and "dry" towed to Santo Domingo, in the Dominican Republic, where it was discharged in Puerto Ozama and is presently on site undergoing commissioning trials.

The power plant consists of five x 18v32D Wartsila medium-speed diesel engines each turning a 6.36MW alternator at 720 rpm and two x 16v32D Wartsila diesel engines each turning a 5.6MW alternator at 720 rpm for a total electrical output of 43MW. The diesel engines are capable of running continuously on 380-centistoke heavy fuel oil, provided in this instance from on-shore storage tanks.

For free literature giving full details on Wartsila diesel engines,

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## Webb Institute Receives Endowment For Professorship From Lester Rosenblatt



Mandell Rosenblatt



Lester Rosenblatt

The Webb Institute of Naval Architecture, located in Glen Cove, N.Y., has received an endowment for the establishment of a professorship to be named the "Mandell and Lester Rosenblatt Professor of Marine Engineering."

**Lester Rosenblatt**, chairman and chief executive officer of M. Rosenblatt and Son, Inc., naval architects and marine engineers, and a member of Webb Institute's board of trustees, contributed the gift to the college for its Centennial Campaign. Mr. Rosenblatt and his father, **Mandell**, founded the firm in 1947. It is one of the largest and most highly regarded ship design firms in the world.

The professorship is only the second such designated position at Webb, which is celebrating the 100th anniversary of its founding. The installation of a professor for this position is planned for the fall of 1990.

"In view of the long association of the Rosenblatt name with the maritime field, and the personal and business relationships that my father and I have had with many Webb graduates, I thought it appropriate and timely to have our name even more closely linked with Webb," said Mr. Rosenblatt. "Webb does an excellent job in providing the maritime industry and the nation with outstanding talent. I am delighted to help its fund-raising campaign in this manner."

The Webb Institute is the nation's only college devoted solely to naval architecture and marine engineering.

## Blount Marine Launches Excursion Boat Spirit of Boston

Warren, Rhode Island-based shipbuilder Blount Marine Corporation recently launched and christened the latest addition to the growing Cruise International fleet, the dinner/excursion boat M/V Spirit of Boston. The Spirit was the first boat launched from Blount Marine's new shipway.



The 600-passenger Spirit of Boston slides down Blount Marine's new ways.

Being constructed for Holiday Cruise II, a subsidiary of Cruise International headquartered in Norfolk, Va., the 600-passenger Spirit of Boston, which will operate in Boston Harbor, was called "the finest (one) of its kind," by owner **Richard D. O'Leary**, president of Cruise International.

Commenting on the Spirit of Boston, **Luther H. Blount**, president of Blount Marine, said, "She represents the peak of design and construction of the last 40 years at Blount Marine. I am very proud of the workers of Blount Marine who have done a terrific job preparing the Spirit of Boston for her scheduled delivery on May 1."

Mr. Blount said that the Spirit of Boston was similar in some respects to the Spirit of New York, a dinner/excursion boat delivered by Blount Marine to Cruise International in 1987. "She (the Spirit of Boston) incorporates some changes

by the owner and is actually a foot longer than the Spirit of New York, even though she is listed as 192 feet long," said Mr. Blount.

Other noticeable changes from earlier designs are the Boston's sleek megayacht profile and enlarged pilothouse. Additionally, the vessel's superstructure has been extended on the aft part of the third deck to conceal her stacks.

Besides Mr. Blount and Mr. O'Leary, other dignitaries on hand included: **Anne Lawler**, the ship's sponsor; her husband, **Beverly Lawler**, chairman of the board, Lawler, Ballard Advertising, and a member of the board of directors of Cruise International; **Marcia L. Blount**, executive vice president of Blount Marine; **Ronald Baer**, shipyard manager; **D.M. Sennott**, representative of Senator Chaffee; **Ken Willette**, representative of Governor Edward DiPrete of Rhode Island; and representatives from the U.S. Coast Guard Marine Safety Office in Providence—**Capt. Eric J. Williams III**, Captain of



Part of the large number of spectators that were on hand for the Spirit of Boston's christening. Note the vessel's sleek megayacht profile.

the Port; Comdr. **L.A. Doyle**, executive officer; Lt. Comdr. **T. Moniz**, Chief of Inspection; CW03 **T. Blair**, Marine Inspection; and CW02 **S. Hall**, Marine Inspection. Pastor **Bertrand L. Theroux** gave the ship's blessing.

The Spirit of Boston has an overall length of 193 feet, beam of 36 feet, depth at amidships of 10 feet 5 inches, and full load draft of 7 feet. Her propulsion machinery consists of two Caterpillar 3408 marine diesel engines, Twin Disc MG-514 re-

duction gears and a pair of 48-inch by 32-inch Columbian propellers.

Upon her delivery in May, the Spirit of Boston will join six other ships built by Blount Marine for Cruise International. The ships are based in New York, Chicago, Los Angeles, Philadelphia, Washington, and New Jersey.

For free literature detailing the building facilities and services of Blount Marine,

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### SPIRIT OF BOSTON Equipment List

Main engines (2)	Caterpillar
Reduction gears	Twin Disc
Propellers	Columbian
Engine controls	Mathers
Generator	Detroit Diesel
Auxiliary engine	Caterpillar
Bowthruster engine	Caterpillar
Keel coolers	Blount Marine
Steering system	Wagner
Stuffing boxes	Blount Marine
Main shaft bearings	Rexnord
Stern bearings	Cutlass
Freshwater	
pressure system	Peabody-Barnes
Sanitary system	Peabody-Barnes
Bilge pump	JABSCO
Fire pump	Gorman-Rupp
Washdown pump	Gorman-Rupp
Radar	Furuno
VHF radiotelephones	Raytheon
Depth sounder	Datamarine
Compass	Dirigo
Air horn	Kahlenberg
Searchlight	ITT JABSCO
A/C & heating	Dunham-Bush



Ship's sponsor Mrs. **Anne Lawler** christens the Spirit of Boston for Cruise International, Inc., Norfolk, Va., at recent ceremonies at Blount Marine Corporation in Warren, R.I. Her husband, **Beverly** (pictured center), a member of the board of directors of Cruise International, and CI president **Richard D. O'Leary**, were also in attendance.

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## EUROPEAN SHIPBUILDING AND REPAIR

Spurred by a number of key factors—the replacement of older vessels in the world fleet, the cruise ship boom, impending double-hull and double-bottom legislation, and prospects of increased trade after 1992—the world shipbuilding order-book reached a five-year high at the end of 1989.

With shipowners scrambling to find berths, European shipyards are acquiring a growing percentage of the workload.

The following is a brief overview based on responses received as of press time of some of the principal European yards involved in shipbuilding, repair and conversion.

### Portugal's LISNAVE Earns \$130 Million During 1989

**Frederico Spranger**, commercial director of Portugal's Lisnave, reportedly the world's busiest ship-repairer, believes that there should be greater control over shipowners who neglect essential ship repairs.

Photo: The recently delivered Fantasy, built by MASA-Yards at Helsinki, Finland.

"This will happen in Europe," said Mr. **Spranger**, "and it will be of long-term benefit to the ship-repair industry." In 1989, Lisnave earned about \$130 million in the ship-repair sector.

During 1989, some of the major repair activity at Lisnave's North Yard at Rocha included structural repairs of the 14,867-dwt general cargo vessel *Symphonic*, operated by East Gulf Management, which involved more than 85 tons of steel work; alongside repairs on the U.S. Navy helicopter carriers *Nassau* and *Shreveport*; and substantial repairs to the 8,636-dwt reefer *Provincia De Los Rios*, which included double bottom plating work, renewal of insulation and work on the MAN B&W main engine.

At Lisnave's South Yard at Margueira, the 280,428-dwt tanker *Mobil Petrel*, owned by Mobil Shipping Co., was drydocked for painting and inspection and steel repairs in her damaged tanks. Chevron Transport's M/T *Chevron Horizon* of 123,969 dwt, underwent normal blasting and painting and extensive renewal of damaged plating on her bottom and stern area. Machinery

overhaul of three cargo and three stripping ballast pumps and retubing of her auxiliary boiler was also completed within a 67-day period. P&O's deluxe liner *Dawn Princess* underwent refurbishment at the South Yard. Work included renewal of both her tailshafts and refit of new stern tube glands.

For literature describing LISNAVE's ship-repair services,

Circle 97 on Reader Service Card

### \$270 Million In Orders For Five Tankers Won By Astilleros Espanoles

Spain's Astilleros Espanoles S.A. (AESAs), has been awarded two contracts from separate entities worth about \$270 million for the construction of five tankers.

The first order worth a total of just under \$150 million for three one-million-barrel tankers to be built by AESA's Puerto Real yard in Cadiz, Spain, was confirmed by Udevalla Shipping.

Two of the 143,000-dwt vessels will be delivered in June 1991 and March 1992, while the third—a resale from France's CNN/Worms—will be delivered in October 1990.



The Friede & Goldman-designed Drillmar I marks the first entry for Astano shipyard into the offshore market.

A second contract for two Suezmax crude oil carriers has been placed with the Puerto Real yard by Spain's state-owned Empresa Nacional Elcano.

Together, the ships are believed to be costing around \$120 million.

Delivery of the 140,000-dwt vessels will be at the end of 1992 and beginning of 1993.

(continued)

Astano shipyard, El Ferrol (La Coruna), Spain, recently end-launched the semisubmersible drilling rig Drillmar I into Ferrol Bay. The launching was unusual in that the unit was structurally complete with each lower hull resting on a separate slipway. The launching weight of 10,728 long tons included approximately 9,300 tons of steel and 1,400 tons of equipment. There remains approximately 2,600 tons of outfitting to be done at dockside before the unit is delivered to Drillmar in the second half of 1990.

The 270-foot-long by 203-foot-wide Drillmar I is a Friede & Goldman, Ltd.-designed Enhanced Pace-setter Semisubmersible. The twin-hull six-caisson semi is capable of drilling to 25,000 feet as a thruster-assisted moored unit in water depths up to 1,500 feet.

The launching also marked the first entry for the Astano shipyard into the offshore market. Previously noted for its ability to produce supertankers, the Drillmar I represents Astano's changing emphasis away from ship construction and into offshore production. It also was the first time Astano had launched any structure from its two parallel slipways simultaneously. Careful calculations and model testing along with a strong lower hull design helped ensure the successful launch with a minimum (less than 2 tons) of structural reinforcement in the lower hulls.

For free color literature detailing the shipbuilding and ship-repairing services of the shipyards of AESA,

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### Fincantieri Prepares P&O's Crown Princess For Delivery

In Italy, the Monfalcone shipyard of Fincantieri Cantieri Navali Italiani is preparing to deliver the new 70,000-grt giant luxury liner Crown Princess to Princess Cruises, an associate of P&O Cruises Ltd.

The Italian-flag passenger ship recently completed her preliminary sea trials in the Adriatic Sea. The 1,748-passenger Crown Princess is fitted with a diesel-electric propulsion plant, which will feature four 14,400-bhp MAN B&W Diesel eight-cylinder L58/64 medium-speed engines driving a pair of propulsion motors.

Fincantieri also is constructing a sister ship to the Crown Princess, the Regal Princess. She is expected to be launched shortly. Besides the two P&O cruise ships, the Italian shipbuilder also has contracts for two 1,600-passenger Costa Crociere liners and three 1,250-passenger Holland America Line cruise vessels.

Fincantieri's Ship Repairs Division, Genoa, has secured a contract from Italian owner NAVARMA to perform a major refit on a passenger/car ferry. The contract calls for the addition of hoistable and permanent car decks to increase car capacity; the extension of the after part of the existing superstruc-

tures on the upper three decks; rebuilding of the accommodation area; and fitting of a new bulbous bow and new funnel.

After completion of the conversion by Fincantieri's OARN yard this spring, the Moby King (ex-Skane, formerly owned by the Swedish State Railway Company) will have a passenger capacity of 2,000 and car capacity of 700. She will enter service between the Ital-

ian mainland and Corsica in the summer of 1990.

Other work being undertaken by Fincantieri's Ship Repair Division in the passenger/car ferry sector includes the refit of a total of 10 vessels, four of the Poeti Class and six of the Strade Consolari Class.

For further information on Fincantieri,

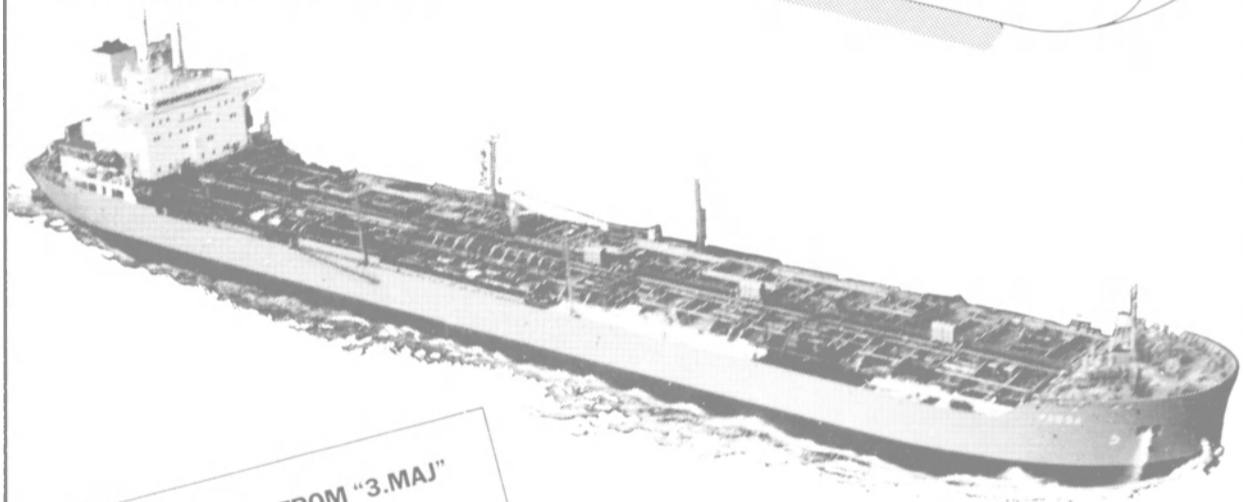
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### 3. Maj Awarded Contract To Build Three Boxships

Rijeka, Yugoslavia-based 3. Maj Shipbuilding was recently awarded a contract for the construction of three 2,200-TEU container-

(continued)

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Main engine m.c.r.	

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Breadth mid.	32.20 m
Depth mid.	21.65 m
Design draught	12.50 m
Deadweight at design draught	60,000 t
Trial speed	14.50 knots
Main propulsion engine	"3.MAJ-SULZER" 6 RTA 62 8,330 kW at 85 r.p.m.
Main engine output	

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# SURVEY OF CONSTRUCTION & REPAIR ACTIVITY AT SELECT EUROPEAN YARDS

Complied by Maritime Reporter Staff

ASTILLEROS ESPAÑOLES, S.A., Madrid, Spain

Vessels Built/Under Contract	Type	Owner	Delivery
<b>Astander Shipyard</b>			
108-ft long liner	F/V	Manchon Ben S.A.	N/A
108-ft long liner	F/V	Marfa S.L.	N/A
108-ft long liner	F/V	Galaica Del Mar	N/A
108-ft long liner	F/V	Pesquera Gaditana	N/A
<b>Barreras Shipyard</b>			
192-ft long liner	F/V	Ezpaia-Arrain	N/A
103-ft fishing vessel	F/V	Ezpaia-Arrain	N/A
103-ft fishing vessel	F/V	Ezpaia-Arrain	N/A
108-ft long liner(8)	F/V	Phiasud	N/A
298½-ft tuna purse seiner	F/V	Albacora S.A.	N/A
216½-ft tuna purse seiner	F/V	Intern. Tunidos	N/A
216½-ft tuna purse seiner	F/V	Albacora Caribe	N/A
218½-ft tuna purse seiner	F/V	Atunsa	N/A
218½-ft tuna purse seiner	F/V	Albacan S.A.	N/A
<b>Bilbao Shipyard</b>			
112,500-dwt tanker	M/T	Knutsen AABY T.	7/90
30,800-dwt phosphoric acid tanker	C/T	SCI	90
30,800-dwt phosphoric acid tanker	C/T	SCI	90
30,800-dwt phosphoric acid tanker	C/T	SCI	90
46,000-dwt product carrier	M/T	Laurin Maritime	12/90
46,000-dwt product carrier	M/T	Laurin Maritime	12/90
123,000-dwt shuttle tanker	M/T	Knutsen Boyelas.	N/A
14,200-dwt chemical tanker	C/T	Knutsen Kjemika.	N/A
14,200-dwt chemical tanker	C/T	Knutsen Kjemika.	N/A
<b>Ferrol/Astano Shipyard</b>			
semisubmersible drilling platform	Rig	Drillmar	90
PTS 850 C	—	Ocean Product	N/A
derrick catamaran	—	Grootint BV	N/A
<b>Juliana Shipyard</b>			
12,000-dwt prod./chem. carrier	M/T	Knutsen Vinga T.	N/A
204,000-ft <sup>3</sup> reefer	RFR	N. Caste/Mambisa	90
204,000-ft <sup>3</sup> reefer	RFR	N. Caste/Mambisa	90
204,000-ft <sup>3</sup> reefer	RFR	N. Caste/Mambisa	90
1,600-m <sup>3</sup> LPG carrier	LPG	N. Caste/Navicari	90
1,600-m <sup>3</sup> LPG carrier	LPG	N. Caste/Navicari	90
4,000-m <sup>3</sup> LPG/ammonia carrier	LPG	Gasnaval S.A.	11/90
4,000-m <sup>3</sup> LPG/ammonia carrier	LPG	Gasnaval S.A.	12/90
12,000-dwt product carrier	M/T	Knutsen O.A.S.	N/A
<b>Puerto Real Shipyard</b>			
140,000-dwt tanker	M/T	Puerto Reinosa	N/A
140,000-dwt oiler	M/T	Pulzar Maritime	N/A
580,000-ft <sup>3</sup> reefer	RFR	Federal Transport	N/A
140,000-dwt oiler	M/T	Petronor	6/90
140,000-dwt oiler	M/T	Petronor	10/90
140,000-dwt oiler	M/T	Aquatrade	12/91
140,000-dwt oiler	M/T	Aquatrade	6/92
140,000-dwt oiler	M/T	Uddevalla	5/91
140,000-dwt oiler	M/T	Uddevalla	1/92
140,000-dwt oiler	M/T	Lauria	11/92
140,000-dwt oiler	M/T	Lauria	11/92
<b>Sevilla Shipyard</b>			
580,000-ft <sup>3</sup> reefer	RFR	Del Monte	9/90
580,000-ft <sup>3</sup> reefer	RFR	Del Monte	10/90
580,000-ft <sup>3</sup> reefer	RFR	Del Monte	11/90
500-passenger liner	P/V	Marline Universal	6/91

### BLOHM + VOSS AG, Hamburg, West Germany

Vessels Built/Under Contract	Type	Owner	Delivery
38-meter, 210-grt Al Jof	FPC	Saudi Arabia	9/90
38-meter, 210-grt Turaif	FPC	Saudi Arabia	9/90
38-meter, 210-grt Hail	FPC	Saudi Arabia	9/90
38-meter, 210-grt Najrain	FPC	Saudi Arabia	9/90
2,100-grt Golden Odyssey	YT	N/A	3/90

### BRODOGRADEYNA INDUSTRILIA "SPLIT"

Vessels Built/Under Contract	Type	Owner	Delivery
140,000-dwt Jahre Transporter	M/T	Park Transport Co.	89
34,000-grt Isabella	FRY	SF Line Ab	89
140,000-dwt Jahre Trader	M/T	Park Shipping Co.	89
48,000-dwt Sibenik	B/C	Larkspur Shipping	89
11,000-dwt Atlantik Frigo	RFR	Fresh Water Marine	89
140,000-dwt Jahre Target	M/T	Park Venture	90
140,000-dwt crude oil carrier	M/T	Park Pacific	90
9,500-dwt reefer	RFR	Crawfish Marine	90
48,000-dwt bulk carrier	B/C	Lipo Steam Corp.	90
140,000-dwt crude oil carrier	M/T	Southeast Tankers	91
140,000-dwt crude oil carrier	M/T	East Tankers	91
140,000-dwt crude oil carrier	M/T	Southwest Tankers	92
140,000-dwt crude oil carrier	M/T	West Tankers	92
48,000-dwt bulk carrier	B/C	S.P. Shipping Co.	90
2,600-dwt car/passenger ferry	FRY	Sea-Link Shipping	91
2,600-dwt car/passenger ferry	FRY	Sea-Link Shipping	91

## European Shipbuilding

(continued)

ships for the French shipping company Delmas Vieljeux. The vessels will be designed to be flexible enough to operate in any of Delmas Vieljeux's 12 trade lanes. The box-ships, which will each have the capacity to carry 400 refrigerated containers, are expected to be delivered in May 1992, November 1992 and May 1993.

For free literature detailing the shipbuilding services of 3. Maj,

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## Large Orderbook On Hand At Brodosplit

The present orderbook at the Split, Yugoslavia, shipyard of Brodogradeyna Industrija "Split," better known as Brodosplit, includes a number of sophisticated, modern and innovative designs, ranging from huge Suezmax tankers of 140,000 dwt to bulk carriers and reefers.

At present, the yard has orders for eight 140,000-dwt crude oil carriers for various owners.

One of the most prestigious orders for the yard are for the two passenger/car ferries for Sea-Link Shipping. The two Baltic cruise ferries are expected to be delivered in 1991.

For free literature detailing the shipbuilding services of Brodosplit,

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## Lindenau Shipyard Marks Successful Year

Located in Kiel, just off the Kiel Canal, Lindenau GmbH is one of the most modern, productive and innovative medium-sized shipyards in West Germany.

Lindenau posted a highly successful year in 1989, delivering two new-buildings, carrying out a number of ship conversions in the geophysical research vessel market and performing repairs on about 140 ships. During 1989, the West German builder delivered the 12,326-dwt double-hull chemical tanker Hummel (see "Outstanding Oceangoing Vessels of 1989 in December issue of MARITIME REPORTER) to the Carl Buttner Shipping Line of Bremen. Additionally, the yard delivered the smaller tanker Awash, specially designed for use in shallow and tropical waters, to the Ethiopian Shipping Lines.

In 1990, Lindenau expects to be fully booked and plans to expand its staff. The order for a 23,000-dwt double-hull chemical/oil tanker for Carl Buttner should provide full employment for the yard into the first quarter of 1991. Lindenau also has a possible contract pending for the construction of one or two special vessels which would provide full employment in 1992. In the repair sector, the yard expects to expand its new contacts with Soviet and East German shipping lines.

For free literature detailing the shipbuilding services of Lindenau,

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## European Shipbuilding

(continued)

### Lengthened Westerdam Delivered By Meyer Werft

Meyer Werft of Papenburg, West Germany, redelivered the 798-foot, 53,872-grt luxury cruise ship Westerdam (ex-Homeric) to Holland America Lines, Seattle, Wash., after the vessel underwent an exten-

sive conversion and lengthening.

The delivery of the Westerdam marked the successful completion of an extraordinary conversion. Lengthened by over 130 feet, the vessel's passenger capacity increased by about 35 percent, from 1,332 to 1,773. The 669-foot-long Westerdam was first cut in two and her 7,000-ton forebody was moved on rollers almost 164 feet. Due to Meyer Werft's 600-ton-capacity crane available in its covered build-

ing dock, the 131.2-foot-long new midbody section was able to be fabricated in just a few pre-outfitted units.

A total of 195 new passenger cabins as well as 66 officers' cabins and 31 crew cabins were installed. Besides an increase in the number of passenger and crew cabins, public space was also considerably increased. The existing restaurant on deck 4 now seats 868 passengers compared to 556 prior to lengthen-

ing. On the Promenade Deck, a bar, card room, library, conference room and lounge were installed. Besides the extension of the pool area, the Sun Deck was equipped with two new whirlpools and a veranda restaurant. The swimming pool can be roofed over by a magrodome.

General overhaul work was carried out on the propulsion machinery consisting of two 16,200-hp MAN B&W Diesel main engines, which transmit the power to two propellers, providing the ship with a speed of 21 knots. Upgrades were performed on the air conditioning, garbage-handling and alarm and monitoring systems.

Furthermore, the yard is preparing to lengthen the 5,723-m<sup>3</sup> LPG carrier Sultan Mahmud Badaruddin 11 for Rupuk Sriwidjaja of Indonesia. After conversion, the vessel, originally constructed by Meyer Werft, will have an overall length of 475 feet and a capacity of 8,700 m<sup>3</sup>. She will be delivered in July 1991.

