

August 2002

# MARITIME REPORTER AND ENGINEERING NEWS

New patrol craft technology means there is

# Nowhere to Hide

U.S. Report

MarAd's Schubert discusses U.S. maritime future

Maritime Security & Defense Products Guide

Ultra Large Containership Design



Raising Kursk ...

An Engineering Marvel

Investment in Design • Ferlship's New Contracts • Righting the Spiegel Grove • Ship's Store • Government Update

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**Contents**

**15 Government Update**

As the U.S. Government considers a number of new maritime security regulations, questions turn to how owners and operators will fare.

— By *Dennis L. Bryant,*

*Senior Maritime Counsel, Haight Gardner Holland & Knight*

**20 Vosper Thornycroft “Bites” Back**

Furthering the U.K.'s already industrious shipbuilding base, Vosper Thornycroft will erect a \$60-million facility within the Portsmouth Naval Base.

—By *David Tinsley, technical editor*

**24 A Conversation with Bill Schubert**

In part one of a two part series, U.S. Maritime Administrator Bill Schubert discusses the current state, as well as the future of the United States Maritime industry.

— By *H. Clayton Cook, Jr., Counsel, Bastianelli, Brown & Kelley*

**32 Raise the Kursk!**

The job of successfully raising and recovering the Kursk, the Russian sub which exploded and sank in August of 2000 with its crew of 118, is nothing short of an engineering marvel.

— by *Greg Trauthwein*

**34 Righting the Spiegel Grove**

Slipping slowly beneath the sea, just days before its intentional sinking, Spiegel Grove gained international attention when it was “righted” by Fort Lauderdale, Fla.-based salvage and recovery company Resolve Marine Group.

— by *Regina P. Ciardiello, managing editor*

**50 Providing Power for the Fight**

High speed, versatile vessels are in big demand with modern military and lawkeeping operations. Combat Boat 90 — built in Sweden by Dockstavet and powered with Rolls-Royce products — is a powerful example of modern military might.



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**A**t press time, the political debate surrounding the creation and final details of the Homeland Security Department was still being vehemently debated, rightfully so considering that it is perhaps the most significant U.S. government overhaul in nearly half a century. Those hoping for a clean and quick decision on the matter should have known that politics — and time — would eventually cool the fervor created by the September 11 attack. This is not to say that safety and security is no longer a top priority ... quite the opposite in fact. The marine business in and around the U.S. has been under intense scrutiny since 9/11, with measures enacted immediately and evolving daily in a sometimes scattered attempt at “improving security.” To ensure that *MR/EN* readers are kept abreast of developments as they happen, we welcome a new column (see page 15) from **Dennis L. Bryant** of Haight Gardner Holland & Knight, who is scheduled to provide a regular article under the “Government Updates” banner.



Those who assume that all of this activity won't effect business much should rethink that position. While yet defined, the change in store for the marine business in the coming weeks, months and years is very real, and it will reach to the very core of the business; that being the timely, efficient and cost-effective delivery of cargo — be it petroleum, electronics, corn or people — from point “A” to point “B.” Those owners and operators that felt besieged by the storm of new rules and regulations pre-September 11 must feel as though a tsunami has hit them now, as every aspect of their business is under a microscope. But where there is trouble there is opportunity, and quality owners that execute a sound business plan should emerge stronger, as questionable operations wither and die under increased scrutiny.

Opportunities similarly exist for companies, both inside and out of the maritime niche, to provide efficient solutions to help owners and operators navigate increasingly complex levels of security. While it is fair to assume there will be a number of bogus “solutions,” it is also safe to say that adversity has time and again driven innovation to new heights. Makers of yet-to-be-known vessels, systems, products and services will increasingly play a central role in ensuring that maritime transportation remains the most efficient and cost-effective method of moving products.

*Dennis L. Bryant*

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## On the Cover



Versatile, small high-speed craft are becoming an essential tool for modern naval and paramilitary forces, however the roles of these vessels are expanding. Starting on page 50, Rolls-Royce's **Andrew Rice** looks at the evolution of the Combat Boat 90. Photos courtesy: **Ake Nordlander/Fredrik Forsman Dockstavarvet AB.**

## Also in this Issue

- 11 LNG barge to be Built
- 22 S. China Yard Prospers
- 38 Titan refloats Clipper Cheyenne
- 39 Bridge Solutions
- 42 Security/Defense Products
- 43 Ultra Large Containerships
- 47 Security Expo Debuts in NY
- 48 Get Ready for New OPA 90
- 56 Ship's Store
- 63 Ferlship's New Contracts
- 64 People & Company News
- 60 Buyer's Directory
- 62 Advertisers Index
- 65 Classified Ads

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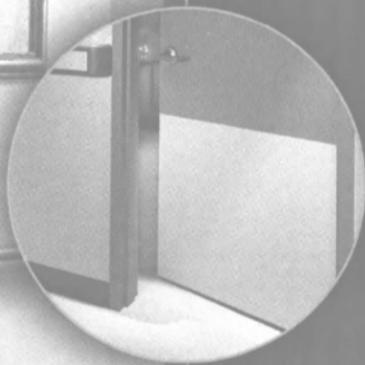