For free literature detailing the facilities of Meyer Werft,

Circle 3 on Reader Service Card

### Blohm + Voss Busy With Major Conversions

Hamburg, West Germany-based Blohm + Voss, one of Europe's busiest ship-repair and conversion specialists, was recently awarded a \$34.8-million contract to convert three paper carriers for Swedish owners Gorthon Lines.

The conversion of the three 14,299-ton bulk carriers into paper/pulp carriers by Blohm + Voss will entail the removal of all her main deck equipment and the creation of a continuous weather deck. Additionally, a tweendeck will be added and access to both decks will be via two side-loading entrances.

Blohm + Voss also completed the \$5.8-million conversion of Hapag-Lloyd's 37,012-grt cruise ship Europa late last year. The work involved upgrade and expansion of the on-board restaurant facilities.

The West German yard also recently completed the \$9-million upgrade of the 10,600-ton ferry Bolero-has for Fred Olsen. The project called for the addition of 88 cabins (176 berths) and the overhaul of the vessel's doors, ramps and propulsion machinery.

For free literature describing the services of Blohm + Voss,

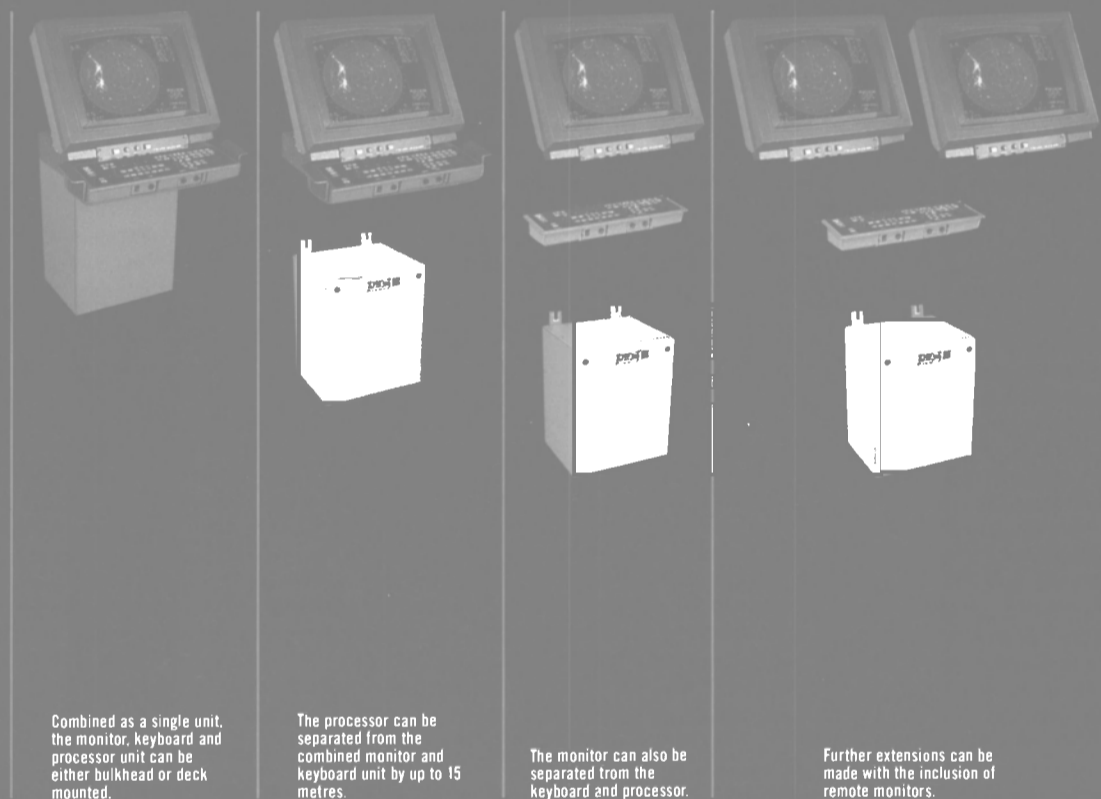
Circle 4 on Reader Service Card

### Schichau Seebeckwerft Delivers Huge Railferry, Performs Conversions

Bremerhaven's Schichau Seebeckwerft AG, a member of the Bremer Vulkan Group, recently completed what is reportedly the world's largest train ferry, the 622-foot Railship III, for the Railship Group (see cover story in this issue). The 10,000-dwt railferry adds about

(continued)

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The largest shiplift platform in the world – 655 ft. long by 106 ft. wide at Todd Pacific Shipyards Corporation, Los Angeles Division.

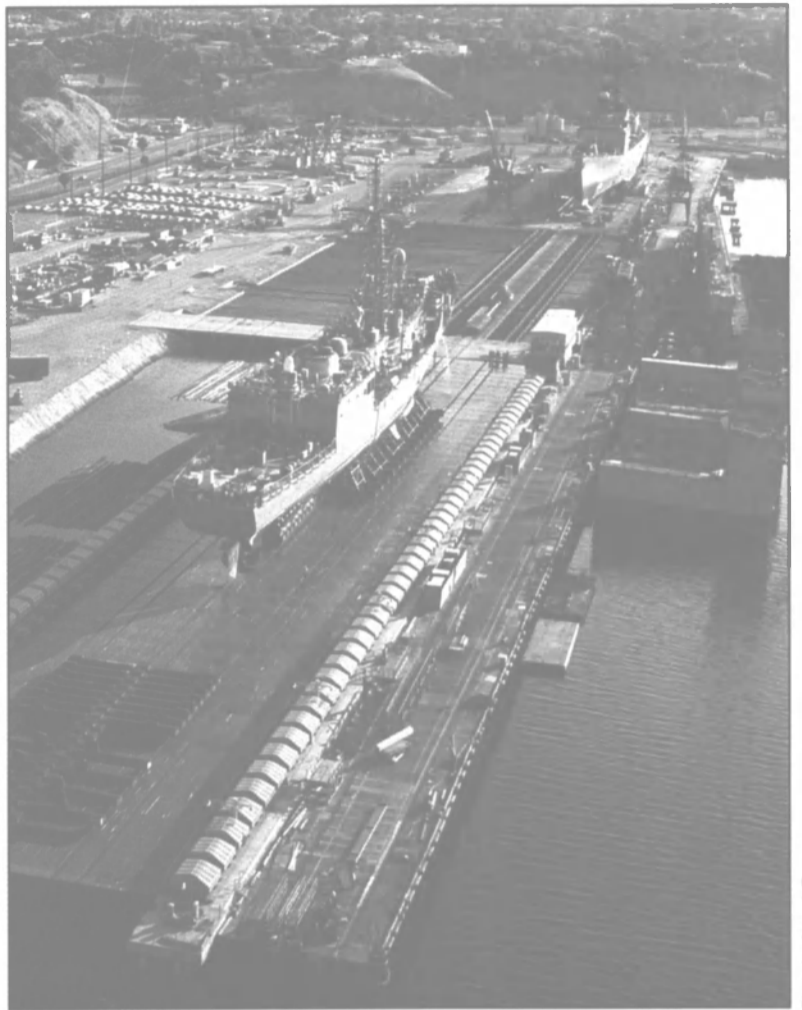
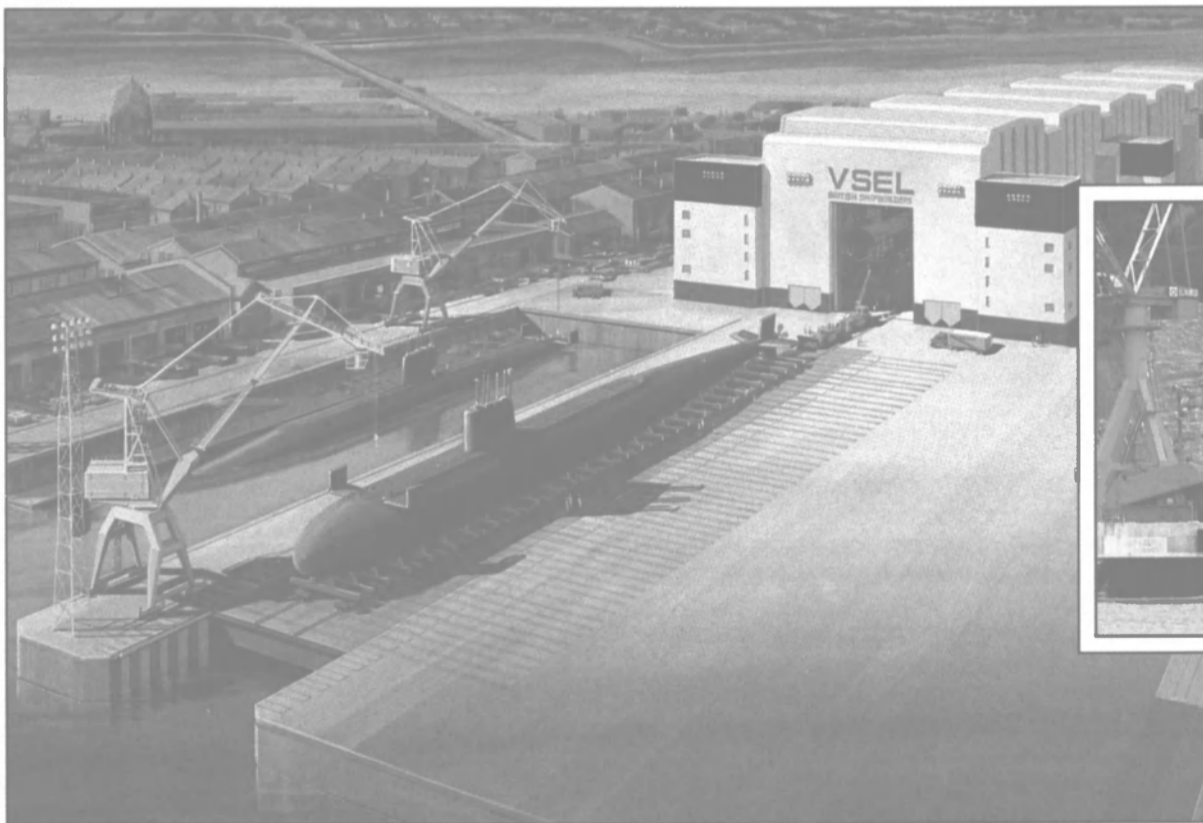


Photo by Joseph Ernest



The highest capacity per metre shiplift in the world – 200 tons per metre for launching concrete caissons at Yunotsu, Japan.

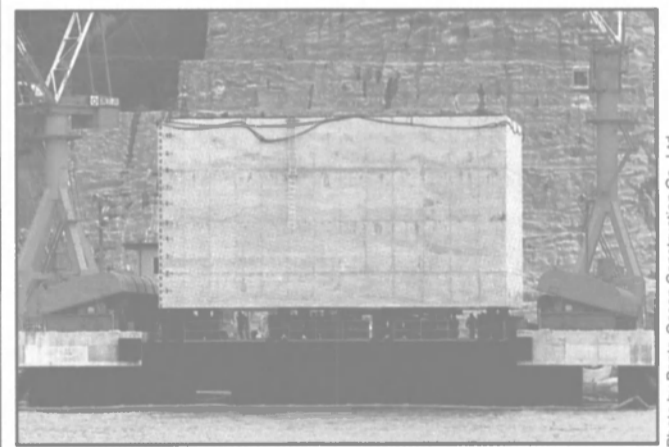


Photo by Penta-Ocean Construction Co., Ltd.

The greatest lifting capacity shiplift in the world – 24,000 tons for nuclear submarines at Barrow-in-Furness, England.

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Syncrolift Systems are patented in the United States and other countries.

DON-EN WERF-MAATSCHAPPIJ WILTON-FIJENOORD B.V., Schiedam, The Netherlands

Vessels Built/Under Contract	Type	Owner	Work
146,368-dwt Amica	B/C	N/A	DD/Engine repairs
101,518-dwt Arcade Sun <sup>2</sup>	OBO	N/A	General repairs
154,489-dwt Aurora	B/C	N/A	DD/damage repairs
35,922-dwt Federal Schelde	B/C	FEDNAV LTD.	DD/general repairs
35,911-dwt Federal St. Clair <sup>2</sup>	B/C	FEDNAV LTD.	DD/general repairs
35,630-dwt Federal Thames <sup>2</sup>	B/C	FEDNAV LTD.	DD/general repairs
179,802-dwt Goyo Maru	B/C	Shinwa Kauin Kaisha	General repairs
112,106-dwt Hellespont Spirit	M/T	Papachristidis (UK)	General repairs
39,582-dwt Peaceventure L <sup>2</sup>	M/T	N/A	DD/general repairs
54,059-dwt Phillips Oklahoma	M/T	Phillips Petroleum	DD/damage/fire repairs
42,825-dwt Uqba IBN Nafi	C/T	National Shipping of Saudi Arabia	Engine repairs
81,282-dwt Viking Merlin	M/T	Nordia Shipping	Sales docking
29,940-dwt Athenian Fidelity	M/T	Intestra Co.	DD/general repairs
23,069-dwt Auto Atlas	V/C	Pan Ocean Shipping	Alongside repairs
23,050-dwt Bauska	M/T	U.S.S.R.	DD/general repairs
10,700-dwt Bridgewater	G/C	Helmut Bastian	DD/general repairs
11,300-dwt Frio Atlas	RFR	Enias Shipping	Engine repairs
11,872-dwt Guardia Ludowa	G/C	Polskie Towarzystwo Okretowe	DD/general repairs
17,802-dwt Sun Heros	B/C	Order Shipping	Alongside repairs
17,513-dwt Taishan <sup>2</sup>	G/C	Anglo-Eastern Ship Management	DD/general repairs
31,189-grt Koningin Beatrix	ROF	Zeeland, Stoomvaart Maatschappij	DD for inspection
31,785-grt Norseia	ROF	North Sea Ferries	DD/general repairs
26,433-grt Pride of Dover	ROF	P&O Steam Navigation	DD/general repairs
17,043-grt St. Nicholas	ROF	N/A	DD/general repairs
6,276-grt Ferry Princess Maria-Esmeralda	ROF	Regis des Transports Maritimes	General repairs
5,574-grt Reine Astrid	ROF	Regis des Transports Maritimes	General repairs
8,583-grt Dorio Ferry	ROF	P&O Steam Navigation	General repairs

FINCANTIERI CANTIERI NAVALI ITALIANI, SPA, Genoa, Italy

Vessels Built/Under Contract	Type	Owner	Delivery
70,000-grt Crown Princess	P/V	P&O Cruises	3/90
70,000-grt Regal Princess	P/V	P&O Cruises	3/91
50,000-grt cruise ship	P/V	Carnival Cruise	92
50,000-grt cruise ship	P/V	Carnival Cruise	93
50,000-grt cruise ship	P/V	Carnival Cruise	94
20,000-grt RO/RO vessel	RO	Cosiarma	10/90
50,000-grt cruise ship	P/V	Costa Crociere	91
50,000-grt cruise ship	P/V	Costa Crociere	91
6,300-dwt reefer	RFR	Armatori Partenopei	91
6,300-dwt reefer	RFR	Armatori Partenopei	91
83,600-dwt Ore/Bulk/Oil carrier	OBO	Almare Soc. Di Navig.	91
83,600-dwt Ore/Bulk/Oil carrier	OBO	Italian owners	92
39,700-dwt product tanker	M/T	Gaetano D'Alesio	3/91
83,600-dwt Ore/Bulk/Oil carrier	OBO	Fermar SpA	91
83,600-dwt Ore/Bulk/Oil carrier	OBO	Maralba Seconda	92
135,000-dwt bulk carrier	B/C	Bulkitalia	92
18,000-dwt containership	CTR	Tropical Shipping Italiana	90
18,000-dwt containership	CTR	Tropical Shipping Italiana	91
18,000-dwt containership	CTR	Tropical Shipping Italiana	91
260,000-dwt bulk carrier	B/C	Sidermar	91

LINDENAU GMBH, SCHIFFSWERFT & MASCHINENFABRIK, Kiel-Friedrichsort, West Germany

Vessels Built/Under Contract	Type	Owner	Delivery
7,421-grt Hummel	C/T	Carl Buttner/Bremen	7/89
2,492-grt Awash	M/T	Ethiopian Shipping Lines	11/89
14,530-grt chem./oil tanker	C/T	Carl Buttner/Bremen	91

LISNAVE, ESTALEIROS NAVAIS DE LISBOA, Lisbon, Portugal

Vessels Built/Under Contract	Type	Owner	Delivery
<b>North Shipyard (Rocha)<sup>2</sup></b>			
12,193-dwt Marina C	RFR	Contramar	Alongside repairs
15,922-dwt Transroll	RO	Perseus	Alongside repairs
11,772-dwt Gaz Victory	LPG	Naftomar S	DD
12,570-dwt Ecuadorian Reefer	G/C	Lauritzen	Alongside repairs
15,084-dwt Symphonic	G/C	Gulfeast Shipping Mgmt.	DD
14,604-dwt E.B.O.	G/C	Angonave	DD
15,704-dwt Essi Flora	C/T	Skips A/S	DD
16,000-t USN Shreveport	USN	U.S. Navy	Alongside repairs
10,026-dwt Caroline I	G/C	Vieira & Silveira	DD
17,187-dwt Nemea	G/C	Delta NC	DD
11,434-dwt Canterbury Star	RFR	Blue Star Line	Alongside repairs
10,600-dwt Honolulu	RFR	Dammers	Alongside repairs
11,829-dwt Csokonai	RFR	Mahart	Alongside repairs
<b>South Shipyard (Margueira)<sup>3</sup></b>			
117,893-dwt Niki	OBO	Navitrans	DD/repairs
3,043-dwt Everdina	LPG	Jinyu	DD/repairs
111,221-dwt Maria De Los Dolores	M/T	Transp. Petroleus	DD
35,267-dwt Resmar Dos	B/C	Marcosa	DD/repairs
71,118-dwt Maureen	OBO	Ultramar SC	DD
76,297-dwt Mercedes	OBO	Ultramar SC	DD
132,201-dwt Rosario Del Mar	M/T	Lineas Asmar	DD
25,515-dwt Overseas Harriette	B/C	Maritime Overseas	DD/repairs
91,252-dwt Showa Maru	M/T	Showa	DD
82,325-dwt Brage	B/C	Burma N.C.	DD/repairs
99,810-dwt Artemis Garofalidis	M/T	Olympic Maritime	DD
14,466-dwt Takoradi	RO	Sekihyo L.L.	DD/repairs
273,268-dwt Menantic	M/T	Universe Tankers	DD/repairs
112,106-dwt Hellespont Spirit	M/T	Papachristidis (U.K.)	DD
22,726-dwt Esso Port Jerome	M/T	Esso Soc. Anon. France	DD/repairs

European Shipbuilding

(continued)

2,000 meters of rail length on three decks to the Railship Group's total. The Group now operates three ships with a total of 5,600 meters of rail. The ship, powered by a Wartsila Diesel propulsion plant, operates on the Travemunde to Hanko, Finland route.

Schichau Seebeckwerft, like other West German shipyards such as Lindenau, Meyer Werft and Blohm + Voss, has been very successful in obtaining complex conversion work. One such project was the conversion of the former landing craft Jaeger in to a modern surimi factory processing ship for Oceantrawl of Homer, Alaska. Renamed the Northern Jaeger, the vessel has an overall length of 336 feet, breadth of 51 feet, depth to upper deck of 36 feet and draft of 19 feet. She is powered by two medium-speed Krupp MaK 8M453 C main engines, rated at 3,218 horsepower each, working via reduction gearing on a propeller arranged in a nozzle.

The Northern Jaeger now features accommodations in a three-story deckhouse located on the elongated fo'c'sle deck. A water treatment with a freshwater capacity of 400 tons per day was added, along with horizontal freezers and other equipment used in the processing of surimi.

For further information on Schichau Seebeckwerft,

Circle 5 on Reader Service Card

Wilton-Fijenoord Performs Ferry Repairs

Strategically situated in the middle of the Rotterdam port area, the gateway to Europe, Dutch ship-repairer Wilton Fijenoord recently received contracts to repair the ferries Princesse Maria-Esmeralda and Reine Astrid, both operated in cross-Channel service by Regis des Transports Maritimes. The ferries Dorio Ferry, operated by P&O Steam Navigation, and St. Nicholas of the Sealink fleet are also in the Netherlands yard for repairs.

Some other vessels recently calling at the yard for repair work include the 256,699-ton tanker Esso Languedoc, for alongside repairs, the Japanese refrigerated cargo vessel Kasuga Reefer for voyage repairs and the Pacific-Gulf Marine RO/RO vessel Nosac Ranger.

C.H. Stapel, deputy managing director of Wilton-Fijenoord, believes that current trends indicate that European shipyards will be among the leaders in the world ship-repair sector.

"On one hand," said Mr. Stapel, "the aging commercial fleet and the tendency to have older vessels in operation longer have no doubt had a spin-off (effect) to the yards, whereas on the other hand European yards are slowly catching up with those in the Far East in terms of price and turn-around times."

For free literature describing Wilton-Fijenoord's services,

Circle 6 on Reader Service Card

## MASA-Yards Delivers Carnival's Superliner, 70,000-GRT Fantasy

MASA-Yards, New Helsinki Shipyard delivered the 70,000-grt superliner Fantasy to Carnival Cruise Lines, Miami, Fla. The construction of the vessel had been begun by Finland's Wartsila Marine Industries before the shipbuilder had declared bankruptcy.

The 855-foot, 2,600-passenger vessel is one of the most expensive ships ever built.

The 14-passenger deck Fantasy features 2 x 14 MW Cyclo propulsion drives, 6.6 kv switchboards, four 10.3 MVA main and two 6.8 MVA auxiliary generators, plus six thruster motors and the main transformers, all engineered and supplied by ABB Marine of Helsinki. Six Wartsila-Sulzer diesel engines with a total of more than 57,000 bhp are the prime movers of the diesel-electric propulsion system. The Fantasy is also fitted with two highly skewed KaMeWa controllable-pitch propellers.

MASA-Yards has secured the contract for the second CCL liner Ecstasy.

For free literature detailing the shipbuilding services of MASA-Yards,

Circle 7 on Reader Service Card

## Ulstein Hatlo Completes Conversion Of Alaskan Factory Stern Trawler

Last year, Norway's Ulstein Hatlo shipyard delivered the converted American Dynasty, a 272-foot U.S. factory stern trawler, to her owner American Seafoods Company.

Operating off the coast of Alaska in the Bering Sea, the American Dynasty can produce up to 100 tons of surimi per day. The surimi is a fish paste used in substitute seafood production.

The vessel is powered by a pair of Bergen Diesel main engines, rated at 4,000 bhp at 750 rpm, driving an Ulstein CP propeller.

Other equipment aboard the vessel includes an Atlas freshwater generator, Norwinch main trawl winches, MacGregor cargo lift, and Simrad sonars and echo sounder.

For free literature detailing the conversion capabilities of Ulstein Hatlo,

Circle 8 on Reader Service Card

35,731-dwt Petrobulk Pioneer	C/T	Naess Shipping	DD/repairs
81,273-dwt William E. Mussman	M/T	Chevron	DD/repairs
38,186-dwt Golden Rio	B/C	World-Wide	DD
11,067-dwt Lincoln Universal	RFR	Jardine S.M.	Alongside repairs
10,570-dwt Peggy Dow	RFR	Dammers	DD/repairs
39,258-dwt Gorgona	M/T	D'Alesio	DD/repairs
56,174-dwt Floreal	LPG	Elf	DD/repairs
13,058-dwt Scottish Star	RFR	Blue Star Line	DD/repairs
69,041-dwt Space	B/C	New Ace	DD/repairs
22,016-dwt Morias	B/C	Metrofin	DD/repairs
33,311-dwt Solomon	B/C	Kedma	DD/repairs
61,013-dwt Ossolineum	B/C	PZM	Alongside repairs
40,000-t Nassau	N/A	USA	Alongside repairs
55,500-dwt Fidelity	M/T	Transpetrol	DD/repairs
barge Seeponton 3	BRG	Bugsier	DD/repairs
77,078-dwt Asteriks	B/C	Anglo E.	DD/repairs
9,495-dwt Dawn Princess	P/V	P&O Cruises	DD/repairs
pontoon Wilkes	PON	USA	Alongside repairs
8,450-t USS Barnstable County	LST	U.S. Navy	Alongside repairs
4,625-dwt Taklift 4	N/A	Smit International	DD/repairs
33,490-dwt Feliks Dzierzynski	B/C	Polish Steamship	Alongside repairs
75,594-dwt Doce Lotus	B/C	NV Rio Doce	DD/repairs
66,995-dwt Northern Enterprise	B/C	Alcan	DD/repairs
80,650-dwt Mobil Vigilant	M/T	Mobil Oil Co.	DD/repairs
48,581-dwt Biakh	C/T	Gill-Johannessen	DD/repairs
39,731-dwt Mobil Challenge	M/T	Mobil Oil Co.	DD/repairs
78,434-dwt Ambia Finjo	OBO	Leif-Hoeg (U.K.)	DD/repairs
48,531-dwt Crown Bridge	M/T	World-Wide	DD/repairs
135,906-dwt Mega Berlisa	M/T	Bergshav A/S	DD/repairs
60,920-dwt Apiliotis	B/C	Buenamar	Alongside repairs
36,313-dwt Antares	M/T	Patt, Manfield & Co.	DD
130,257-dwt Ruth M	M/T	North America Shipping	DD
141,754-dwt Jane Stove	M/T	Lorentsens S.	DD
28,122-dwt Aire	M/T	Soponata	DD
62,503-dwt Snestad	B/C	Barber International	DD/repairs
123,969-dwt Chevron Horizon	M/T	Chevron Transportation	DD
54,057-dwt Phillips Mexico	M/T	Phillips Petroleum	DD
9,300-dwt Isla Genovesa	RFR	Transnave Transporte	DD/repairs
12,339-dwt Clipper Confidence	B/C	Jinyu Shipping	DD/repairs
11,358-dwt Vasco Da Gama	M/V	Arcalia Shipping	DD
141,178-dwt Vasilikos	M/T	Pal Shipping	DD/repairs
57,372-dwt Iver Christina	M/T	Iver Bugge Mgmt.	DD
10,890-dwt Nada III	V/C	Barber Shipping Mgmt.	Alongside repairs
61,898-dwt Marita	B/C	Ugland	Alongside repairs
141,006-dwt Mega Point	M/T	Mosvolds Rederi	Alongside repairs
117,805-dwt Unique Pioneer	B/C	Unique Shipping	DD
135,906-dwt Mega Sun	M/T	Mosvolds Rederi	Alongside repairs
24,502-dwt Thorunn	B/C	Singa Shipping Mgmt.	DD/repairs
10,890-dwt Nada III	V/C	Barber Shipping Mgmt.	DD/repairs
135,000-dwt Marofa	M/T	Soponata	DD
50,901-dwt Ismenios	M/T	Baltic Shipping Co.	DD/repairs
89,965-dwt Hellespont Tenacity	M/T	Papachristidis	Alongside repairs
139,137-dwt Marichristina	M/T	Chandris (Hellas)	DD/repairs
74,596-dwt Andromachi	B/C	EF Shipping	DD/repairs
144,892-dwt Zawrat	M/T	Polish Steamship	DD
75,631-dwt Docemar	B/C	Docenave V.R.D.	DD

### MASA-YARDS, INC., Helsinki, Finland

Vessels Built/Under Contract	Type	Owner	Delivery
70,000-gt Ecstasy	P/V	Carnival Cruise Lines	91
2,000-gt cable layer	LYR	Etisalat, Abu Dhabi	90
56,000-gt cruise ferry	FY	EFFOA	90
56,000-gt cruise ferry	FY	Johnson Line	91
40,000-gt cruise ferry	FY	Rederi Ab Slite	90

### MEYER WERFT, Papenburg, West Germany

Vessels Built/Under Contract	Type	Owner	Delivery
1,773-passenger Westerdam <sup>1</sup>	P/V	Holland America	3/90
5,723-m <sup>3</sup> Sultan Mahmud Badaruddin 11 <sup>1</sup>	LPG	Rupuk Sriwidjaja	7/91
45,000-grt Horizon	P/V	Chandris Celebrity	5/90
45,000-grt Zenith	P/V	Chandris Celebrity	—/92
656-foot cruise ferry	P/V	Rederi Ab Slite	—/92
15,000-m <sup>3</sup> Sigulda	LPG	AKP Sovcomflot	10/89
15,000-m <sup>3</sup> gas carrier	LPG	AKP Sovcomflot	8/90
15,000-m <sup>3</sup> gas carrier	LPG	AKP Sovcomflot	11/90
15,000-m <sup>3</sup> gas carrier	LPG	AKP Sovcomflot	2/91
15,000-m <sup>3</sup> gas carrier	LPG	AKP Sovcomflot	5/91
15,000-m <sup>3</sup> gas carrier	LPG	AKP Sovcomflot	8/91

### SCHICHAU SEEBECKWERFT AG. BREMERHAVEN, WEST GERMANY

Vessels Built/Under Contract	Type	Owner	Delivery
8,900-dwt Robin Hood	FF	TT-Line, Hamburg	1/89
33,336-grt Olau Hollandia	PVF	Olau-Line, Hamburg	10/89
9,975-grt Seabourn Spirit	P/V	Seabourn Cruise Line	11/89
10,000-dwt Railship III	RF	Railship Group	2/90
33,336-grt Olau Britannia	PVF	Olau-Line, Hamburg	5/90
series of BV-1600 container vessels	CTR	N/A	mid-91

### VESSEL, TYPE OF WORK & YARD FACILITY CODES

**AUX**—auxiliary vessel; **BB**—building berth; **B/C**—bulk carrier; **BRG**—barge; **C/T**—chemical tanker; **CTR**—containership; **D/C**—dry cargo vessel; **DD**—drydock; **DGR**—dredger; **FD**—floating dock; **FF**—freight ferry; **FPC**—fast patrol craft; **F/V**—fishing vessel; **FY**—ferry; **G/C**—general cargo vessel; **GD**—graving dock; **LNG**—liquefied natural gas; **LPG**—liquefied petroleum gas; **L/S**—light ship; **LST**—tank landing ship; **LYR**—cable layer; **M/T**—motor tanker; **M/V**—motor vessel; **OBO**—ore/bulk/oil carrier; **OH**—overhaul; **O/O**—oil/ore ship; **PON**—pontoon; **P/V**—passenger vessel; **PVF**—passenger/vehicle ferry; **RFR**—reefer ship; **R/L**—Roll-On/Load-Off vessel; **ROF**—Roll-On/Roll-Off ferry; **R/V**—research vessel; **SW**—slipway; **V/C**—vehicle carrier; **W/T**—wine tanker; **YT**—yacht;

Footnotes: (1) conversion; (2) vessels above 10,000 dwt, repaired from 2/89-1/90; (3) vessels repaired between 8/89-1/90.

May, 1990

SCHICHAU SEEBECKWERFT AG, BREMERHAVEN, WEST GERMANY

Vessels Built/Under Contract	Type	Owner	Work
4,280-grt Meteor	R/V	R.F. Bremen	Annual OH
research vessel Victor Hensen	R/V	R.F. Bremen	Annual OH
1,582-grt Leman	W/T	VINALMARR	Piping
aux./supply vessel Rhon	AUX	German Navy	Collision repair
stern trawler Klakkur	F/V	Santog	Recondition fish processor plant
lightship Deutsche Bucht	L/S	GSA	Annual OH
3,335-grt European Trader	ROF	P&O Steam Navigation	Enlarge crew quarters
26,433-grt Pride of Dover	ROF	P&O Steam navigation	Install restaurant equipment, seating
RO/RO ship Stena Shipper'	RO	Stena Rederi	Convert to passenger ferry
14,983-grt Prigipos	B/C	Marmaris Navigation	New foreship
reefer Patmos Reefer	RFR	Transcontinental Maritime + Trading	Install cooling spaces
ferry Nord Gotlandia	FY	Nordstrom + Thulin	Enlarge passenger space
3,153-grt World Discoverer	P/V	Discoverer Reederei	Install new aux. diesels, convert passenger area
police boat Bremen I	PB	Wasserschutz-Polizei	Install new engines
8,785-grt Nordsee	DGR	Wasser- und Schifffahrts-Amt	OH of engines, alter dredge equipment
auxiliary vessel Wangerooge	AUX	German Navy	Renew propulsion plant

SHIPBUILDING INDUSTRY "3. MAJ," Rijeka, Yugoslavia

Vessels Built/Under Contract	Type	Owner	Delivery
60,000-84,000-dwt Northern Bell	M/T	Three Bells Shipping	3/90
100,000-110,000-dwt Apache Spirit	M/T	USSI Oceans Inc.	12/90
100,000-110,000-dwt oil tanker	M/T	Christian Haaland	8/91
100,000-110,000-dwt oil tanker	M/T	Christian Haaland	3/92
22,000-dwt multipurpose dry cargo vessel	D/C	Chinese-Polish Joint Stock Co.	6/91
22,000-dwt multipurpose dry cargo vessel	D/C	Chinese-Polish Joint Stock Co.	10/91
22,000-dwt multipurpose dry cargo vessel	D/C	Chinese-Polish Joint Stock Co.	12/91
22,000-dwt multipurpose dry cargo vessel	D/C	Chinese-Polish Joint Stock Co.	5/92
100,000-110,000-dwt oil tanker	M/T	West Bulk Carriers	6/92
100,000-110,000-dwt oil tanker	M/T	Southwest Bulk Carriers	1/93
100,000-110,000-dwt oil tanker	M/T	East Bulk Carrier	6/93
30,300-dwt RO/LO vessel	R/L	Societe Navale et Commerciale	5/92
30,300-dwt RO/LO vessel	R/L	Societe Navele et Commerciale	11/92
30,300-dwt RO/LO vessel	R/L	Societe Navale et Commerciale	5/93

ULSTEIN HATLO A/S, Ulsteinvik, Norway

Vessels Built/Under Contract	Type	Owner	Delivery
2,016-dwt American Dynasty	F/V	Swan Pacific Fisheries, Ltd.	7/89
5,100-gt Hull #220	M/V	Alaska Ocean Seafoods	5/90
2,500-dwt Polar Circle	M/V	Rieber Shipping	9/90
Northern Hawk	F/V	Northern Hawk Partner	7/90

Wartsila Diesel Expands In North America —Literature Offered—

Wartsila Diesel, one of the world's largest manufacturers of medium-speed diesel engines, has relocated its North American and Caribbean sales and service operations to Chestertown, Md. With the consolidation of all functions of Wartsila Diesel, Inc., in one central location, they will be better positioned to serve the expanding market in the Western Hemisphere for high-quality, advanced-design, medium-speed diesel engines powered by heavy fuel and natural gas.

Wartsila Diesel currently sells diesel engines from 788 to 22,000 horsepower in two primary markets—marine and land-based power generation.

In the marine market, Wartsila Diesel supplies propulsion and power generating engines for all types of ships, from tugs and fishing vessels to tankers, containerships and cruise ships. With the current emphasis on efficiency and economy, Wartsila Diesel engineers are developing complete machinery packages including reduction gears, propellers, and control systems. Their goal is to optimize the balance among all on-board space components for maximum economies of operation.

For free literature detailing the complete line of diesel engines from Wartsila Diesel for the marine market,

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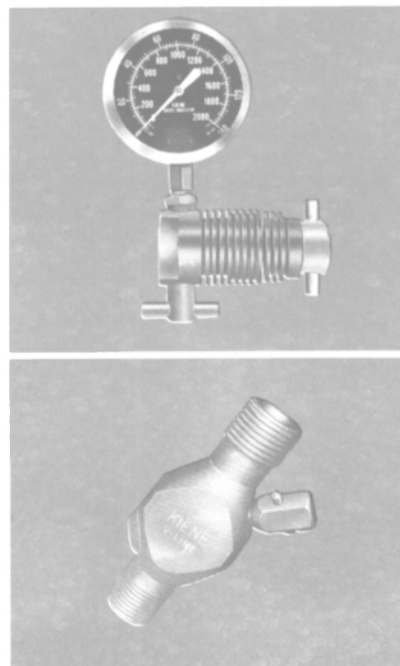
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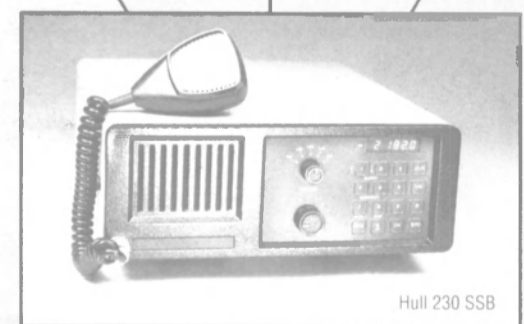
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Maritime Reporter/Engineering News

**James Marino Named  
Sales Manager  
At Navionics**

Riva Schwartz, president of the newly formed Navionics, Inc., has appointed James Marino to the position of sales manager. Mr. Marino, who brings to Navionics an extensive background in sales and marketing in the computer and electronic equipment industry, will be responsible for the North American market.

Following graduation from Boston University, Mr. Marino became senior marketing representative at Xerox Corporation, where he was responsible for maximizing market share, customer satisfaction and return on assets. While at Xerox, he twice achieved the President's Club Award For Outstanding Performance.

Mr. Marino then developed computer-based telemarketing and product performance tools for BIS/CAP International in Norwell, Mass.

Ms. Schwartz stated, "Mr. Marino's proven marketing talents in the high-tech arena will make him an asset both to Navionics as well as to the marine electronics industry."

For free literature giving more information on Navionics,

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**Texas A&M At Galveston  
To Get Norcontrol  
Diesel Engine Simulator**

Engineering students at Texas A&M University at Galveston, Texas, (TAMUG) will soon be able to simulate a ship's engine room in the classroom with a new \$205,900 Norcontrol Diesel Engine Simulator which will be installed at the Mitchell Campus on Pelican Island.

According to Prof. William C. Van Loo of the TAMUG engineering department, the equipment can compress years of experience into a few weeks of training and can give the student an easier introduction to background theories.

The configuration of the simulator is that the instructor is equipped with shipshape consoles and panels arranged in a realistic environment, while the students are furnished with color graphic displays and keyboards.

The system is also applicable for simulation of the deck operation of the ship, which will allow students who are training toward licenses as third mates to experience the "bridge" relationship with the engine room.

For free literature from Norcontrol giving full information on equipment and services,

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**ScanRope Introduces  
Two New Mooring Ropes**

ScanRope a/s, one of Norway's largest manufacturers of wire ropes

and fiber ropes, has introduced two new mooring ropes in the market, based on its successful Karat fiber. The products are "Karatlas," and "18Karat." Karatlas is a six-strand wire rope laid rope with a combination of Karat-fiber and thick monofilaments. The manufacturer reports the main benefit is its structural stability, which allows it to be used on self-tensioning winches in several layers without crush-

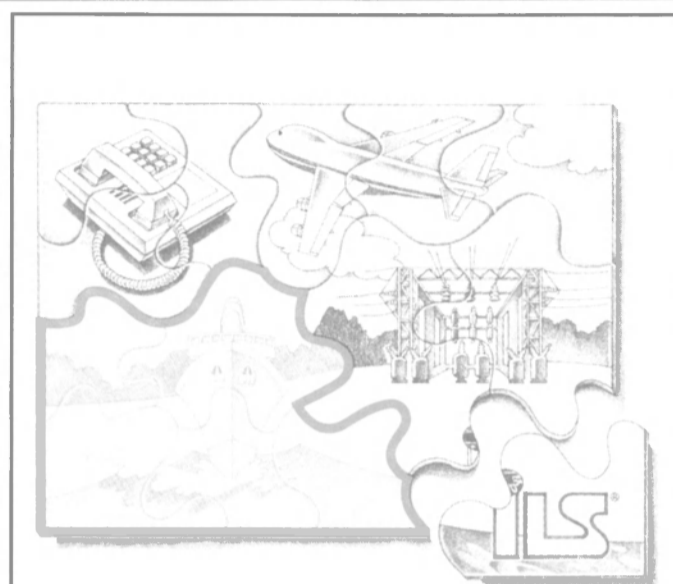
ing or jamming. It has low elongation and excellent abrasion resistance. Until now, this rope has been produced with nylon fiber only. Karatlas weighs less and is therefore more economical.

With 18Karat, ScanRope uses a process that covers the outer yarn in the Karat Maxi hawser with a thin mantle of polyester. This gives an optimal combination of Karat's very high strength with Polyester's excel-

lent abrasion properties. ScanRope indicates at least a 50 percent increase in abrasion resistance when compared to ordinary Karat, polypropylene, etc., but with only a small cost increase.

A new brochure, "Shipping Ropes For The 90's," explaining all these products in detail, is now available from ScanRope. For a free copy,

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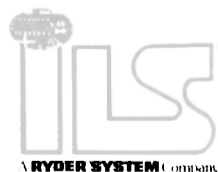
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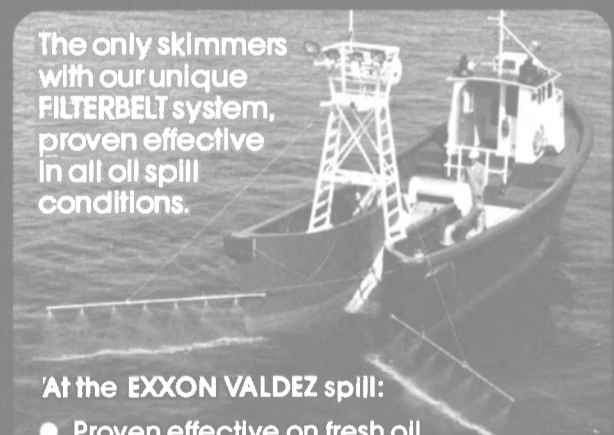
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## Unitor Offers Literature On New Medical Concept For Cruise Industry

A new medical concept for the cruise industry has been officially introduced by Unitor Ships Service in a special presentation held recently in Miami, Fla. The new concept is designed around the medical needs of the cruise ship hospitals, offering Unitor as a one-source, quality supplier of medical equipment and supplies from the newbuilding stage through re-supply and service. The concept includes Unitor's first medical supply and service center located in one of the busiest cruise ports in the world—Miami.

**Harald Meidel**, product manager for Unitor's first-aid medical department, said the company initiated the medical concept in close cooperation with many of their customers who were experiencing problems, not only at the newbuilding stage, but also with after-supply and service. Some of these problems included receipt of equipment that proved incompatible, problems with availability of spare parts and maintenance, as well as equipment or supplies that did not meet international standards.

Figures show that between 1981 and 1989, the world cruise fleet tonnage expanded by 31 percent with the number of berths, now about 100,000, representing an increase of 30 percent. Further, a 12 percent annual growth rate is predicted with the market potential still not tapped to its limit. With so many going to sea, the importance of the ship's hospital cannot be

understated. Add to the fact that changes in medical science are taking place daily, with laws regarding ships medicine and generic medications under controversy. Also is the need for educational updates for the ships' nurses and crew who are away from the medical mainstream.

Unitor's medical concept takes into consideration these facts and includes in-service training, insured brand and generic drugs and a team of medical professionals ready to assist when requested.

In addition, product offerings include medical equipment such as X-ray, anesthesia, emergency and biotechnical, including medical gases. Pharmaceuticals are supplied, as well as a variety of disposable goods such as dressings, needles and syringes. Hospital beds, stretchers and medical cabinets and other hospital furniture can also be ordered. Also available are loaner machines to help cut the cost of weekend repair rates, as well as repair and in-service on equipment.

Unitor reports that response from customers has been very positive. Some cruise vessels already supplied by Unitor's hospital/first-aid equipment include: Sovereign of the Seas, Seward, Royal Viking Sun, Star Princess, and the Nordic Empress. By utilizing Unitor's concept, onshore purchasing departments will have the advantage of dealing with one internationally approved supplier rather than dealing with many local companies, saving them time and money.

For more information and free literature on

Unitor's new medical concept for the cruise industry,

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## Rizzotti And Westrich Named To New Positions At MagneTek Defense Systems

**John Scherzi**, senior vice president, marketing and government business, MagneTek, Inc., recently announced the appointments of **Edward C. Rizzotti** and **Joseph A. Westrich** to two new positions within MagneTek Defense Systems, a strategic business unit of the leading electrical equipment manufacturer, MagneTek, Inc.

**Mr. Rizzotti**, formerly vice president, government systems, was promoted to senior vice president, MagneTek Defense Systems and general manager, MagneTek Anaheim. He joined MagneTek in 1988 from the Electronics Systems Division of the consulting firm Booz, Allen and Hamilton. A graduate of Long Island University, he holds several executive management certificates and has worked in the field of program management and business development for more than 25 years.

**Mr. Westrich** fills the position of vice president and assistant general manager of MagneTek Defense Systems as well as MagneTek Anaheim. He has served with various MagneTek operational units for 225 years in marketing, business development and management positions.

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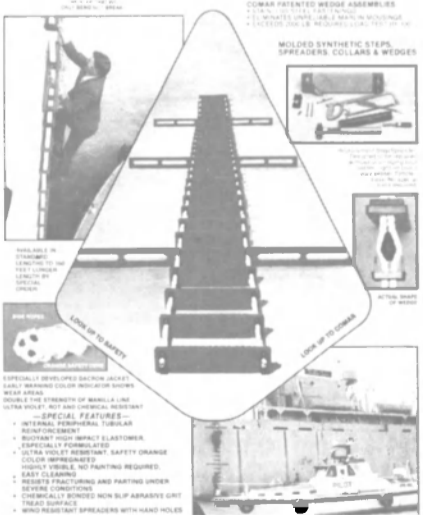
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Maritime Reporter/Engineering News

## Daniel V. Zimmerman Named Comptroller At Directions In Design



Daniel V. Zimmerman

Daniel V. Zimmerman has been named to the newly created position of comptroller at Directions In Design, Inc. (DID), a major interior design firm based in Chesterfield, Mo. Making the announcement was Jane Ganz, president and founder of the company.

As comptroller, Mr. Zimmerman will function as the firm's chief financial officer. His duties include line management of corporate financial and credit affairs, administration of employee benefits and insurance programs, and supervision of the firm's procurement and accounts payable departments.

DID, with offices in Chesterfield, Lake of the Ozarks, and Columbia, Mo., is one of St. Louis's largest interior design firms. The company specializes in custom residential, model home, hospitality, health care, office, and ship design.

## Marathon LeTourneau Sells Class 116-C Rig 'Kit' To Far East Levingston

J. Earl Beckman, president of Marathon LeTourneau Company, recently announced the sale of a Marathon LeTourneau-designed Class 116-C rig "kit" to Singapore-based, Far East Levingston Shipbuilding, Ltd. (FELS).

A "kit" consists of the proprietary components used in the construction of the offshore mobile drilling rig, primarily leg components and gear units used for self-elevation of the rig, and engineering technology.

FELS holds an exclusive licensing agreement for the construction of Marathon-designed rigs built in Asia.

All components are manufactured at Marathon's Vicksburg, Miss., and Longview, Texas, facilities, with engineering support from the company's Marine Design Engineering group in Houston, Texas. FELS will construct the rig at one of its Republic of Singapore construction sites.

Marathon recently announced an unrelated sale of a Class 116-C rig to be built at the Vicksburg location for delivery in late 1991 to Brobekk A.S., a Norwegian company.

For further information and free literature from Marathon LeTourneau,

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## Bird-Johnson Pneumatic Systems To Be Installed By PCE On 18 Navy LSTs

Propulsion Controls Engineering (PCE), San Diego, Calif., has received a contract for the installation of new pneumatic systems on 18 of the U.S. Navy's LST Class ships. PCE president John P. Reilly said the new contract calls for removal of

the original equipment and installation of new systems while the 18 ships are in port in San Diego, Long Beach and Norfolk, Va.

The new systems, manufactured by Bird-Johnson of Walpole, Mass., represent state-of-the-art technology that can be installed on each ship in less than two weeks by a skilled nine-man PCE team.

The first phase of the contract, valued at \$1.1 million, was awarded to PCE by the Navy Regional Con-

tracting Center (agents for NAVSESS), Philadelphia, Pa. Work is expected to be completed over a two-year period.

In addition to headquarters in San Diego, PCE also has facilities in Seattle and Honolulu.

For further information and free literature on Bird-Johnson pneumatic systems and marine equipment,

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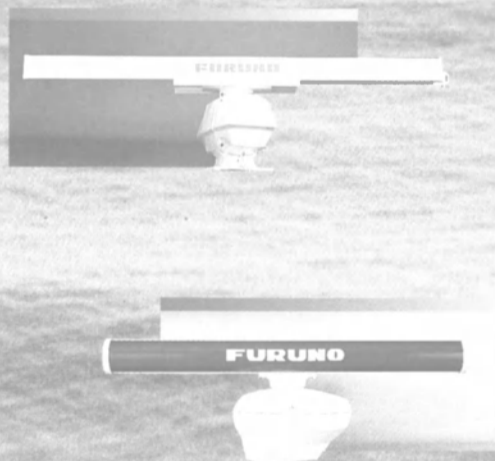
plotter adapters: the RP Series that permits relative motion plotting with simultaneous real time radar, or the ARP Series that automatically tracks up to 5 manually acquired targets. Both units accept Furuno's convenient ROM electronic chart cards.

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## PROPULSION UPDATE

### Huge Train Ferry 'Railship III' Powered By Wartsila Diesels

Reportedly the world's largest train ferry, the Railship III was recently commissioned for the Rail-ship Group.

Built by Schichau Seebeckwerft in Bremerhaven, the ferry increases the Railship Group's transportation capacity on the Baltic Sea route between West Germany and Finland by 50 percent. There are six sailings a week with three ships on the 550-nautical-mile route between Travemunde and the port of Han-ko.

The 10,000-dwt ferry has a length of about 622 feet, width of 70 feet and a loading capacity of 90 railcars. The service speed is 19 knots. She was built to meet the requirements of the Germanischer Lloyd Class E4 and the Finnish Ice-class 1A Super, which allow for year-round operation in severe ice conditions.

The vessel is powered by two Wartsila 9R46 main engines, each generating 8,145 kw. The Vasa 46 engine is the newest and most powerful heavy fuel engine built by Wartsila Diesel. Designed for heavy fuels up to a viscosity of 700 cSt/50 degrees C., the engines drive a Lips c-p propeller through a Lohmann & Stolterfoht reduction gear. The PTO on the gearbox drives an alternator rated at 1,200 kVA, which is used to power the bowthrusters.

The Vasa 46 engines are equipped with several innovations, such as Twin-injection, Swirlex turbocharger, and Thick-pad bearings.

The Twin injection provides good fuel atomization, which reduces ignition delay, rate of cylinder pressure rise and NO<sub>x</sub> emission formation.

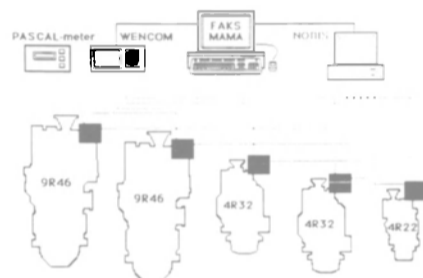
The Swirlex turbocharger system is an exhaust gas system combining the advantages of both pulse and constant pressure charging, resulting in excellent performance over a wide load and speed range.

Trial runs proved that the pro-

pulsion is reliable and powerful. Gale force winds over 30 m/s made the trials even more demanding for the propulsion machinery.

The measurements taken during the trials were all better or equal to specified values. The vessel could achieve a speed of 17.5 knots on one engine and 21.2 knots on two engines at MCR.

Auxiliary power is produced by two Wartsila Vasa 4R32 heavy fuel engines. They produce 1,620 kw each at 720 rpm. The auxiliary engines operate on the same fuel as the main engines. More than 1,000 of this popular medium-speed engine have been produced during the last 10 years.

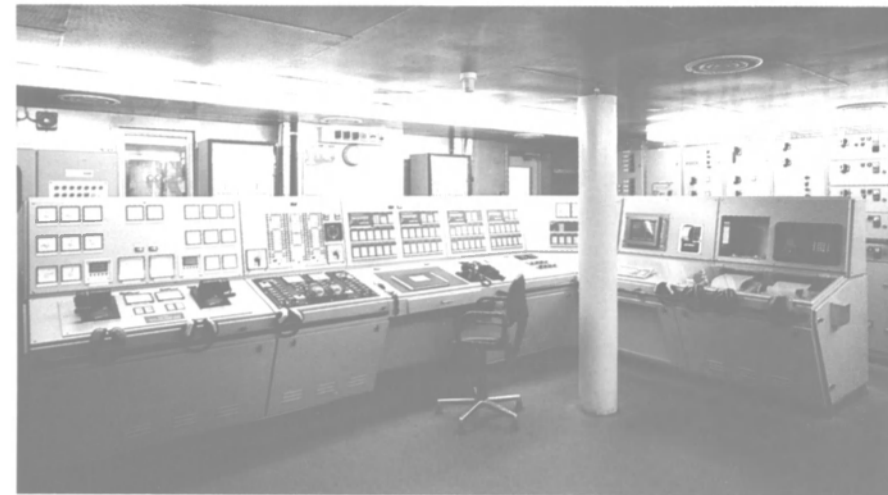


Computer systems layout of the Wartsila Diesel machinery.

One Vasa 4R22MD engine provides for emergency power. The engine is rated for 540 kw at 900 rpm and is the smallest diesel generator built by Wartsila Diesel in Finland.

The Railship III is also equipped with a complete set of computer systems developed by Wartsila Diesel. All five Vasa engines are connected with these systems for monitoring operating data, diagnosis and planning maintenance.

Wencom and Noris are the monitoring part of the computer systems. They collect data at high frequency to be able to respond quickly if an alarm or shutdown situation occurs.



View of the control room.

The printer produces an automatic printout in the event of an alarm or shutdown.

The diagnostics for the computer systems are provided by FAKS (Fault Avoidance Knowledge System). FAKS is an expert system for diagnosing trends that take days to develop. Sample data are compared

with data for an ideal engine a few times a day.

The planning system for maintenance is Wartsila Diesel's Mama.

For free literature containing full information on products from Wartsila Diesel,

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### Hover Systems/Eastern Shipyards Announce Air Cushion Vehicles Licensing Agreement



Hover craft consist of a rigid hull and superstructure supported on a cushion of air provided by internal centrifugal fans and contained under the craft by a flexible loop and segmented, ducted skirt. Propulsion is provided by one or more ducted propellers which are diesel driven.

Hover Systems, Inc. Eddystone, Pa., and Eastern Shipyards, Inc., Panama City, Fla., recently signed a licensing agreement whereby Eastern Shipyards will market and build a full range of Hover Systems air cushion vehicles (ACVs) for a multitude of maritime applications.

Hover Systems craft are capable of operating over open water and areas prohibited to conventional craft, such as shallow flats, grassy areas, sand bars, beaches, ice and land areas.

Brian d'Isernia, Eastern Shipyards' president, states that their marketing development group, managed by C.A. (Charlie) Hall, with experience in advanced marine vehicles, will head a program to target the commercial passenger, construction, oil and gas, governmental/military and sports industries.

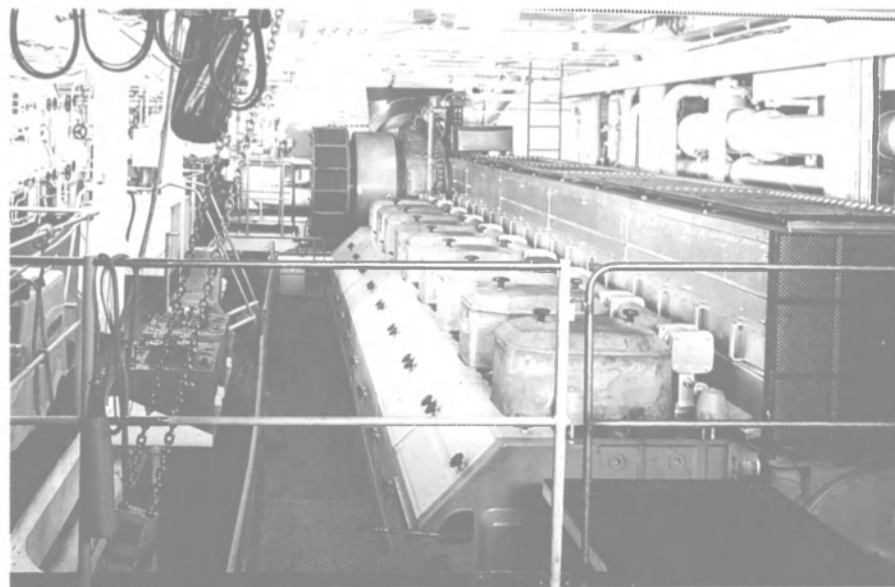
Mr. d'Isernia and James D. Hake, Hover Systems' president,

indicated that the potential applications for specialized operations utilizing air cushion vehicles are virtually unlimited. With this potential, Hover Systems operates the only USCG-approved hovercraft operators training school in the country.

Hover Systems retains certain exclusive USA master licensing rights from Griffon Hovercraft, Ltd., the U.K. hovercraft designer and builder. Hover Systems and Griffon have dramatically reduced the propulsion system noise factors through extensive testing, and with the use of advanced dampening materials approved by the U.S. and Canadian Coast Guards and other regulatory agencies.

For further information and free literature,

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View of the engine room.





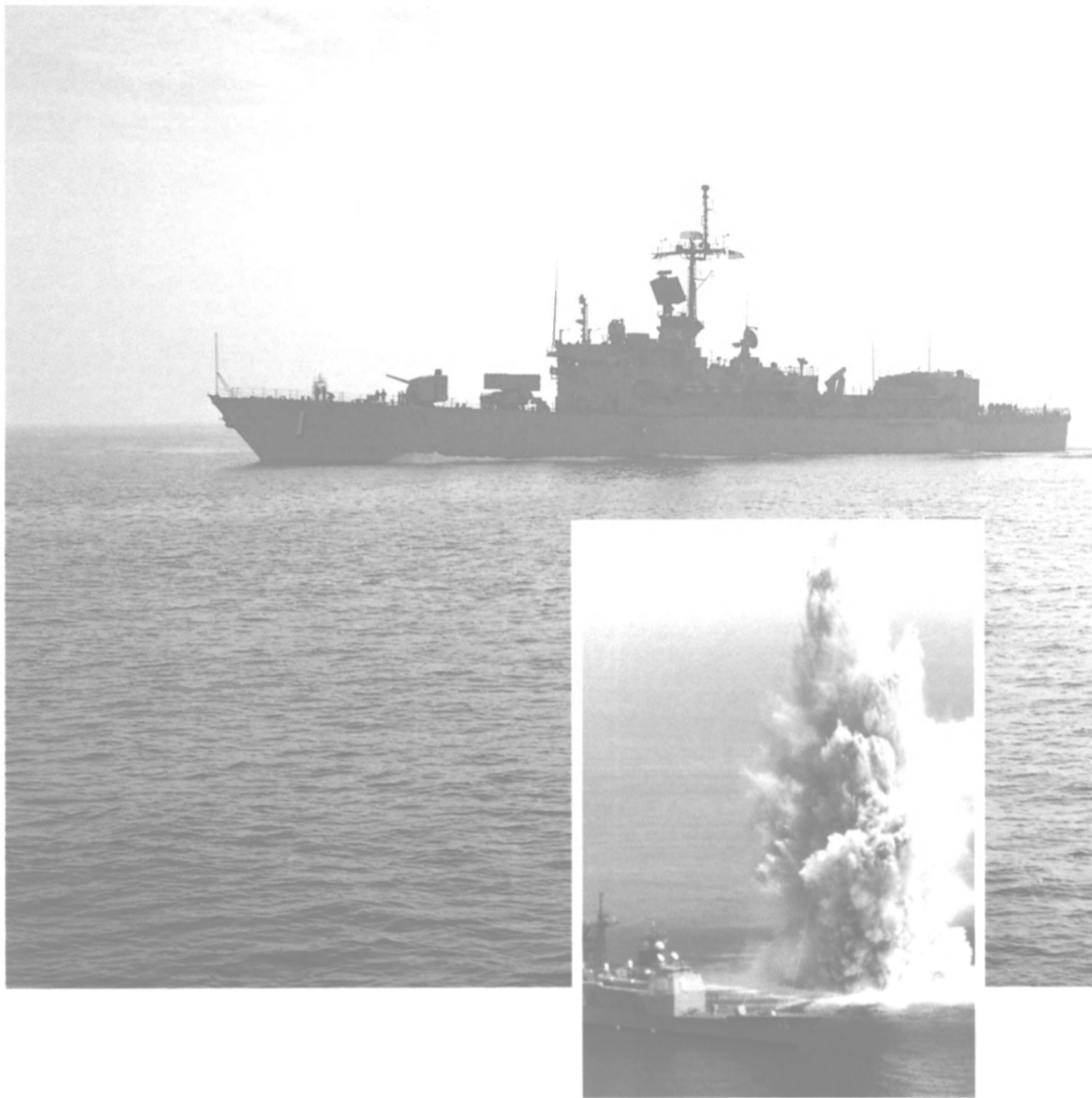
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## STATUS REPORT ON U.S. NAVY SHIP AND EQUIPMENT PROCUREMENT

DOD Requests \$100.3 Billion To Fund Navy Programs In FY91

By James R. McCaul, President  
IMA Associates, Inc.

The Department of Defense (DOD) has requested slightly more than \$100 billion to fund Navy programs in FY 1991. The funding level is virtually the same as the amount approved for this year.

### Shipbuilding & Conversion

The shipbuilding and conversion program calls for the construction of one Trident Class (SSBN) ballistic

Photo: USS Arleigh Burke at her recent launching at BIW. There are five DDG-51s in the FY91 budget.

missile submarine, two Seawolf Class (SSN-21) attack submarines, five Arleigh Burke Class Aegis destroyers (DDG-51), one amphibious assault ship (LHD-1), one Landing Ship Dock, Cargo Variant (LSD-41, CV), three Coastal Minehunters (MHC-51), one Fast Combat Support Ship (AOE) and one Ocean Surveillance Ship (T-AGS). Procurement of 12 Landing Craft, Air Cushion (LCAC) is also requested. For more details on these programs, see Table 1.

Although there were no ship conversions included in FY91, advance

procurement funds totaling \$113.1 million were requested for the Carrier Service Life Extension Program (CV-67 SLEP) for the USS John F. Kennedy scheduled in FY93.

The remainder of the FY91 request includes \$10.4 million for landing craft, \$27.3 million for service craft, \$231.1 million for outfitting, \$154.5 million for post delivery, \$5.8 million for first destination transportation, and \$36.3 million for special support equipment. First destination transportation has been transferred from the operation and maintenance to the procure-

ment appropriations to more fully reflect acquisition costs.

A significant change in the FY91 budget request from the Revised FY90/91 President's budget submission is the addition of two new multiyear procurement candidates. The LHD and LCAC programs are now being submitted as multiyear candidates in order to maximize cost savings and competition. The DDG-51 budget continues to assume multiyear procurement in FY90 and FY91.

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# U.S. NAVY

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The FY90 changes reflect proposed reprogramming actions for the following: an increase of \$21 million in the CV SLEP for full funding of essential repair and modernization items; an increase of \$27.9 million in the AOE program as a result of prior year shipbuilding execution experience; a decrease of \$9.4 million for the SSN-688 program as a result of shipbuilder contract award savings; a decrease of \$5.2 million in service craft requirements; and decreases in the outfitting and post delivery line items of \$12 million and \$9 million, respectively, as a result of ship schedule changes.

## Long-Term Shipbuilding Plan

Over the six-year period of FY 1989-1994, the Navy plans to build 117 ships, as well as perform six conversions and order a variety of small craft. Details of this work are shown in Exhibit 3.

## Naval Weapons

The Weapons Procurement, Navy (WPN) appropriation request of \$6.16 billion in FY 91 funds procurement of strategic and tactical missiles, satellites, torpedoes, guns and other weapons, ammunition and other ordnance, spare parts and support equipment.

The FY 91 Trident II (D-5) program resumes full rate production following recent successful flight tests. The Tomahawk missile program supports maximum competitive dual-source production levels, accelerating near-term procurement while capturing substantial cost efficiencies. The FY 91 AMRAAM program continues progress towards full rate production. The Harpoon program reflects an increase in FY 91 to procure missiles at a more economic rate when combined with Foreign Military Sales. Antisub requirements are also met by the procurement of Norwegian-built Penguin missiles. Fiscal Year 1990 includes a proposed reprogramming of \$23 million to cover projected price increases for the Penguin missile. The budget reflects the continued joint acquisition of the Air Force/Navy procured HARM anti-radiation missiles as well as the joint Army/Navy Hellfire anti-armor missiles to meet continuing defense suppression requirements. The Rolling Airframe Missile (RAM) program provides self-defense protection for amphibious and auxiliary ships, and is a joint NATO Cooperative program with West Germany. The FY 91 buy will be the second competitive procurement of RAM. The FY 91 Standard Missiles program buys 600 SM-2 Aegis Block IIIA and 300 Aegis Extended Range Block IV missiles on a dual-source basis. Both Sparrow and Standard Missile modification programs incorporate the Missile modification programs incorporate the Missile Homing Improvement Program (MHIP) upgrades starting in FY 91.

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Funding for the installation of equipment modifications was transferred in FY 90 from the operations to the procurement appropriations. While reflected as a single line item in FY 90, these funds are budgeted in FY 91 with the appropriate weapon system or modification program line item. Additionally, the procurement of ammunition is, in FY 91, transferred from OPN to WPN, and first destination transportation costs are transferred in from and maintenance appropriations to the procurement appropriations.

The dual sourced MK-48 ADCAP torpedo will provide a substantial increase in operational capabilities over the in-service MK-48 Mod 4 Series. The FY 91 buy sustains procurement at a minimum level of 240 torpedoes until product improvements have been incorporated. The MK-50 ALWT torpedo program, a follow-on to the MK-46 lightweight torpedo, is dual sourced, with FY 91 representing a third year of procurement. The consolidated ASW Targets program supports both the MK-30 heavyweight targets, for highly sophisticated training requirements and the low cost MK-39 Expendable Mobile ASW Training Target (EMATT), for less stringent training requirements. Other procurements support ASROC, Torpedo Support Equipment and Modifications, and ASW Range Support Equipment.

## Other Procurement

The other procurement appropriation request of \$6.08 billion in FY 91 will fund procurement of ship support equipment, communications and electronics equipment, aviation support equipment, ordnance support equipment, civil engineering support equipment, supply and personnel/command support equipment and spares and repair parts. The decrease from FY 90 is primarily associated with the one-time FY 90 increase in ship's support equipment of \$1.82 billion to fully fund the installation of mod-

ernization equipment procured in FY 90 and prior years. In FY 91, installation costs have been incorporated into the total cost of the end item, resulting in increases in many line items. First destination transportation has been transferred from the operation and maintenance to the procurement appropriations to more fully reflect acquisition costs. Additionally, ammunition procurement previously reflected in aviation support equipment and ord-

nance support equipment has been transferred to the Weapons Procurement, Navy appropriation. Finally, funding for Special Operation Forces (SOF) has been transferred to Procurement, Defense Agencies commencing in FY 91.

The Ships Support Equipment budget of \$1.34 billion in FY 91 includes procurement of one reactor core, and minor increases in fire-fighting equipment and pollution control equipment.

Exhibit 1  
FY 1991 NAVY BUDGET REQUEST  
(in millions of \$)

	FY 1989	FY 1990	FY 1991
<b>Procurement</b>			
Shipbuilding and conversion	\$9,840	\$11,019	\$11,195
Naval weapons	6,092	5,353	6,161
Naval aircraft	9,311	9,298	9,839
Other systems and components	4,753	7,780	6,082
Marine Corps	1,292	1,075	782
<b>Research &amp; Development</b>	9,282	9,466	9,102
<b>Military Construction</b>	1,583	1,123	1,113
<b>Operation &amp; Maintenance</b>	25,138	24,560	24,532
<b>Other</b>	30,556	30,676	31,492
<b>Total Navy</b>	<b>\$97,847</b>	<b>\$100,350</b>	<b>\$100,298</b>

Exhibit 2—SHIPBUILDING AND CONVERSION, NAVY  
(In Millions of Dollars)

	FY 1989		FY 1990		FY 1991	
	QTY	\$	QTY	\$	QTY	\$
<b>NEW CONSTRUCTION</b>						
TRIDENT	1	1,217.2	1	1,214.7	1	1,387.6
SSN-688	2	1,298.5	1	732.9	—	—
SSN-21	1	1,687.7	—	606.3	2	3,482.0
DDG-51	4	2,791.5	5	3,451.7	5	3,570.0
LHD-1	1	728.8	—	34.6	1	959.8
LSD-41(CV)	—	—	1	226.4	1	240.0
MCM	—	—	3	337.2	—	—
MHC	2	194.4	2	194.8	3	268.1
TAO	5	688.2	—	—	—	—
TAGOS	3	184.2	1	153.8	—	—
AOE	1	361.9	1	379.8	1	398.2
OCEANOGRAPHIC RESEARCH	—	—	3	274.6	1	43.1
LCAC	(15)	305.0	(12)	269.8	(12)	267.9
SOF LANDING CRAFT	—	1.5	(9)	97.2	—	—
USCG ICEBREAKER	—	—	1	324.8	—	—
USCG PATROL BOATS	—	—	(12)	82.9	—	—
<b>CONVERSION/ACQUISITION/OTHER</b>						
CV-SLEP	—	62.7	1	643.3	—	113.1
ENTERPRISE REFUELING/MOD	—	—	1	1,404.1	—	—
AO JUMBO	2	74.5	1	35.2	—	—
MOORED TRAINING SHIP	—	—	(1)	217.2	—	—
OTHER COSTS	—	244.0	—	338.1	—	465.4
<b>TOTAL: SCN</b>	<b>22</b>	<b>9,840.1</b>	<b>22</b>	<b>11,019.4</b>	<b>15</b>	<b>11,195.2</b>

Exhibit 3—LONG-TERM NAVY SHIPBUILDING AND CONVERSION PLAN  
FY 1989-1994

	FY 1989	FY 1990	FY 1991	FY 1992	FY 1993	FY 1994	Total
<b>Construction</b>							
Trident Submarine (SSBN)	1	1	1	1	1	1	6
Attack Submarine (SSN 688)	2	1	0	0	0	0	3
New Attack Submarine (SSN 21)	1	0	2	0	6	0	9
Destroyer (DDG 51)	4	5	5	10	0	10	34
Mine Countermeasure Ship (MCM)	0	3	0	0	0	0	3
Minesweeper (MHC)	2	2	3	4	5	0	16
Amphibious Landing Craft (LSD 41)	0	1	1	1	1	1	5
Amphibious Assault Ship (LHD 1)	1	0	1	0	1	0	4
Ocean Surveillance Ship (TAGOS)	3	1	0	2	3	0	9
Fleet Oiler (TAO-187)	5	0	0	0	0	0	5
Fast Combat Support Ship (AOE)	1	1	1	0	3	0	6
Ammunition Ship (AE)	0	0	0	0	1	2	3
Salvage Ship (ARS)	0	0	0	0	0	1	1
Repair Ship (AR)	0	0	0	0	0	1	1
Ocean Research Ship (AGOR)	0	3	1	2	1	2	9
Ocean Surveillance Ship (AGOS)	0	0	0	1	0	2	3
USCG Icebreaker	0	1	0	0	0	0	1
<b>Total Construction</b>	<b>20</b>	<b>19</b>	<b>15</b>	<b>21</b>	<b>22</b>	<b>20</b>	<b>117</b>
<b>Conversion</b>							
Carrier Modernization (CV SLEP)	0	1	0	0	1	0	2
Enterprise Refueling/Mod	0	1	0	0	0	0	1
Fleet Oiler Lengthening (AO 1)	2	1	0	0	0	0	3
<b>Total Conversion</b>	<b>2</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>6</b>
<b>Other</b>							
Landing Craft (LCAC)	15	12	12	12	12	11	74
SOF Landing Craft	0	9	0	0	0	0	9
USCG Patrol Boats	0	12	0	0	0	0	12
Moored Training Ship Conversion	0	1	0	1	0	0	2
<b>Total Other</b>	<b>15</b>	<b>34</b>	<b>12</b>	<b>13</b>	<b>12</b>	<b>11</b>	<b>97</b>

Source: Department of the Navy

The FY 91 budget includes \$2.02 billion for communication and electronics equipment. Major increase in FY 91 include increased procurement of AN/SQQ-89 Surface ASW Combat Systems and AN/BQQ-5 Sonar Systems to continue to modernize the fleet, \$141.9 million for the BSY-2 software support facility which is required to meet the initial operating capability if the SSN-21, and funding for one Relocatable Over the Horizon (ROTHR) system.

Ordnance Support Equipment includes \$86.2 million for the procurement of equipment associated with the backfit of the D-5 missile configuration into Trident submarines commencing with the first overhaul

in FY 93. Other major increases include the procurement of Aegis Support Equipment and Shipboard Expendable Countermeasures.

Supply Support Equipment is funded at a level of \$478.4 million in FY 91, primarily associated with classified special purpose systems.

Personnel and Command Support Equipment is budgeted at \$748.6 million and includes \$348.2 million for industrial depot maintenance equipment (previously included in the Navy industrial fund asset capitalization program), and an increase for training devices for such items as a Landing Craft Air Cushion (LCAC) trainer and required state-of-the-art modifications to existing trainers.

### Research & Development

The RDT&E, Navy, appropriation request is \$9.10 billion in FY

91, a decrease of \$363.4 million from the FY 90 request. Most of the decrease is caused by tactical programs transitioning to production. (continued)

**Exhibit 4—WEAPONS PROCUREMENT, NAVY**  
(In Millions of Dollars)

	FY 1989		FY 1990		FY 1991	
	QTY	\$	QTY	\$	QTY	\$
<b>MISSILES</b>						
TRIDENT II	66	1,865.6	42	1,439.1	52	1,536.3
TOMAHAWK	510	675.3	400	572.0	600	808.7
AMRAAM	26	34.8	85	107.9	550	421.9
MAVERICK	731	81.9	560	66.4	—	5.8
HARM	1,307	300.8	1,162	291.8	1,320	339.4
HARPOON	119	172.9	190	212.1	215	241.1
PENGUIN	—	3.5	64	66.3	65	44.2
RAM	260	51.8	580	90.2	405	70.4
STANDARD MISSILES	1,310	594.6	940	390.2	900	607.8
HELLFIRE	1,000	34.8	1,098	50.3	1,198	42.1
OTHER MISSILES		1,072.7		651.2		397.0
INSTALL OF MODERN EQ		—		30.4		—
<b>TORPEDOS</b>						
MK-48 ADCAP	320	481.1	260	437.8	240	350.3
MK-50 ALWT	140	197.4	200	270.8	265	328.3
OTHER TORPEDOES		166.0		95.0		162.7
<b>AMMUNITION</b>						
OTHER ORDNANCE		—		—		275.2
<b>OTHER</b>						
FLTSATCOM (UHF)	—	173.6	2	312.7	3	249.6
MK-15 CIWS & MODS	2	73.1	18	116.3	17	143.3
ALL OTHER		111.6		152.5		137.3
<b>TOTAL: WEAPONS PROCUREMENT, NAVY</b>		<b>6,091.5</b>		<b>5,353.0</b>		<b>6,161.4</b>

**Exhibit 5—OTHER PROCUREMENT, NAVY**  
(In Millions of Dollars)

	FY 1989	FY 1990	FY 1991
SHIPS SUPPORT EQUIPMENT	620.5	3,580.5 <sup>1</sup>	1,399.0
COMMUNICATIONS AND ELECTRONICS EQUIPMENT	1,399.5	1,562.8	2,021.0
AVIATION SUPPORT EQUIPMENT	487.7	577.8	283.8 <sup>2</sup>
ORDNANCE SUPPORT EQUIPMENT	1,051.6	733.0	600.6 <sup>2</sup>
CIVIL ENGINEERING SUPPORT EQUIPMENT	111.6	99.7	88.5
SUPPLY SUPPORT EQUIPMENT	109.7	143.1	478.4
PERSONNEL AND COMMAND SUPPORT EQUIPMENT	444.8	669.3	748.6
SPARES AND REPAIR PARTS	203.1	228.0	244.2
OUTFITTING SPARES	324.5	186.0	277.4
<b>TOTAL: OTHER PROCUREMENT, NAVY</b>	<b>4,752.8</b>	<b>7,779.8</b>	<b>6,081.5</b>

**Exhibit 6—RESEARCH, DEVELOPMENT, TEST AND EVALUATION, NAVY**  
(In Millions of Dollars)

	FY 1989	FY 1990	FY 1991
TECHNOLOGY BASE	782.1	804.9	867.5
ADVANCED TECHNOLOGY DEVELOPMENT	190.0	213.9	199.6
STRATEGIC PROGRAMS	778.3	390.6	285.7
TACTICAL PROGRAMS	6,037.4	6,523.4	6,146.3
INTELLIGENCE AND COMMUNICATIONS	723.3	860.1	873.6
DEFENSE WIDE MISSION SUPPORT	770.4	672.9	729.7
<b>TOTAL: RESEARCH, DEVELOPMENT, TEST AND EVALUATION, NAVY</b>	<b>9,281.5</b>	<b>9,465.8</b>	<b>9,102.4</b>
<b>SIGNIFICANT PROGRAMS</b>			
TRIDENT II	567.2	213.9	91.8
F-14 UPGRADE	152.6	117.8	121.4
NAVY ATF	63.7	60.6	65.7
ADVANCED AIR-TO-AIR MISSILE (AAAM)	29.6	70.4	84.2
V-22	301.3	255.0	—
HELICOPTER DEVELOPMENT	11.5	17.1	65.6
P-3 MODERNIZATION PROGRAM	199.7	340.1	280.7
A-12	*	*	*
SEA LANCE	78.1	81.5	—
SSN-21 DEVELOPMENT	187.2	181.9	186.9
SUBMARINE COMBAT SYSTEM	365.7	340.8	346.7
SURF ASW SYSTEM IMPROVEMENT	66.3	134.7	168.4
FIXED DISTRIBUTED SYSTEM	99.0	141.2	210.2
*CLASSIFIED PROGRAM			

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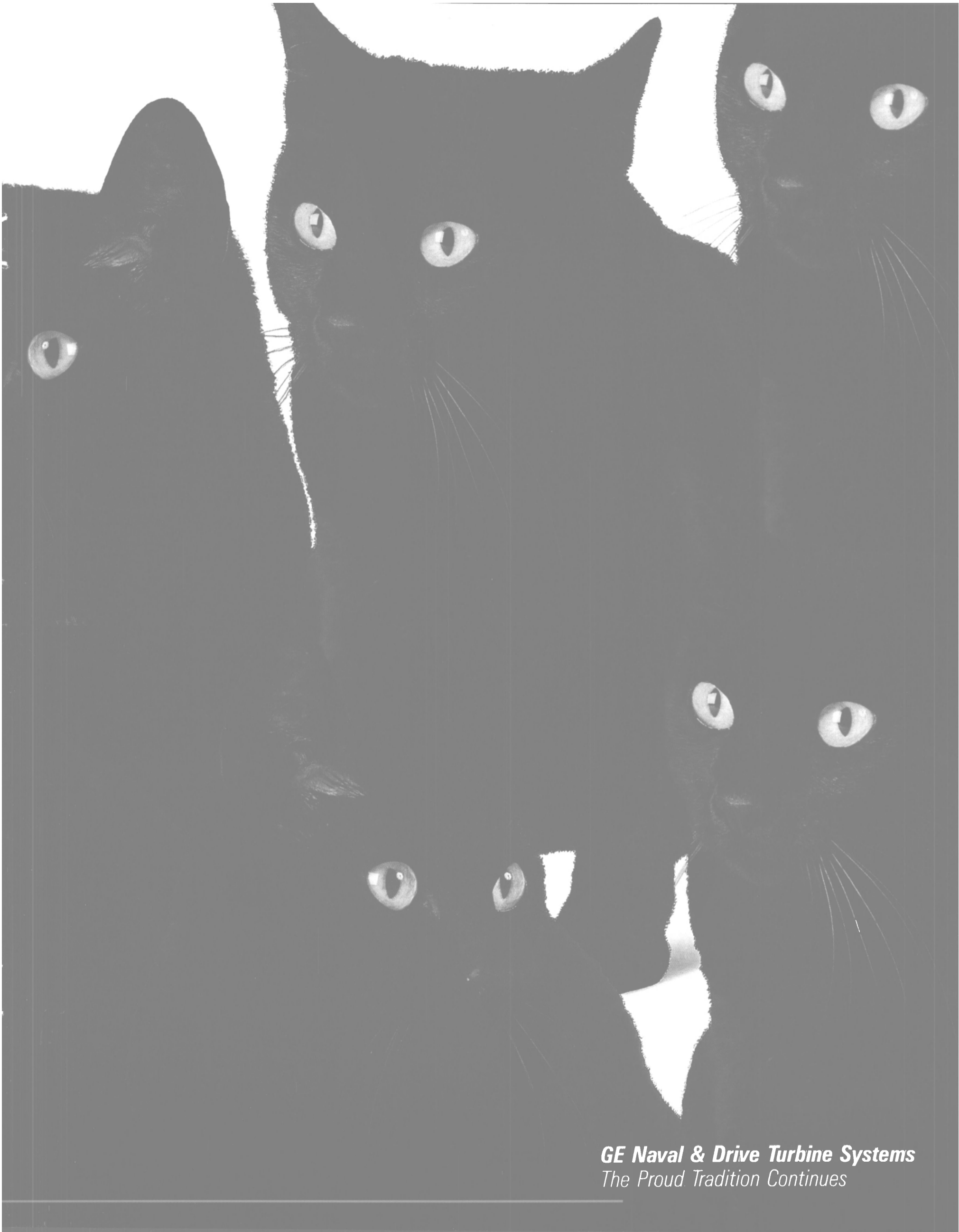
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The Technology Base, which provides funding for basic research and exploratory development with the primary objective of increasing fundamental scientific knowledge adaptable to solving needs of widely varying future requirements, increases by \$62.6 million from FY 1990 to FY 91. Advanced Technology Development Programs have been restructured for better managerial oversight, but funding remains relatively constant.

The primary effort in Strategic Programs is the Trident D-5 missile development effort, which completes full-scale engineering development in FY 91.

The decrease in FY 91 for Tactical Programs is the sum of several changes and reflects the impact of programs transitioning to production, including P-3C Update IV, MK-50 torpedo, Joint Advanced Systems, and the termination of funding for V-22 development after

FY 90. The FY 91 budget continues the F-14D predeployment update (PDU) effort to expand the capability of baseline hardware to meet projected operational requirements; SSN-21 will continue development and testing; Surface ASW System Improvement will continue full-scale engineering development of the AN/SQQ-891; and Fixed Distributed System will continue both wet and dry end development. Sea Lance development has been terminated in FY 90.

Intelligence and communications programs are level funded following an increase from FY 89 to FY 90 to reflect the transition of Navstar GPS from development to a level required to integrate the system into Naval aircraft on schedule with termination of other navigation systems.

## Ship Maintenance Funding

DOD has requested \$3.7 billion to fund ship maintenance and modernization in FY 91. This figure will fund 13 overhauls and about 135

short term scheduled maintenance availabilities. Included in the budget is \$2.5 billion for active fleet depot level repair and \$205 million for maintenance and modernization of ships in the naval reserve fleet.

IMA Associates is a management consulting firm. For the past 17 years, IMA has systematically covered business developments affecting shipbuilders and marine equipment suppliers in the U.S. Part of

its activities include publication of a quarterly report which tracks developments affecting business opportunities with the U.S. Navy. For more information about IMA's quarterly report, contact: **James R. McCaul**, IMA Associates, Inc., 2600 Virginia Avenue, NW, Suite 901, Washington, DC 20037; telephone: (202) 333-8501; or fax: (202) 333-8504.

## Major Navy Contracts

Compiled by Maritime Reporter Staff

**National Steel and Shipbuilding Company**, San Diego, Calif., was awarded a **\$197,591,586** fixed-price-incentive contract for the construction of one fast combat support ship (AOE 8). Work is expected to be completed in July 1993. The Naval Sea Systems Command, Washington, D.C., awarded the contract (N00024-87-C-2002).

**Peterson Builders, Inc.**, Sturgeon Bay, Wisc., was awarded a **\$180,539,246** option to a previously awarded fixed-price contract for the construction of three mine countermeasures ships. Work will be completed October 31, 1993. The Naval Sea Systems Command, Washington, D.C., awarded the contract (N00024-89-C2126).

**Orange Shipbuilding Company, Inc.**, Orange, Texas, was awarded an option exercise of **\$5,805,000** under a previously awarded firm-fixed-price contract for 15 open lighter (YC) barges. Work will be completed in October 1991. The Naval Sea Systems Command, Washington, D.C., awarded the contract (N00024-89-C2112).

**National Steel and Shipbuilding Company**, San Diego, Calif., was awarded a **\$8,932,555** contract to accomplish the Post Shakedown Availability (PSA) for USS Chancellorsville (CG 62). This work also provides engineering and management support. Work is expected to be completed August 20, 1990. The Naval Sea Systems Command, Washington, D.C., awarded the contract (N00024-90-C-2101).

**Avondale Industries Incorporated, Avondale Shipyards Division**, New Orleans, La., was awarded a **\$128,265,950** modification to a previously awarded fixed-price-incentive contract for the construction of one LSD-41 class dock landing ship. Work is expected to be completed in May 1994. The Naval Sea Systems Command, Washington, D.C., awarded the contract (N00024-88-C-2048).

**Textron Marine Systems**, New Orleans, La., was awarded a **\$121,106,308** modification to a previously awarded fixed-price-incentive contract for the construction of nine Landing Craft Air Cushion (LCAC) ships. Work is expected to be completed in June 1993. The Naval Sea Systems Command, Washington, D.C., awarded the contract (N00024-89-C-2028).

**Bollinger Machine Shop and Shipyard Incorporated**, Lockport, La., was awarded a **\$73,448,069** modification to a previously awarded firm-fixed-price contract for 12, 110-foot Island class patrol boats. Also included are spare parts. Work is expected to be completed in July 1992. The Naval Sea Systems Command, Washington, D.C., awarded the contract (N00024-87-C-2029).

**Avondale Gulfport Marine**, Gulfport, Miss., was awarded a **\$39,132,610** modification to a previously awarded fixed-price-incentive contract for the construction of three Landing Craft Air Cushion (LCAC) ships. Work is expected to be completed in June 1993. The Naval Sea Systems Command, Washington, D.C., awarded the contract (N00024-89-C-2110).

**Raytheon Company, Equipment Division**, Wayland, Mass., was awarded a **\$273,745,177** fixed-price-incentive con-

tract for three over-the-horizon radar systems. Also included are spares, site support equipment, depot equipment, special tooling and test equipment, technical drawings and an upgrade to the prototype system. Work is expected to be completed July 30, 1993. The Space and Naval Warfare Systems Command, Washington, D.C., awarded the contract (N00039-90-C-0027).

**Pacific Ship Repair & Fabrication**, San Diego, Calif., was awarded a **\$6,177,771** firm-fixed-price contract for Drydocking Phased Maintenance Availability for USS Tripoli (LPH 10). Work includes boiler, propeller, forced draft blower and fuel oil tank repairs. Work is expected to be completed May 30, 1990. The Supervisor of Shipbuilding, Conversion and Repair, San Diego, Calif., awarded the contract (N00024-85-H-8107).

**Bath Iron Works Corporation**, Bath, Maine, has been awarded a **\$26,360,620** cost-plus fee contract modification under existing NAVSEA contract N00024-87-C-2077 for the 4th option period for Lead Yard Services in support of the DDG-51 Aegis Destroyer Program. Included are those services which apply to the DDG-51 Class follow-on ships and cover efforts not included in Ship Construction contracts consisting of configuration management efforts, control and pricing of vendor options. Contract modification will support follow-on ship construction through FY 90. Work is expected to be completed September 30, 1990. The Naval Sea Systems Command awarded the contract (N00024-87-C-2077).

**Magnavox Government & Industrial Electronics Company**, Fort Wayne, Ind., was awarded a **\$25,223,162** firm-fixed-price contract for 22,875 AN/SSQ-62B sonobuoys. The AN/SSQ-62B sonobuoy is a directional, command, active sonobuoy used in the detection localization and identification of potentially hostile submarines by U.S. Navy Airborne ASW forces. The work is expected to be completed in September 1993. The Naval Avionics Center, Indianapolis, Ind., awarded the contract (N00163-90-C-0004).

**Southwest Marine, Incorporated**, Terminal Island, Calif., was awarded a **\$6,782,864** firm-fixed-price contract for Drydocking Phased Maintenance Availability for USS Hepburn (FF 1055). Work is expected to be completed September 28, 1990. The Naval Sea Systems Command, Washington, D.C., awarded the contract (N00024-85-H-8222).

**Raytheon Company, Submarine Signal Division**, Portsmouth, R.I., was awarded a **\$46,166,892** firm-fixed-price contract for materials and services for AN/SQS-56 sonar systems and ancillary equipment. Work is expected to be completed in December 1996. The Naval Sea Systems Command, Washington, D.C., awarded the contract (N00024-90-C-6065).

**G. Marine Diesel Corporation**, Brooklyn, N.Y., was awarded a **\$7,901,019** firm-fixed-price contract for Drydocking Phased Maintenance Availability for USS Butte (AE-17). Work is expected to be completed June 29, 1990. The Naval Sea Systems Command, Washington, D.C., awarded the contract (N00024-85-H-8150).

**IBM Corporation, Federal Systems Division**, Manassas, Va., was awarded a **\$5,696,205** cost-plus-fixed-fee delivery or-

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der under a basic ordering agreement to repair critical components of the AN/BQQ-5 submarine sonar system, the AN/UYH-2 receiver/recorder Advanced Signal Processor (ASP) system and the Enhanced Verdin Processor (EVP) secure digital data communication system. Work is expected to be completed December 31, 1990. The Navy Ships Parts Control Center, Mechanicsburg, Pa., awarded the contract (N00104-86-G-A116).

**Ingalls Shipbuilding, Incorporated**, Pascagoula, Miss., was awarded a **\$9,816,556** cost-plus-award-fee modification for six shipsets of ship alteration kits. Work is expected to be completed in May 1991. The Naval Sea Systems Command, Washington, D.C., awarded the contract (N00024-89-C-4108).

**General Electric Company, Defense Systems Division**, Pittsfield, Mass., was awarded an **\$8,350,000** cost-plus-fixed-fee contract for design agent services for the MK-15 Phalanx Close-in Weapons System. Work is expected to be completed September 30, 1990. The Naval Sea Systems Command, Washington, D.C., awarded the contract (N00024-90-C-3106).

**General Electric Company**, Schenectady, N.Y., was awarded a **\$99,421,000** modification to a previously awarded cost-plus-fixed-fee contract for naval nuclear propulsion components. The Naval Sea Systems Command, Washington, D.C., awarded the contract (N00024-87-C-4001).

**Southwest Marine, Inc.**, Terminal Island, Calif., was awarded a **\$5,270,454** firm-fixed-price contract for Drydocking Selected Restricted Availability (DSRA) for USS Duncan (FFG 10). Work is expected to be completed July 27, 1990. The Naval Sea Systems Command, Washington, D.C., awarded the contract (N00024-85-H-8222).

**Northwest Marine, Inc.**, Portland, Ore., was awarded a **\$29,798,179** firm-fixed-price contract for the regular overhaul and new threat upgrade of USS Standley (CG 32). Work is expected to be completed

June 12, 1991. The Naval Sea Systems Command, Washington, D.C., awarded the contract (N00024-85-H-8197).

**Magnavox Government and Industrial Electronics Company**, Fort Wayne, Ind., was awarded a **\$23,964,598** firm-fixed-price contract for 72,268 AN/SSQ-53D sonobuoys. Work is expected to be completed in September 1991. The Naval Avionics Center, Indianapolis, Ind., awarded the contract (N00163-90-C-0003).

**National Steel and Shipbuilding Company**, San Diego, Calif., was awarded a **\$5,471,237** firm-fixed-price contract for Drydocking Selected Restricted Availability (DSRA) for USS Valley Forge (CG 50). Work is expected to be completed June 8, 1990. The Supervisor of Shipbuilding, Conversion and Repair, San Diego, Calif., awarded the contract (N00024-85-H-8192).

**Bath Iron Works Corporation**, Bath, Maine, was awarded a **\$511,894,475** fixed-price-incentive contract to construct two DDG-51 Class ships. Work is expected to be completed in April 1996. The Naval Sea Systems Command, Washington, D.C., awarded the contract (N00024-90-C-2801).

**Ingalls Shipbuilding**, Pascagoula, Miss., was awarded a **\$614,216,000** fixed-price-incentive contract to construct three DDG-51 Class ships. Work is expected to be completed in July 1996. The Naval Sea Systems Command, Washington, D.C., awarded the contract (N00024-90-C-2800).

**General Ship Corporation**, Boston, Mass., was awarded a **\$7,958,292** firm-fixed-price performance-incentive contract for Extended Drydocking Selected Restricted Availability (EDSRA) for USS Clark (FFG-11). Work is expected to be completed February 28, 1991. The Naval Sea Systems Command, Washington, D.C., awarded the contract (N00024-85-H-8157).

**National Steel and Shipbuilding Company**, San Diego, Calif., was awarded a **\$10,804,733** firm-fixed-price contract for Extended Drydocking Selected Restricted

Availability (EDSRA) for USS Wadsworth (FFG-9). Work is expected to be completed in April 1991. The Naval Sea Systems Command, Washington, D.C., awarded the contract (N00024-85-H-8192).

**General Dynamics Corporation, Electric Boat Division**, Groton, Conn., was awarded a **\$70,671,508** cost-plus-fixed-fee contract for engineering and technical services for Ohio class submarines. Work is expected to be completed September 30, 1990. The Naval Sea Systems Command, Washington, D.C., awarded the contract (N00024-90-C-2115).

**Swiftships, Inc.**, Morgan City, La., was

awarded a **\$8,800,390** firm-fixed-price contract for the construction of one LCM-8 Class ship. Work is expected to be completed in May 1992. The Naval Sea Systems Command, Washington, D.C., awarded the contract (N00024-90-C-2212).

**General Dynamics, Pomona Division**, Pomona, Calif., was awarded a **\$18,780,252** cost-plus-fixed-fee contract for design agent services for the MK 15 Phalanx Close-In-Weapon System. Work is expected to be completed September 30, 1990. The Naval Sea Systems Command, Washington, D.C., awarded the contract (N00024-90-C-2070).

## Newport News Christens Navy's Newest Fast Attack Submarine 'Jefferson City'

Newport News Shipbuilding recently christened the Navy's newest fast attack submarine, Jefferson City (SSN759).

The ship's sponsor, **Susan Anding Skelton**, wife of U.S. Representative **Ike Skelton** of Missouri's 4th District, christened the ship. The principal speaker was Adm. **Kinnaid R. McKee**, USN (ret.).

The 360-foot-long Jefferson City, the 45th submarine overall, and 21st Los Angeles-class attack submarine christened at the Virginia shipyard, will carry a crew of 115 enlisted men and 12 officers.

Newport News Shipbuilding, the only builder of U.S. Navy aircraft carriers and one of two domestic shipyards building submarines, is the lead design yard for both Los

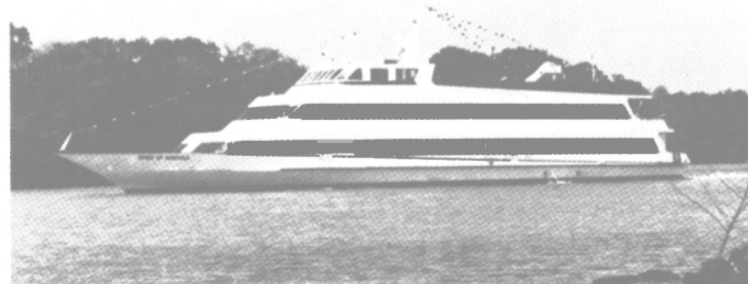
Angeles- and Seawolf-class attack submarines. The Jefferson City is one of 12 attack submarines now under construction at the yard, which is also building three Nimitz-class aircraft carriers for the U.S. Navy.

As part of the christening activities, the yard honored its Top Ten Suppliers of 1989. Two Hampton Roads businesses, Warwick Plumbing & Heating of Newport News and Snap Contracting Corp. of Norfolk were among its Top Ten Suppliers.

The Top Ten Suppliers list also includes: Bethlehem Steel Corp., Bethlehem, Pa.; Curtiss-Wright Corp., Lyndhurst, N.J.; Devoe Coatings Co., Louisville, Ky.; IMO Industries, Gems Sensors Div., Plainville, Conn.; Joy Technologies, Inc., Joy/Green Fan Div., New Philadelphia, Ohio; Precision Fabricators, Inc., Stuarts Draft, Va.; Seacoast Electric Co., Rye, N.J.; and Vitco Nuclear Products, Inc., Mentor, Ohio.

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The U.S. Navy SES-200, to be powered by twin MTU 16V396TB94 marine diesel engines and KaMeWa waterjets.

## MTU, KaMeWa To Supply Propulsion Machinery For Repowering U.S. Navy SES-200

MTU North America has been awarded a contract by the U.S. Navy's David Taylor Research Center to supply main propulsion diesel engines and, as U.S. representative for Sweden's KaMeWa AB, waterjet propulsion units for the repowering of the Navy's 160-foot, 200-ton surface-effect research ship, SES-200.

The new propulsion plant for the SES-200 will consist of two MTU 16V396TB94 marine diesel engines rated at 2,560 kw (3,433 bhp) each at 2,100 rpm. Coupled to ZF BW755 marine reduction gears (1.87:1), the engines will drive KaMeWa 71S62/6 waterjets via 30-foot-long, 5-inch-diameter intermediate shafts.

The repowering of the SES-200 is sponsored by the Department of Defense Foreign Weapons Evaluation/NATO Comparative Testing Program, the purpose of which is to evaluate foreign systems and equipment to determine the potential for U.S. service use.

"By awarding the contract to MTU, the U.S. Navy has demonstrated its commitment to objectively evaluating technologically advanced components for future high-speed naval vessels," said **Ray Carrell**, MTU North America president and CEO. "The 16V396TB94 engine, identical to those which recently powered the Gentry Eagle's record-breaking trans-Atlantic crossing, was selected for this program because of its outstanding performance characteristics and its proven reliability. In addition, MTU was chosen for its ability to provide a complete, system-engineered waterjet propulsion package. We are very pleased to be working with the U.S. Navy on this project and look forward to the advances it will bring to the field of high-performance ship design technology."

The 16V396TB94 engine is MTU's most advanced version of

the highly regarded Series 396 diesel engine program, used widely in many high-performance marine applications throughout the world.

This new equipment will join two MTU 6V396TB83 diesel engines currently installed on the SES-200 to drive four large lift fans used to pump air into the SES cushion. The 6V396 engines were installed at the end of 1988 to enhance lift-system

performance and to test advanced SES ride-control systems. Each engine drives one fan from each end through a Vulkan torsional coupling. This drive solution significantly reduces weight and space requirements of lift-fan systems and was first used on the SES-200.

For more information and free literature from MTU,

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## Philadelphia Naval Yard To Perform CV-64 Refit Under \$729.5-Million Pact

The Philadelphia Naval Shipyard will perform a \$729.5-million refit of the U.S. Navy aircraft carrier Constellation (CV-64). The work is scheduled to take two years.

## Trinity To Build Fifth Army LSV Under \$10-Million Pact

The U.S. Army has awarded Moss Point Marine, Inc., Escatawpa, Miss., a \$10-million contract to build the fifth of a new class of 274-foot Logistics Support Vessels (LSV).

The new ship will actually be built by a sister company in the Trinity Marine Group, Halter Marine at Moss Point, Miss., since Moss Point Marine is occupied with building and completing thirty-five 175-foot Army LCU-2000 landing craft.

The LSV is capable of delivering large quantities of cargo to almost any beach or port facility in the world.

With ramps fore and aft, the ship has a drive-through capability and

can assist in logistics over the shore operations. Containerized, break-bulk, and roll-on/roll-off (RO/RO) cargoes can safely and quickly be loaded, transported and discharged.

The all-steel LSV will be 274 feet in length with a 60-foot beam and 16-foot 5-inch depth. Power will be provided by two General Motors EMD 16-645-E2 diesel engines. The LSV can transport between 900 and 2,000 short tons of cargo depending on the type of operation. It is capable of approximately 12 knots sustained speed and has a range of over 5,500 nautical miles at loaded displacement.

Preliminary work has already begun and the ship will be delivered in January 1991.

For free literature detailing the facilities and capabilities of Trinity Marine Group,

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## Wilson & Hayes Mark 55 Years In Business

Wilson & Hayes Inc., a manufacturer of shipboard furniture, has passed 55 years of business. The company manufactures furniture to any specification—Navy, Coast Guard, Maritime Administration, NOAA—as well as for commercial marine projects, offshore oil drilling, the fishing industry, and ferry systems, to name a few. The company has also developed a quick ship program for small production runs. Berths, cabinets, desks, lockers, seats, tables, book racks, wardrobes, safes, modular units, galley equipment, secretary bureaus, and custom metal joiner trim, in small quantities, can be ordered and shipped in less than a week.

Wilson & Hayes can assist a customer with interior design/habitability projects, providing technical assistance, color coordination, room arrangements and detailed room layouts.

The company's drafting department can provide engineered/pre-production drawings detailing items and particular specifications.

Currently, Wilson & Hayes is broadening its market to include a replacement program for furniture parts, a rehabilitative program, interior design, and installing of equipment on shipboard.

Wilson & Hayes, Inc. puts out a comprehensive catalogue that cross-references Navy, Coast Guard, and MarAd furniture drawings. It also has brochures and line cards available upon request. For free copies,

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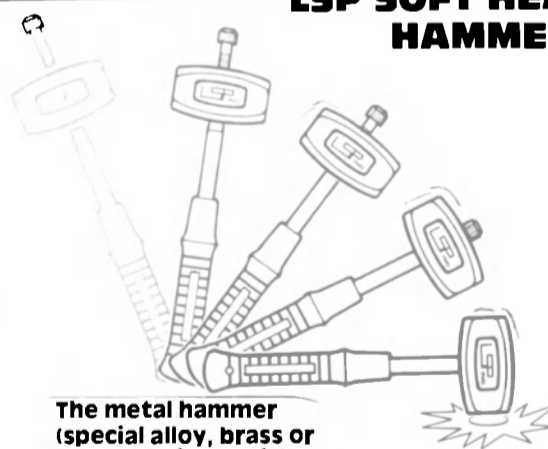
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\*Patent #3,394,745

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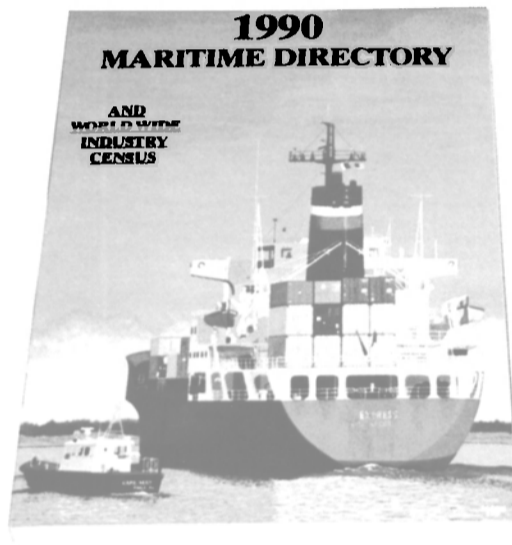
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## Soviet-Pepsi Deal: Soda For Ships, Vodka

In what is reportedly the largest deal ever undertaken between a U.S. company and the Soviet Union, PepsiCo, Inc., Purchase, N.Y., makers of the nation's number two soft drink, has agreed to trade Pepsi-Cola in exchange for ships and vodka.

Under the agreement, which has been estimated to be worth as much as \$3 billion, Pepsi will upgrade and expand the number of its bottling plants in the USSR and provide Pepsi-Cola syrup in exchange for Stolichnaya Russian Vodka and 10 tankers and freighters, ranging in size from 28,600 to 65,000 tons, with a value of over \$300 million.

According to the *Wall Street Journal*, Pepsi will assist the Soviets in selling or leasing 10 commercial ships in international markets. The ships will provide Pepsi with foreign exchange credits, part of which will be used to open the first Pizza Hut restaurants in Moscow later this year. Pepsi owns the Pizza Hut chain.

## Fairbanks Morse Receives Order For 16 Engines From Avondale

The Fairbanks Morse Engine Division of Colt Industries in Beloit, Wis., has been awarded contracts from Avondale Industries to supply eight 16-cylinder Colt-Pielstick PC2.5V engines, and eight 12-cylinder opposed piston engines for a re-configured class of Navy amphibious ships.

The diesel engines, shock qualified in accordance with military specifications, will propel and provide auxiliary power for the Cargo Variant Class, a follow-on project to the eight ships in the Landing Ship Dock (LSD) Program.

The internal structures of the cargo variants have been modified to carry fewer Hovercraft and more cargo than the LSDs. Both versions of the ship utilize the same Fairbanks Morse Colt-Pielstick PC2.5 engines rated at 8,500 bhp and 520 rpm for propulsion and have the same length and beam. The opposed piston engines, rated at 1,300 kw, that provide shipboard power for the cargo variants are being modified to incorporate technological advances that have been made since the LSD Program.

The initial order received by Fairbanks Morse in the cargo variant program was for engines that will equip the first two vessels. The Department of Defense is projecting that three more ships of this configuration will be built through 1994.

Fairbanks Morse Engine manufactures and markets large, heavy-duty diesel, gas and dual fuel engines and parts for industry, marine propulsion, and for stationary and marine power generation.

For free literature describing the entire line of Fairbanks Morse Engine Division marine diesels,

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## L&C Associates Installs Protective Sealing System Aboard USNS Mispillion

Installation of a Protective Sealing System aboard the jumboized oiler USNS Mispillion was recently completed in San Francisco, Calif., by L&C Associates, Inc. of North Hampton, N.H.

The Mispillion, assigned National

Defense Reserve status, must conform to a rigorous reactivation schedule which includes a 50-90 day "breakout" in the event of an emergency. L&C's patented Protective Sealing System, a flexible, spray-applied, strippable seal, is used to protect the ship from moisture-induced corrosion. The strippable nature of the seal assures that the "breakout" requirements will be met.

L&C engineers and technicians

designed and installed the dehumidification, sealing, and alarm system for the vessel featuring a 600-CFM dehumidifier, and PSS. The alarm network monitors the moisture content of the air in the dehumidified spaces. The turnkey installation was completed within five days.

For free literature giving full information on L&C Associates,

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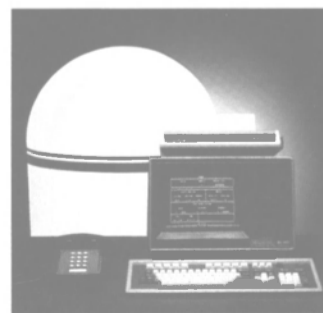
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8218/3/89



# Posidonia

## The International Shipping Exhibition

Piraeus, Greece June 4-8, 1990

Posidonia '90, the biennial international shipping exhibition, will be held in Piraeus, Greece, from June 4 to 8, 1990, at the Piraeus Port Authority waterfront exhibition center.

Providing the industry with a vote of confidence, as early as mid-February nearly 600 firms from 43 countries had booked space at Posidonia '90. Additional space had to be added to the exhibition area to

accommodate the demand. The event might well be staged on all three levels of the exhibition center for the first time since 1984.

Sixteen countries have already confirmed national pavilions with Britain, the United States, the Netherlands and West Germany booking the largest areas. France, Italy, Norway, Japan, Singapore and Finland are also mounting strong national representations as is the So-

viet Union, East Germany and Bulgaria. For the first time at Posidonia '90, several independent Soviet maritime companies are booking space outside their country's national pavilion.

Based upon present registration trends, the host nation, Greece, will once again have a large representation at the exhibition.

Exhibition participants cover every facet of the maritime industry

from ships' equipment suppliers and shipyards to high-tech office equipment and service companies, shipbrokers, finance institutions, insurance organizations, seamen's travel companies, port authorities, ship classification societies, inspection services, ship registries, publications and humanitarian services. Several companies have revealed they intend launching new products during the exhibition.



The Posidonia Forum will again be a feature of the week. To be held on Thursday morning, June 9, proceedings are open exclusively to Posidonia exhibitors and to visitors invited directly by the organizers.

For further information on Posidonia '90, contact: Posidonia Exhibitions, Ltd., 4-6 Efplias Street, 185 37 Piraeus, Greece; telephone: (1) 4517859, 4517859; fax: (1) 4528976; telex: 241937 Expo GR.

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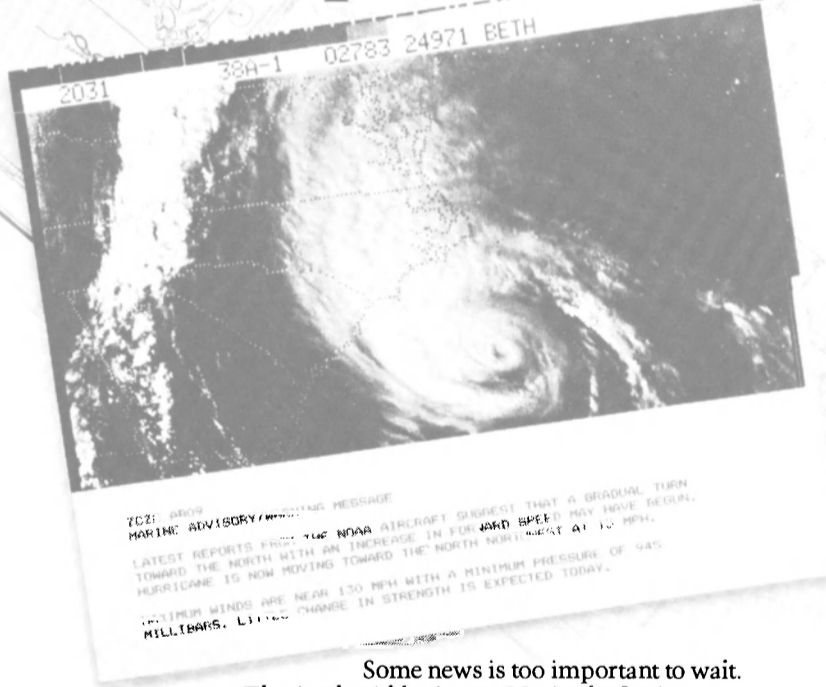
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Fincantieri  
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French Hellenic Chamber of Commerce  
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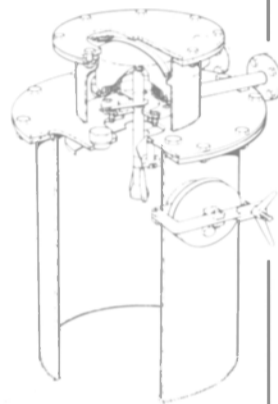
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### Stolt-Nielsen Orders Two 5,000-DWT Parcel Tankers For Inter Europe Service

Stolt Tankers and Terminals (Holdings) S.A., and Sumitomo Corporation, on behalf of the Fukuoka Shipbuilding Co., Ltd. of Fukuoka, Japan, have announced the contract for the construction of two 5,000-dwt parcel tankers. The ships will be delivered in March and June 1992, for operation by the Stolt-Nielsen Inter Europe Service, which serves Europe, including North Sea, United Kingdom and Mediterranean ports.

### Furmanite Offers Free Brochure Describing Machines And Services

Furmanite, an international maintenance service company with corporate headquarters and techni-

cal center in Virginia Beach, Va., is offering a free brochure describing machines and services available from the company.

The publication asserts that Furmanite's series of machine tools specifically designed for marine use, and capable of performing on-board ship repairs, eliminates costly removal and re-installation expenses during overhaul.

Discussed are: vertical launch system, designed to grind missile tube

land rings; hatch refit machine—fits all hatches on 637 and 688 Class submarines, and meets U.S. Navy "fit-up" requirements for 36-inch hatches; milling, turning and boring machine series (F-MTB), developed for in-place repair of 1/2-inch to 4-inch valves; and canopy-to-bonnet cutter (F-CBC), designed for cutting and weld prepping the canopy on vented cap valves.

Furmanite has established credibility in U.S. and civilian shipyards

for designing and delivering machines for special applications that offer cost-effective solutions to time-delay problems. The company also has experienced technicians located throughout the country who are available 24 hours a day to respond to emergency situations.

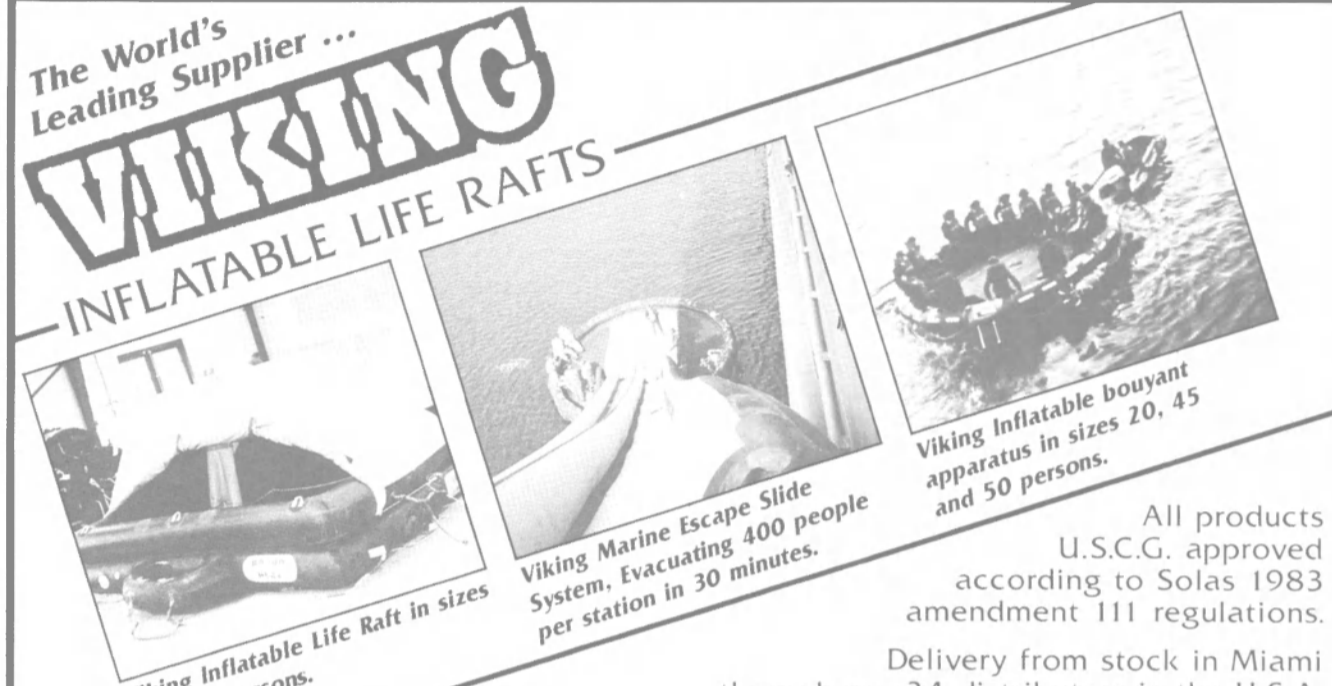
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## International Paint Applies New Coating Technology To U.S. Marine Market

### —Free Literature Available—

Offering new tank coating technology that greatly extends the operational flexibility of ship owners and operators—thereby enabling maximum flexibility of cargo carriage—International Paint is moving toward consolidating itself as a market leader in marine tank coatings for the U.S.

The new tank coating technology developed by International Paint, a subsidiary of Courtaulds Coatings, the international chemicals and industrial company, has been engineered over the past four years. With this technology, the company has become one of the major players in the highly specialized area of cargo tank coatings.

International Paint currently is a leader in the newbuilding market worldwide for tank coatings with a

share of almost one-third of all vessels contracted.

International Paint, already a leader in the U.S. in marine coating sales, has only recently stepped up its tank coating activities in the U.S. market.

A special unit, headed by market manager **Glen Dempsey**, has been formed to promote International's range of tank coatings and specialized products, led by the advanced Interchem TC 900 Series and the Intergard TH 700 Series. U.S. production of the Intergard TH 700 Series is scheduled to begin later this year at International's Houston, Texas, facility, which is one of the largest marine manufacturing plants in the U.S.

Mr. Dempsey points out that the advanced products improve

profit potential for ship owners and operators through extending flexibility in the range of cargo carried. He says the new technology present in the Interchem TC 900 and Intergard TH 700 Series makes this possible and yields the additional benefits of greater ease of application and cleaning between cargoes compared with similar tank coating systems. Mr. Dempsey notes that the Interchem TC 900 series, as an ambient cured material, offers a range of cargo carriage previously available only with products that required post-heat curing.

While both series continue to increase their market share in the U.S. and worldwide, International's product development team has further enhanced the performance and appeal of the two systems.

Through gaining compliance on U.S. Food and Drug Administration rules and regulations, Intergard TH 700 Series now gives ship owners and operators the flexibility to trade in refined vegetable oils for the U.S. market as well as white oils and a good range of aggressive chemicals on the world spot market. This greatly increases the potential of the

coating, since 23 percent of all deep-sea chemical cargoes are vegetable oils and animal oils.

International notes that further improvements have been made to the Intergard TH 700 Series, which they describe as the premier epoxy tank coating system. Intergard TH 700 Series may now be applied and overcoated at temperatures as low as 42 degrees F without compromising the drying and curing properties of the film or impairing its cargo carriage capability.

Company officials say that International's newest tank coating system, Interchem TC 900 Series, is becoming firmly established as the premium tank coating system for chemical carriers. The company believes that the system offers the widest spectrum of cargo carriage currently available from any ambient cured organic tank coating system and the most flexible carriage sequencing options.

International's Interchem TC 900 Series has been upgraded since its introduction last year. Further exhaustive cargo sequence testing has been carried out to evaluate its wide spectrum cargo capability. This has resulted in the lifting of restrictions on some aggressive cargoes such as Styrene Monomer, Benzene and Methyl Isoamly Ketone. In addition, the period of carriage and recovery of aggressive cargoes has been considerably eased to take into account customer requirements for longer carriage periods or more rapid turnaround between cargoes.

International envisions further product tailoring with both premium systems as the company continues to work toward meeting customer requirements for even greater flexibility in cargo carriage.

For free literature fully detailing the tank coating systems from International Paint,



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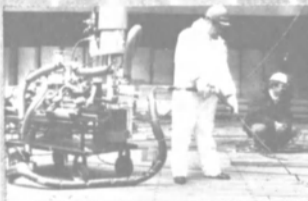
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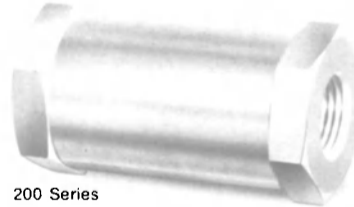
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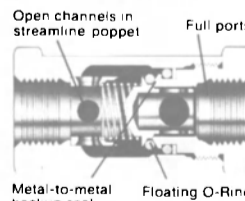
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## Kull & Hallberg Offer Lift, Lash Systems For Marine Market

Kull & Hallberg, one of the largest manufacturers of steel wire rope sling systems in Europe for the offshore market, will be one of the exhibitors at the RORO 90 Exhibition, an international show focusing on transport using Roll-On/Roll-Off methods in Trieste, Italy. The company holds a leading position in the marine sling market in Northern Europe for timber lift systems used aboard vessels for loading and off-loading.

Besides its slings, Kull & Hallberg will exhibit its Airbag, with a new patented quick-release valve; Web lock and Lock less systems, for economical lashing uses; Brichain lifting and lashing equipment; and Mobile bulkhead system, specially designed for time- and money-saving use aboard RO/RO vessels.

For free literature detailing Kull & Hallberg lifting and lashing equipment,

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## Nichols Bros. Delivers First 3 Of 6 Ferries For Puerto Rico

Nichols Brothers Boat Builders, Inc., Whidbey Island, Wash., first entered the high-speed catamaran market in the early 1980s with the delivery of the 210-passenger M/V Klondike. Last year, the firm delivered the first wave piercer catamaran, the Nantucket Spray, built in the U.S. based on an International Catamarans design. Now, Nichols Brothers has entered the small catamaran passenger ferry market with the delivery of the first three of six new 75-foot vessels for the Puerto Rican Government.

Dubbed the "Nichols Mosquito Fleet," the six 167-passenger catamarans will each have an overall length of 75 feet 5 inches, beam of 29 feet 4 inches and draft of 5 feet. Each will be propelled by a pair of Detroit Diesel model 12V71 diesel engines, totaling 930 hp, fitted to Osborne five-bladed propellers via

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Capitol Gears and shafting. The cats will have a full load speed of 22 knots and a normal speed of 28 knots.

The six ferries, which bear the names Martin Pena, Amelia, Covadonga, San Geronimo, Viejo San Juan, and Cristobal Colon, are highly efficient in fuel, maintenance and crew costs. With most of the large coastal cities experiencing traumat-



Powered by twin Detroit Diesels, the ferry Covadonga can reach about 28 knots

ic traffic impaction, the trend toward alternate movement of commuters opens new markets for the smaller passenger-only ferries.

"We introduced the Incat high-speed catamaran concept to the U.S. in 1984 which had a major impact on modern marine passenger service," said **Matt Nichols**, president of Nichols Brothers. "We feel our 'Mosquito Fleet' extension of

this proven design will now help solve many problems of operators and government traffic departments faced with fast and efficient movement of medium and smaller passenger loads."

For free literature detailing the boatbuilding services of Nichols Brothers Boat Builders,

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## Eastern Shipyards Converts Two Offshore Vessels To EnscO Marine

Eastern Shipyards, Inc., Panama City, Fla., recently delivered two enlarged and completely refurbished offshore vessels to EnscO Marine, Broussard, La.

The former 156-foot supply vessels Gulf Stream I and Gulf Stream II, were acquired by Eastern Shipyards and contracted to EnscO Marine on a turn-key refurbishment/sales arrangement. The vessels did not include liquid mud tanks and required extensive re-engineering for the length extension and refurbishment programs.

The converted vessels, EnscO Cruiser and EnscO Transport, measure 184 feet in length, with a beam of 39 feet and 14-foot depth, with capacities of 4,400 cubic feet of bulk mud, 1,412 barrels of liquid mud,

and 118,532 gallons of rig water. Each has a clear deck length of 130 feet and deck cargo capacity of approximately 700 long tons.

Eastern Shipyards employed advanced modular fabrication techniques to construct the 28-foot by 39-foot mid-body sections for both vessels.

All main engines and auxiliary machinery was either completely rebuilt or overhauled. New bowthrusters and drive engines were installed, and independent, direct drive liquid mud pumps and piping systems were installed on each vessel.

For free literature detailing the building, repair and conversion services of Eastern Shipyards,

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The EnscO Transport is one of two offshore vessels recently converted by Eastern Shipyards, Panama City, Fla.



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# RORO90

## The 10th International Conference and Exhibition on Through Transport using Roll-on/Roll-off Methods STAZIONE MARITTIMA TRIESTE 15-17 MAY 1990

First held in 1976, the 1990 edition of RORO, the biennial international conference and exhibition focusing on through transport using Roll-On/Roll-Off methods, will take place at the Congress Center Stazione Marittima in Trieste, Italy, May 15-17, 1990.

Being held for the 10th time, RORO has been firmly established as a leading international event for those involved in the Roll-On/Roll-Off industry.

The conference program will bring together the views of some of the leading executives from the various sectors of through-transport—shipping, port operations, hauliers and regulators. They will focus on the current and future issues affecting business, ranging from new techniques for new cargo units to the latest design concepts for the ships themselves.

The host for the main social events of RORO 90 will be the Regione Autonoma Friuli-Venezia Giulia and the Trieste Authorities. The social highlight will be the RORO gala dinner held at the La Villa Manin di Passariano, the former country estate of the last of the Doges.

As the only international free port in the Mediterranean, Trieste has seen a rapid increase in RO/RO and ferry traffic. In particular, Greece, Turkey and Bulgaria have increased their utilization of the port as their means of entry into Western Europe. RO/RO and ferry cargoes have increased dramatically from 397,000 tons in 1986 to 960,000 tons in 1987. The continued growth of Trieste, as well as other Mediterranean ports provides a lively market in which to promote services and equipment.

In a cosmopolitan commercial center strategically situated for the through transport of freight to the major cities of Europe, RORO 90 will again be a unique marketing opportunity for companies to promote their specialist capabilities.

As visitors to their stands, exhibiting companies will not only have more than 800 participants who regularly attend the RORO meeting from 40 nations, but can also exploit a venue recognized throughout the world as a center for international trading and a major Mediterranean doorway for the Eastern Bloc countries.

Shipping companies, shipbuilders, suppliers of onboard equipment and specialist services, port authorities and companies providing the whole range of sophisticated techniques and products for cargo handling operations have found RORO an excellent business environment in which to promote their capabilities.

The Congress Center Stazione Marittima is a fully integrated conference and exhibition facility. Modern display halls provide exhibitors with an excellent forum to promote their operations, services and technology and manufacturers of heavy equipment can also make use of this opportunity to demonstrate their products to full advantage.

The exhibition will be a major international showcase for developments in the RO/RO concept and through transport operations and will provide an effective means for companies to develop business in an expanding market. Some of the products and services on display will include: RO/RO terminal tractors; computer-based stevedoring and port systems; standard design RO/RO ships; car/passenger ferries; location and layout of ports; auxiliary engines; container-handling equipment; container cranes; ship management services; and container manufacture.

For further information on RORO 90, contact: RoRo Secretariat, 2 Station Road, Rickmansworth, Herts WD3 1QP, England; telephone: (0923) 776363; fax: (0923) 777206; telex: 924312.

### EVENT PROGRAM AT A GLANCE

#### MAY 15

9 a.m.—RORO exhibition opens.

2 p.m.—RORO conference opens.

#### SESSION 1:

##### Markets And Trends

"RO/RO Markets of the North Sea/Intra-Europe/Intra-Mediterranean," by **M. Garratt**, MDS Transmodal.

"The Development of RO/RO in the West African Trades and Its Future Prospects," by **S.M. Gay**, managing director, African RO/RO Ltd. and director, OT Africa Line.

"New Trends in the Fast Developing Baltic RO/RO Market," by **K. Levander**, vice president, research and development, Masa-Yards.

"Australia—New RO/RO Age Dawning," by **A.R. Clarke**, director, Thompson Clarke Shipping.

"New Ships for the Brazil-Europe Trade," by **R. Klien**, director, Transroll Navegacao S.A.

"Developments in Vehicle Transportation. Integrated Services—The Solution for the Future?" by **C. Olsson**, executive vice president, marketing, Wallenius Lines.

Official welcome reception at the Fiera di Trieste.

#### MAY 16

#### SESSION 2:

##### The Ports Build For Tomorrow

"Cost Effective Design of Terminals for the Import of RO/RO Forest Products—By Cassette and in Bulk," by **N. Nixon**, chairman, and **G. Bell**, director, Nigel Nixon & Partners.

"RO/RO Interface for the 21st Century," by **R.S. Cork** and **P.W. Wright**, Associates Port Division, Posford Duvivier.

#### SESSION 3:

##### The Trieste Connection

Panel Session Speakers: **F.A. Querci**, president of the Superior Council, Ministry of Merchant Marine; **R. Prioglio**, chairman, Forwarding Agents Association, Port of Trieste; **E. Bevilacqua**, president, Port of Monfalcone; **G. Bravo**, president, Port of Nogoaro; **G. Di Benedetto**, regional minister for transport and Ports of Friuli Venezia Giulia; and **L. Rovelli**, director general, Port of Trieste.

#### SESSION 4:

##### Ship Design

"New Passenger Trailer Ferry Concepts to Meet Increasing Transport and Safety Requirements," by **M. Kanerva**, development director, Oy Elomatic Group Ltd.

"Seahorse Shipping Follow Their Advanced Design of Inland RO/RO Shuttles for Stora with More Innovative Thinking," by **S.A. Svensson**, naval architect, Seahorse Shipping Lines AB.

"Transfennica—Looks Ahead with New Ships and Handling for Forest Products," by **T. Grandell**, technical group, Transfennica Corporation.

"Converting to the Market," by **K.J. Taylor**, marine services manager, MacGregor-Navire (GBR) Ltd.

"New RO/RO's and Services," by **B. Soderholm**, marketing director, Bore Line AB. Lunch for registered delegates.

#### SESSION 5:

##### RO/RO Survivability

"Compliance with New IMO Subdivision and Stability Requirements for RO/RO and other Dry Cargo Ships," by **C.M. Magill**, principal surveyor, Statutory Computational Services Group, Lloyd's Register of Shipping.

"The 'Stat-90 Rules' Influence on RO/RO Newbuildings and Conversions," by **J. Dalgaard**, **N. Fisker-Andersen** and **E. Schilder**, Knud E. Hansen.

"RO/RO Safety—A Need for a Total Approach," by **T.C. Mathiesen**, senior executive vice president, Det norske Veritas Classification A/S.

"Enhancing the Stability/Survivability of RO/RO Vessels," by **J.G. Brown**, Seaform Design.

#### SESSION 6:

##### RO/RO Stevedoring And Swapbodies

"Securing for Rolltrailers and Rolux—New Top Lashings the Answer," by **B. Wiking**, Wiking Leasing AB.

"New IMO Code of Safe Practice for Stowage and Securing Cargo, Cargo Units and Vehicles (includes guidelines for securing arrangements for road vehicles on RO/RO ships)" by Captain **S. Felding**, senior technical officer, cargoes section, International Maritime Organization.

"The Advantages of Swapbodies Vis-A-Vis Trailers for International Traffic," to be announced.

Other papers to be added.

Gala dinner—in the evening.

#### MAY 17

#### SESSION 7:

##### RO/RO Operational Safety

"The Carriage of Dangerous Goods on Roll-On/Roll-Off Ships (Revision of Section 17) in the 1990 of the IMDG Code," by Captain **S. Felding**, senior technical officer, cargoes section, International Maritime Organization.

"Dangerous Goods at Sea."

"Is the Baltic Sea Memorandum of Understanding a Suitable Instrument for the Transportation of Hazardous Cargoes in Other Protected Areas," by **H. Busch**, dangerous goods section, Federal Ministry of Transport, Bonn.

Coffee break—Video on MARPOL Annex 5 will be shown during the break.

"Handling of RO/RO Ships and Ferries in

Ports—Single Screw and Twin Screw," by **U. Nienhuis**, MARIN.

"Fire Safety on RO/RO Ships and Passenger Car Ferries," speaker to be announced.

#### SESSION 8:

##### Environmental Issues of RO/RO Ferry Operations

"Ecological Aspects of Ferry Operation," by **A. Flising**, Stena Marine Management.

#### SESSION 9:

##### Through Transport—New Markets And New Links

"North-South Through Transport—Transit Problems Overshadow 1992," speaker to be announced.

"1992 and Eastwards," by **N.R.S. Baker**, underwriter, Through Transport Club.

"Eurotunnel—The New Link for Road and Rail Freight," by **J. Chapman**, freighting markets development manager, Eurotunnel.

"Trade Structure and Network Development in UK/Europe Unit Routes," by **S. Gilman**, maritime consultant.

12:30 p.m.—Conference sessions end. Lunch for delegates. Afternoon visit to the Port of Trieste for delegates.

### RORO 90 Exhibitor List

Adriatica  
Ancra Marine  
Associazione Porti Italiani  
Bollnas Terminal Equipment  
Boss Trucks  
Brax Shipping  
C-T Security  
Cargo Safe SOE  
Consent Equipment  
CVS  
Danyard  
DIFT  
Elomatic  
F L Douglas  
Free Port of Trieste  
Gotesborgs Truckservice  
Hyco  
Intering  
Kalmar LMV  
Kaup  
Kull & Hallberg  
Kvaerner Ships Equipment  
Lansing  
MacGregor Navire  
MAFI  
Marine Development  
Moore's of Carnforth  
Navalimpianti  
OM Fantuzzi  
Ottawa Truck  
Oy Electrolux  
PGS  
Port Authority Brugge-Zeebrugge  
Port of Cherbourg  
Port of Chioggia  
Port of Hanko  
Port of London  
Port of Marseilles  
Port of Rotterdam  
Port of Tilbury  
Port Ramsgate  
Rautarukki  
Reliance Mercury  
Scandinavian Cargo Sea  
Seaport Terminals  
Simonship  
Sisu  
Spectec Consult  
Svensk Lasthantering AB  
Svensk Sjöfarts Tidning  
Trans Trading  
Trieste Chamber of Commerce  
Trieste Stevedores  
Volvo Penta  
Wallenius Lines  
Wallenius Lines  
Wallhamn Terminal  
Wiking Leasing



LCAC-24 shown during builder's trials on Lake Borgne in Louisiana.

## Textron Marine Systems Delivers LCAC-24 To U.S. Navy

**John J. Kelly**, president of Textron Marine Systems (TMS), Division of Textron Inc., recently announced the delivery of Landing Craft, Air Cushion (LCAC)-24 to the U.S. Navy. Following remarks by **Eugene E. Shoults**, program manager for the Amphibious Warfare and Strategic Sealift Program (PMS 377), in a ceremony held at the Naval Coastal Systems Center in Panama City, Fla., Mr. Kelly presented LCAC-24 to Lt. Comdr. **U.H. (Jack) Rowley**, Supervisor of Shipbuilding, Conversion and Repair, USN. Commander **Rowley** then released the craft to Lt. **D. Weid** of Assault Craft Unit (ACU)-5, located at Camp Pendleton, Calif.

LCAC-24 was ferried nonstop from the TMS shipyard in New Orleans to Panama City, Fla., the first LCAC to be delivered under a production contract awarded to TMS in 1987. Five more are scheduled to be delivered under this contract in 1990. Previously delivered LCACs are based for fleet deployment at Assault Craft Units (ACU) at Little Creek, Va., and Camp Pendleton, Calif.

According to TMS, the LCACs performed well beyond contract requirements. In terms of speed, payload, range, and reliability and maintainability, the craft have sig-

nificantly exceeded their original design requirements. They have exhibited excellent Mean-Time-Between-Failure characteristics exceeding the contract specification requirements by 500 percent.

The LCAC is an air cushion landing craft designed to carry troops, weapons and equipment at speeds in excess of 40 knots from support ships over the horizon to the beach. It is the first significant technical improvement in waterborne landing craft since World War II and is considered a cornerstone in modernizing U.S. Navy/Marine amphibious warfare capabilities.

Textron Marine Systems has contracts to build 45 LCASs. Delivery of LCAC-24 represents the 15th provided to the U.S. Navy by TMS. Currently, TMS has nine LCACs in construction, two in testing, and nineteen in preproduction planning.

Textron Marine Systems is the U.S. leader in design and construction of advanced technology air cushion vehicles and surface effect ships and other advanced marine craft for both military and commercial customers. Its offices and shipyard are located in eastern New Orleans.

For more information and free literature,

Circle 70 on Reader Service Card

## Bender Monitoring Systems Prevent Ground Faults —Literature Available

Bender Incorporated of Paoli, Penn., makes a series of insulation monitors, residual current devices and ground fault location systems that can predict the presence of a ground fault without system shutdown.

Insulation monitors operate on ungrounded, AC 1PH/3PH systems, pure DC systems and AC networks with large DC components, all the way up to 10,000 V. These units send out a DC measuring voltage over the system and will alarm when the insulation value declines below the present level. The residual cur-

rent devices function on all types of systems. They measure for current imbalance and are sensitive enough to detect leakages as low as 10 mA.

All units are available with metered output, adjustable alarm settings and adjustable time delays.

Bender also offers a complete ground fault detection system. This is the best solution for large, complex systems. The system combines an insulation monitor and ground fault location units in a 19-inch rack frame. It looks at every circuit once the monitor alarms and then indicates the circuit on which the fault has occurred.

Bender makes over 1,100 different units to suit many voltages, housings and applications. Insulation monitoring provides an ideal, cost-effective way to safeguard both



Despite its size, the luxurious Alpha Centauri draws only 6 feet. Shown under construction at Freeport Shipbuilding in Florida, the yacht will have a 10-foot by 27-foot "sports platform" extending from the stern that can accommodate divers, fishermen and equipment.

## Cummins-Powered Yacht At Freeport Shipbuilding

Freeport Shipbuilding & Marine Repair, Freeport, Fla., is constructing a 110-foot steel-hulled yacht designed by the late **John Brever** of Florida, with interior by Dallas-based CDA.

The vessel will be christened Alpha Centauri when delivered to Star of Texas, Inc., founded by Dallas businessman **G. Ray Miller**.

Mr. Miller and **Jim Murray**, president of Freeport Shipbuilding, decided to fashion the 110-foot hull from a combination of existing designs in order to make the boat as tough as any at sea. This requirement was fulfilled by a 23-foot bow (measured from keel) fashioned after a North Sea workboat, the stern fashioned after a deepsea fishing boat, with the entire hull made of solid 5/16-inch steel.

The Alpha Centauri is considered a new concept in "space" ships, a fact that is evident in its height of 42 feet from keel to mast top, and its 27-foot beam. Mr. Miller's scheme was for a ship capable of accommodating anyone's fantasy. His concept in this case encompasses room for on-deck stowage of a Maule (STOL) seaplane, a 27-foot Boston Whaler Outrage complete with tuna-tower and twin 225-hp engines, a 15-foot Boston Whaler, a 13-foot hard-bottom Zodiac and at least two Waverunners and Windsurfers. The "Sports Yacht" is

### ALPHA CENTAURI Equipment List

Engines	Cummins
Generators	Cummins
Sanitation	Humphrey
Watermaker	Humphrey
Communication system	JRC
Backup communication system	Raytheon
Video plotter	Raytheon
Radar	Raytheon
Loran	Raytheon
Autopilot	Robertson
Auxiliary boats	Boston Whaler

equipped with a 10-ton-capacity crane to move the Maule, as well as the other boats, on and off the deck.

The vessel's twin 400-hp Cummins engines provide more than adequate power to turn the large 42-inch propellers. This, combined with twin 60-kw Cummins diesel generators and a 10,000-gallon fuel storage system, provides a cruising range of 2,800 miles at 20 knots.

Alpha Centauri, the mother ship, will be available for charter, primarily in the Caribbean, by fishing, diving and business groups.

For free literature on the facilities and capabilities of Freeport Shipbuilding,

Circle 66 on Reader Service Card

people and equipment from electrical hazards.

For more information and free literature from Bender,

Circle 30 on Reader Service Card

## Free Brochure Details Rigid Inflatable Craft From Task Force Boats

A free brochure from Task Force Boats Ltd. details its full line of Rigid-Hulled Inflatable Boats from 5.7 to 9.5 meters (18.7 to 31.1 feet) for the commercial, military, rescue, patrol and recreational markets.

The new HF "Typhoon" range utilizes a unique patented and quickly interchangeable Modular Air Collar Systems (MACS). The modules are independently mechan-

ically secured to the topside gunwales by very high grade woven polyester fastening straps. This system has been proven in service with the British Royal Marines, Royal Hong Kong Police and the German Lifeguard. The heavy duty density module material has an excellent resistance to petroleum, diesel and oil. Individually molded in one piece, without joints and weak points, these units are manufactured using well established techniques.

In the event of damage, each module or fastening can be simply and quickly replaced.

The rigid hull is available in both aluminum and GRP.

For a free brochure detailing Task Force Boat products,

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# AUCTION

U.S. General Services Administration

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GSA Representatives will be on site **April 20-21, May 22, and June 20, 10 AM to 3 PM.**

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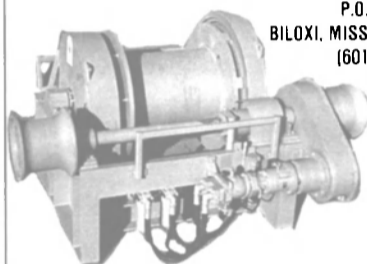
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## Construction Of Cog Replica Supported By Deutz MWM



Deutz MWM considers participation in the rebuilding of the cog as a duty since, through its founders, the company has been associated with motor shipping from its very early beginnings.

The Deutz MWM division of the KHD group is providing propulsion units for a Hanse cog which is being rebuilt in Bremerhaven.

The vessel, which was found in the sludge of the Weser River in 1962, dates back to the 14th century. It is being rebuilt by the Hanse-Kogge-werft e.V., Bremerhaven, according to the designs of the German Maritime Museum. As the new cog is to follow the old routes of the Hanseatic League—which means it has to be seaworthy—safety requirements make engine propulsion necessary as much as modern navigation equipment.

The cog will be powered by an eight-cylinder engine of the Deutz MWM series 234, with an output of 280 kw (380 hp). The auxiliary marine set is driven by a four-cylinder engine of the Deutz MWM series 226.

Deutz MWM specialists will assist the Kogge-werft in the installation and commissioning of the propulsion unit and auxiliary marine set.

For free literature giving full details on Deutz MWM engines,

Circle 43 on Reader Service Card

## Ingalls To Continue Engineering, Planning Services To Navy's Aegis Destroyer Program

The U.S. Navy has awarded Litton's Ingalls Shipbuilding division a \$12.2-million contract to continue engineering and planning support for the Navy's Arleigh Burke (DDG-51) class Aegis guided missile destroyer program. Ingalls currently has construction contracts for six of the ships.

The support contract is the second element of a five-year program, begun in December 1988, with a total value of about \$66 million. Ingalls will perform the various technical, engineering and design tasks at its Pascagoula, Miss., production facility.

"This contract, coupled with the award in February to Ingalls for the construction of three additional Aegis destroyers, is further evidence of the Navy's confidence in our shipyard's ability to build Aegis destroyers, as well as provide the technical expertise necessary to support a construction program of this magnitude and importance," said **Gerald J. St. Pe** senior vice president of Litton and president of Ingalls.

Litton is a technology-based company providing advanced electronic and defense systems, resource exploration services and industrial automation systems for U.S. and world markets.

For more information and free literature,

Circle 53 on Reader Service Card

## Jeffboat Names Ken Howe Manager, Marine Repair



Ken Howe

Ken Howe has been named manager of marine repair at Jeffboat, a subsidiary of American Commercial Marine Service Company in Jeffersonville, Ind.

In his new position, Mr. Howe will be responsible for the management of marine repair as well as Jeffboat's machine shop. He began his career with Jeffboat in 1973 as a quality control inspector and later moved to the positions of foreman for special vessels and superintendent of marine repair.

Mr. Howe replaces 28-year veteran Ken Wise, who recently retired. During the past 12 years, Mr. Wise worked as manager of marine repair. Due to his expertise developed over the years through the positions of steelfitter, assembly line foreman and towboat construction superintendent, Mr. Wise has become widely recognized throughout the marine industry.

Jeffboat, a large inland shipbuilder, is a producer of high quality river barges, towboats and a wide variety of commercial marine vessels.

For more information and free literature describing the inland shipbuilding and repair services offered by Jeffboat,

Circle 62 on Reader Service Card

## Aeroquip Corporation Offers New Teflon Hose Training Bulletin

"How to Handle Teflon Hose" is the subject of a new training bulletin available from Aeroquip Corporation, a manufacturer of flexible hose products.

In addition to the precautions that should be taken while handling Teflon® hose, new Aeroquip Bulletin 2278 also covers tips for the proper installation of Teflon hose, minimum bend radius data and measuring information.

For a free copy of Bulletin 2278,

Circle 51 on Reader Service Card

## E-A-R's Type II Vibration Damping Tiles Hold Navy QPL Status

E-A-R Specialty Composites Corporation offers two Type II vibration damping tiles approved to military specification MIL-P-23653C (SHIPS). Both the Class 1, C-2203 tile and the Class 2, C-2204 tile have qualified for the Department of the Navy Qualified Products List QPL-23653.

Both damping tiles are composed

of high-physical-strength, thermally stable, graphite-filled polyvinyl chloride alloy compounds, formulated to provide exceptionally high damping in specific temperature ranges. Class 1, C-2203 tiles are designed for optimum performance between 35 degrees F and 55 degrees F. Class 2, C-2204 tiles are used in the range from 55 degrees F to 75

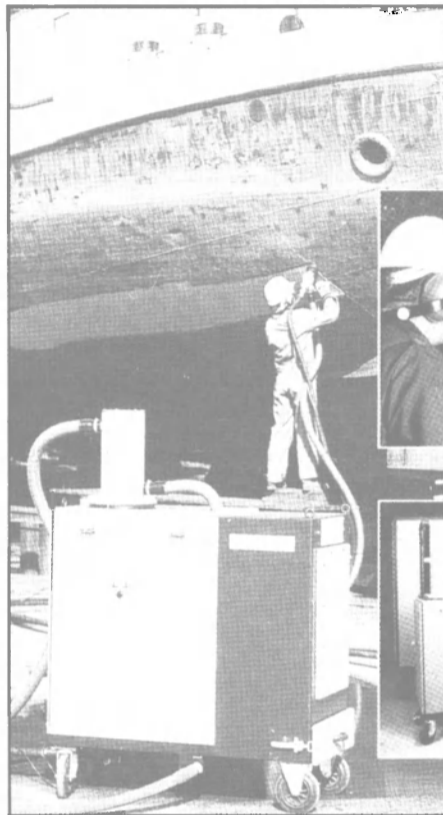
degrees F. Both tiles are used for extensional and constrained-layer damping.

These tiles have special application on Ohio-class and Los Angeles-class submarines, to reduce their submerged acoustic signature by controlling interior vibration—for ballast tanks, propulsion systems, machinery frames, bulkheads, deck-

ing and other surfaces. They also are effective for surface ships to reduce resonance and impact-induced noise for hulls, engine rooms, decks and bulkheads, and where high-performance damping materials are required.

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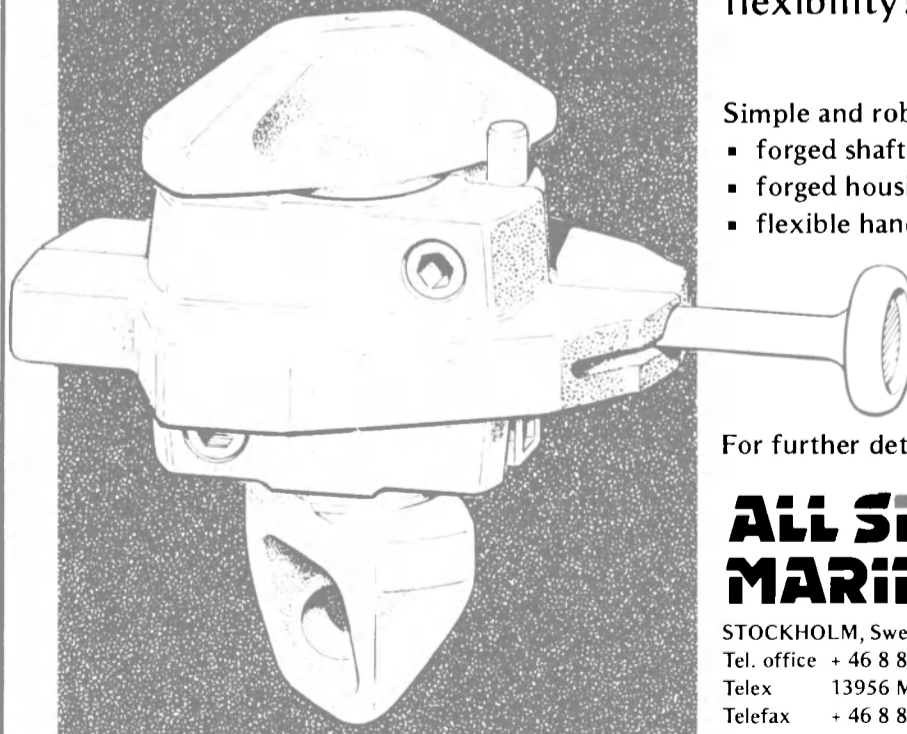
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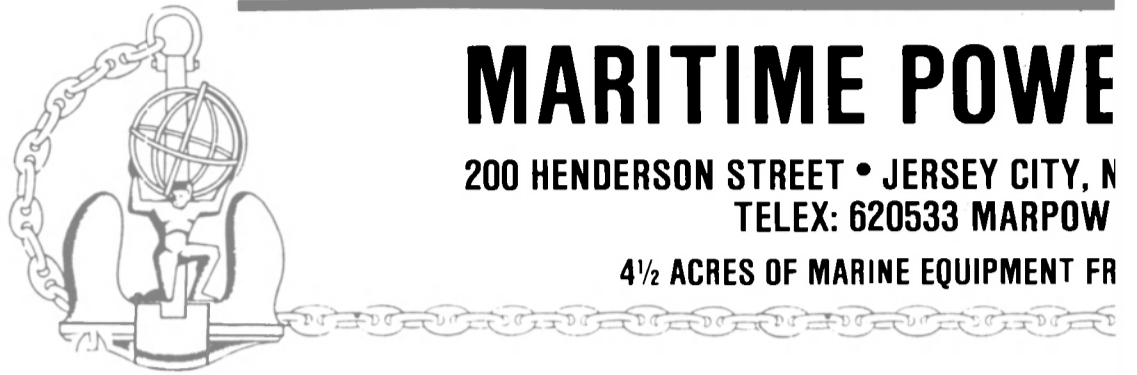
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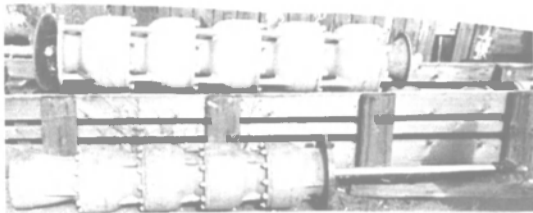
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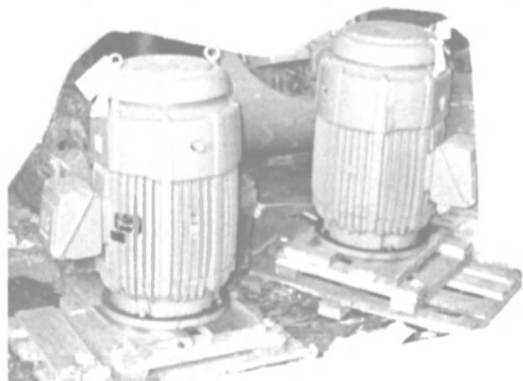
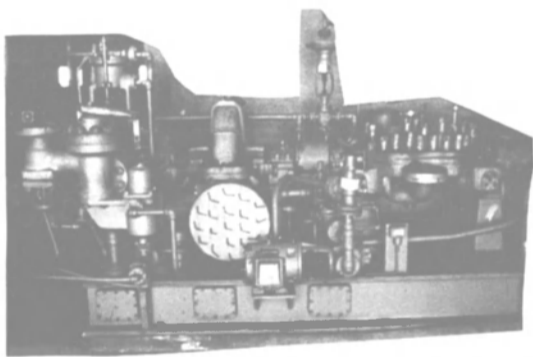
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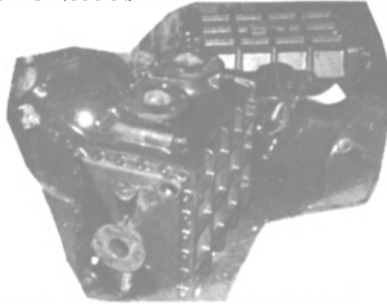
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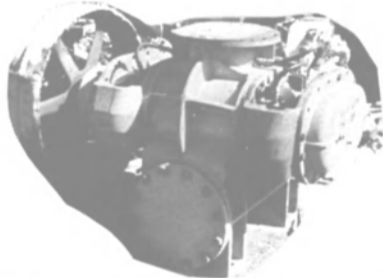
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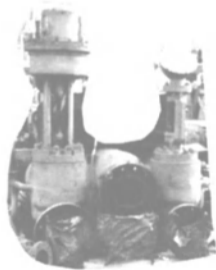
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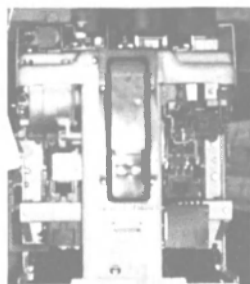
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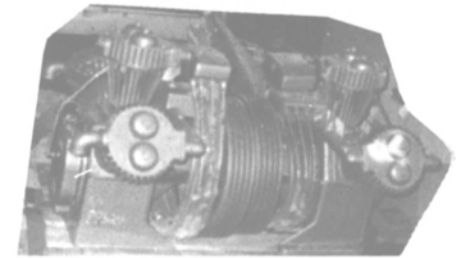


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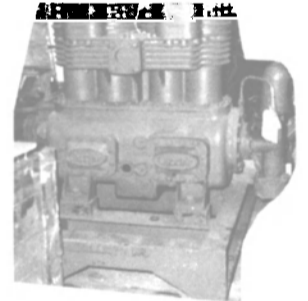


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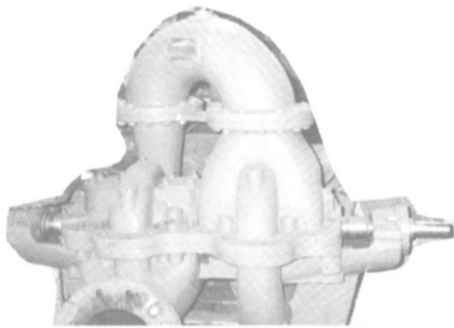
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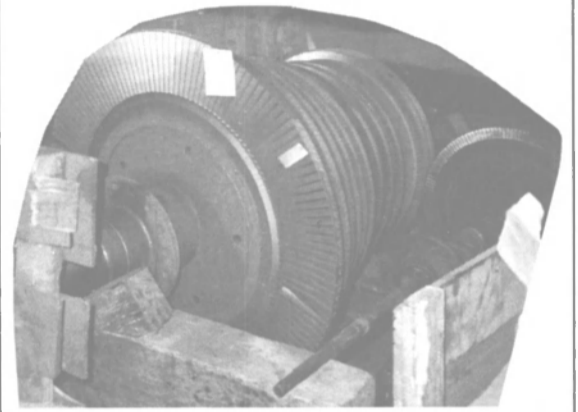
**CARGO PUMP TURBINES:** Rebuilt Turbine rotors for General Electric DR125 Turbines and Reduction Gear.

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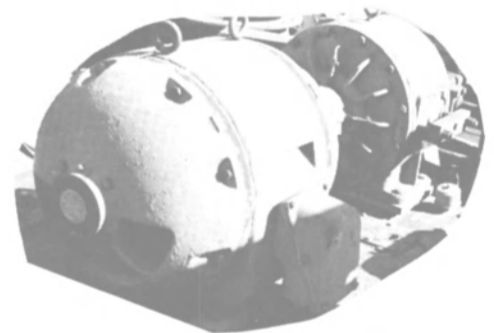
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## 10,000th Inmarsat Customer Commissioned By Comsat— Literature Available



Ron Mario, vice president and general manager, COMSAT Mobile Communications (at left) recently presented Michael Bayle, director of operations, Alaska Frontier Corporation, with a plaque for being INMARSAT's 10,000th customer to be equipped with a ship earth station terminal.

The U.S. fishing vessel Frontier Mariner, operated by Alaska Frontier Company, recently became the 10,000th customer in the Inmarsat satellite communications system to be equipped with a ship earth station terminal. It was commissioned by COMSAT's Santa Paula, Calif., coast earth station in late 1989 and is now able to communicate globally through the Inmarsat system.

COMSAT recently presented Michael Bayle, director of operations for Alaska Frontier Company, with a commemorative plaque to mark the occasion at a special presentation dinner in Washington, D.C. The plaque was presented by COMSAT Mobile Communications' vice president and general manager Ron Mario.

For free literature detailing the satellite com-

munications services offered by COMSAT,

Circle 88 on Reader Service Card

## Hopeman Brothers To Supply Accommodation Joiner Packages For Two Oil Skimming Vessels



Artist's conception of one of the oil skimmers, reportedly the largest being built in the U.S.

Hopeman Brothers, Inc., Waynesboro, Va., was recently awarded a contract by Goudy and Stevens of East Boothbay, Maine, to supply complete accommodation joiner packages for what are reportedly the two largest oil skimming vessels being built in the U.S.

The two 123-foot-long by 31-foot-wide vessels are under construction for Alyeska Pipeline, Valdez, Alaska, and Clean Sound, an oil spill cooperative in Puget Sound, Wash. They will be delivered under their own power in the fall of 1990.

Hopeman has worked closely with the vessels' designers, JBF Scientific Co., Inc. of Southwest Harbor, Maine, to develop a custom-designed joiner package for these vessels. Isolamin bulkhead panels, which eliminate the need for the traditional thermal insulation against the weather boundary, will be used.

Momek interior doors will be supplied. Over 12,000 Momek doors were supplied to the marine industry in 1989.

The vessels will have Dampa ceilings which will be pre-engineered, factory cut to size and complete with modular light fixtures. Furniture for berthing a crew of eight, messing and navigation areas will be produced at Hopeman Brothers' facility in Virginia.

Hopeman Brothers is the sole U.S. distributor for Isolamin panels, Momek doors, and Dampa ceilings.

For further information and free literature describing Hopeman services,

Circle 46 on Reader Service Card

## S-Tech Offers Free Literature On Ground Fault Detection Unit

S-Tech of Paoli, Pa., recently introduced the RCD300 Residual Current Device, which continuously measures for differential and ground leakage currents on grounded and high-resistance grounded systems, 1 or 3 phase.

The RCD300 is a truly sensitive ground fault detection unit. Because it detects small leakage currents in the mA range, it protects people from hazardous currents if they are working in wet environments, as well as the equipment it is monitoring.

The unit operates in conjunction with a current transformer and will alarm when the preset trip value. The RCD300 is compact and easily installed alongside equipment starter.

Features include: adjustable alarm levels from 30 mA to 3 A; adjustable time delay from 20 mS to 1.5 S; NO/NC contacts; metered output available; and current transformers from 1 inch to 12 inches.

For free literature giving full information on the RCD300 Residual Current Device, apply to S-Tech, P.O. Box 873, Paoli, Pa. 19501.

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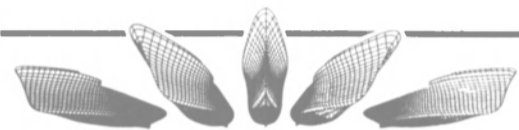
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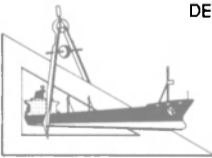
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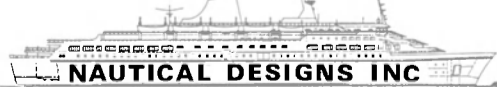
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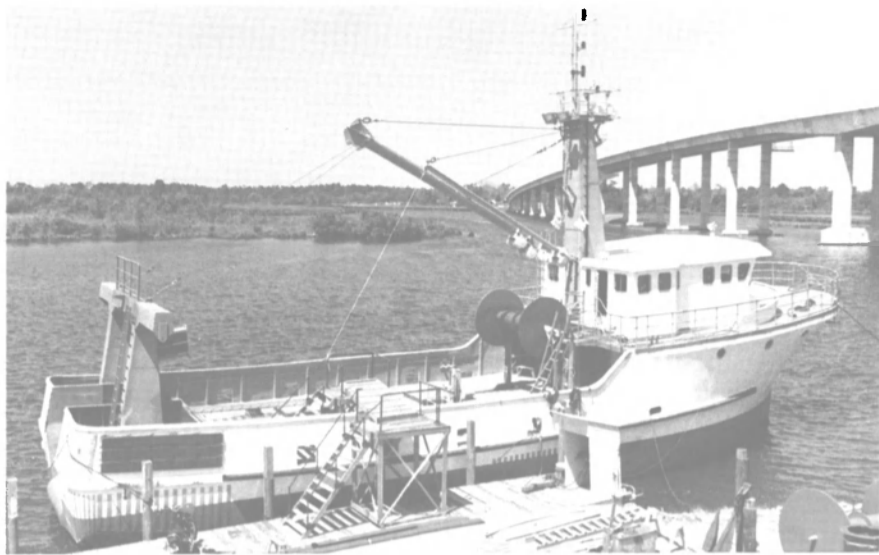
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The One Ocean II, reportedly the largest fiberglass fishing trawler in the U.S., docked at Master Marine, Inc.'s Escatawpa, Mississippi, yard. She is the second large fiberglass trawler built by Master Marine for U.S. Marine Corporation, Kodiak, Alaska.

## Master Marine Building 100-Foot Fiberglass Trawler For Alaska Fisheries

The Escatawpa, Mississippi, shipyard of Master Marine, Inc. has begun construction of one of the nation's largest fiberglass trawlers for operation in the Alaska fisheries.

Christened the One Ocean II, the 100-foot vessel is being built for U.S. Marine Corporation, Kodiak, Alaska. She is the second large fiberglass trawler built by Master Marine for U.S. Marine Corp. The first, named the One Ocean I, was an 85-foot vessel delivered in 1988.

The 100-foot One Ocean II has a

beam of 27 feet and draft of 10 feet. Her propulsion power is provided by a 1,280-hp Caterpillar 3512TA diesel engine fitted to a 79-inch propeller via Aquamet shafting and a Reintjes reduction gear with a ratio of 6:1.

Two Caterpillar engines, a model 3306 and 3408, fitted to two 65-kw generators and hydraulic pumps supply auxiliary power. The 3408 engine, with 443 horsepower, turns three hydraulic pumps that provide power for trawl winches, dual net reels, an anchor winch and four net-

handling winches.

The Caterpillar 3306 auxiliary engine, rated at 201 horsepower, drives two hydraulic water pumps and compressors in a Refrigerated Seawater (RSW) system and also provides hydraulic power for a deck crane.

Designed by Master Marine's **Henry Masters**, the One Ocean II features a 437-foot-square deck-house forward. She has a fish hold capacity of 5,800 cubic feet and fuel capacity of 22,000 gallons.

Two more fiberglass fishing trawlers are on Master Marine's design boards, measuring 110 and 120 feet.

Master Marine expects to deliver the One Ocean II later this year.

Master Marine has constructed a number of fishing vessels, both of steel and fiberglass, for operators around the country.

For free literature detailing the building facilities of Master Marine,

Circle 67 on Reader Service Card

## Thorne Introduces New Commercial Compactor Line

**Thomas Thorne**, president, Thorne Compactors And Trash, Inc., Burnsville, Minn., recently announced the introduction of the new 1990 Thorne line of compact, commercial compactors.

Requiring a floor area of as little as 3.1 square feet for the Model 240, this new, rugged, long-life compactor line bags, bales, boxes and cubes both wet and dry waste.

An internal germicidal light destroys microorganisms, bacteria, mold spores and virus by ultraviolet

### ONE OCEAN II Equipment List

Main engine	Caterpillar
Propeller	Doran
Nozzle	Mitternight
Auxiliary engines	Caterpillar
Generators	Lima
Keel coolers	Walters
Engine controls	MMC
Reduction gear	Reintjes
Shafting	Aquamet
Steering control hydraulic system	Alliance Fluid Power
Trawl hoists	Alliance Fluid Power
Main boom hoists, cod-end winch, picking boom hoist	Pullmaster
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rays. Air is kept clean by oxidizing odors.

All models have the same features but with varying specifications and capacity.

The line is ideally sized and priced for multiple locations in a variety of applications such as hospitals, restaurants, nursing homes, apartments, office buildings, airports, amusement parks, resorts and warehouses.

For more information and free literature on the new 1990 commercial compactor line from Thorne,

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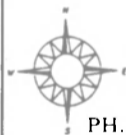
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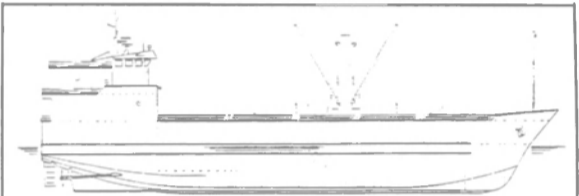
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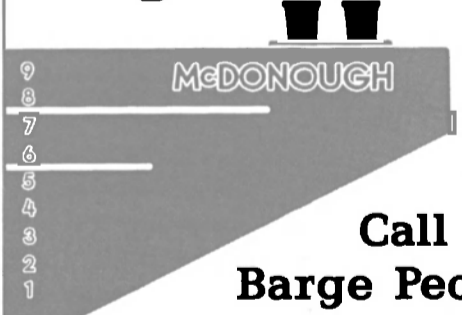
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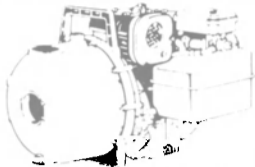
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STAZIONE MARITTIMA TRIESTE 15-17 MAY 1990

## CONFERENCE PROGRAMME

### DAY 1: Tuesday 15 May

09.00 EXHIBITION OPENS

14.00 CONFERENCE OPENS

#### Session 1: Markets and Trades

**RoRo Markets of the North Sea/Intra Europe/Intra Mediterranean**

M Garratt, MDS Transmodal, Chester, England

**The Development of RoRo in the West African Trades and its future prospects**

S M Gay, Managing Director, African RoRo Ltd and Director, OT Africa Line, London

**Mediterranean Cabotage after 1992**

G Migliorino, Direttore Centrale Finmare, Genoa

(Finmare operating companies include Lloyd Triestino, Italia, Adriatica, Tirrenia and Sidermar)

**New Trends in the fast developing Baltic RoRo Market**

K Levander, Vice President, Research and Development, Masa-Yards, Finland

**Australia - new RoRo Age Dawning**

A R Clarke, Director, Thompson Clarke Shipping, Port Melbourne

**New ships for the Brazil-Europe Trade**

R Klien, Director, Transroll Navegacao SA, Rio de Janeiro

**Developments in vehicle transportation. Integrated services - the solution for the future?**

C Olsson, Executive Vice President Marketing, Wallenius Lines, Stockholm

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### DAY 2: Wednesday 16 May

**Session 2: The Ports Build for Tomorrow**

(parallel with Session 4)

**Cost Effective Design of Terminals for the import of RoRo Forest Products - by cassette and in bulk**

N Nixon, Chairman and G Bell, Director, Nigel Nixon & Partners, London

**RoRo Interface for the 21st Century (with case studies from Belfast, Poole and Sheerness new RoRo terminals)**

Particular reference will be made to high capacity freight throughputs, improvements in passenger access and rapid vessel turnaround.

R S Cork and P W Wright, Associates Port Division, Posford Duvivier, Peterborough, England

**Session 3: The Trieste Connection**

(parallel with Session 4)

**Panel Session Speakers:**

Prof. F A Querci, President of the Superior Council, Ministry of Merchant Marine, Rome

R Prioglio, Chairman, Forwarding Agents Association, Port of Trieste

E Bevilacqua, President, Port of Monfalcone

G Bravo, President, Port of Nogaro

G Di Benedetto, Regional Minister for Transport and Ports of Friuli-Venezia Giulia

L Rovelli, Director General, Port of Trieste

### Session 4: Ship Design

(parallel with Sessions 2 and 3)

**New passenger trailer ferry concepts to meet increasing transport and safety requirements**

Three new ferry concepts will be described: cruise ferry for a Baltic route - two newbuildings for two different Channel routes

M Kanerva, Development Director, Oy Elomatic Group Ltd, Turku

**Seahorse Shipping follow their advanced design of inland RoRo shuttles for Stora with more innovative thinking**

S-A Svensson, Naval Architect, Seahorse Shipping Lines AB, Gothenburg

**Transfennica - looks ahead with new ships and handling for forest products**

T Grandell, Technical Group, Transfennica Corporation, Helsinki

**Converting to the Market**

K J Taylor, Marine Services Manager, MacGregor-Navire (GBR) Ltd, UK

**New smaller RoRo's on more frequent service facilitate Just-In-Time Distribution**

B Soderholm, Executive Vice-President, Bore Line AB, Helsinki

### Session 5: RoRo Survivability

(parallel with Session 6)

**Compliance with the new IMO subdivision and stability requirements for RoRo and other dry cargo ships**

C M Magill, Principal Surveyor, Statutory Computational Services Group, Lloyd's Register of Shipping, London

**The "Stab-90 Rules" influence on RoRo Newbuildings and Conversions**

J Dalgaard, N Fisker-Andersen and E Schilder, Knud E Hansen, Copenhagen

**RoRo Safety - a need for a total approach**

T-C Mathiesen, Senior Executive Vice President, Det norske Veritas Classification A/S, Norway

**Enhancing the stability/survivability of RoRo vessels**

J G Brown, Seaform Design, Isle of Man, UK

**Session 6: RoRo Stevedoring and Swapbodies**

(parallel with Session 5)

**Securing for Rolltrailers and Rolux - new top lashings the answer**

B Wiking, Wiking Leasing AB, Gothenburg

**New IMO Code of Safe Practice for stowage and securing cargo, cargo units and vehicles (includes guidelines for securing arrangements for road vehicles on RoRo ships)**

Captain S Felding, Senior Technical Officer, Cargoes Section, International Maritime Organization

**The advantages of swapbodies vis-a-vis trailers for international traffic**

Speaker to be announced, Transfesa, Spain

**More swapbody papers to be announced for this session**

(Authors should contact the Secretariat)

WEDNESDAY EVENING: GALA DINNER

### DAY 3: Thursday 17 May

**Session 7: RoRo Operational Safety**

(parallel with Session 9)

**The Carriage of Dangerous Goods on Roll-on/Roll-off ships (revision of Section 17) in the 1990 edition of the IMDG Code**

Captain S Felding, Senior Technical Officer, Cargoes Section, International Maritime Organization

**Dangerous Goods at Sea**

(a recently updated video from Videotel Marine showing handling of dangerous goods as general cargo/containers/ portable tanks including response to incidents at sea)

**Is the Baltic Sea Memorandum of Understanding a suitable instrument for the transportation of hazardous cargoes in other protected areas?**

H Busch, Dangerous Goods Section, Federal Ministry of Transport, Bonn

**During the Coffee Break a new anti-pollution video from Videotel will be shown: MARPOL Annex 5 Marine Litter**

**Handling of RoRo ships and ferries in ports - single screw/twin screw**

U Nienhuis, MARIN, Wageningen, Netherlands

**Fire Safety on RoRo Ships and Passenger Car Ferries**

Speaker to be confirmed

**Session 8: Environmental Issues of RoRo Ferry Operations**

(parallel with Session 9)

**Ecological Aspects of Ferry Operation**

A Flising, Stena Marine Management HB, Gothenburg

**Session 9: Through Transport - New Markets and New Links**

(parallel with Sessions 7 and 8)

**North-South Through Transport - transit problems overshadow 1992**

Speaker to be announced

**1992 and Eastwards**

N R S Baker, Underwriter, Through Transport Club, (members include Ravasped, Masped, Hungarocargo and Sovtransavto)

The paper will cover the widespread effects of the removal of barriers not only in the EC but also in Eastern Europe.

**Eurotunnel - the new link for road and rail freight**

J Chapman, Freight Marketing Development Manager, Eurotunnel, London

**Trade Structure and Network Development in UK/Europe Unit Routes**

S Gilman, Emeritus Professor, Maritime Consultant, Liverpool

12.45 CONFERENCE CLOSE

During the afternoon of Thursday 17 May there will be an opportunity for interested delegates to join a conducted tour of the Port of Trieste.

16.30 EXHIBITION CLOSE

The Organisers reserve the right to amend this programme

## REGISTRATION

We wish to make Conference Registration(s) for . . . . . delegate(s) and enclose our cheque for . . . . . made payable to BML Business Meetings Ltd. Conference fee of £390 (Lire 800 000) per person includes conference documentation, lunches, coffee breaks and invitations to the Welcome Reception and the Gala Dinner hosted by the Regione Autonoma Friuli-Venezia Giulia and the City of Trieste.

Delegates who will attend (please print):

Name . . . . . Address . . . . .  
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Name . . . . .  
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Complete this form and return with remittance to:-

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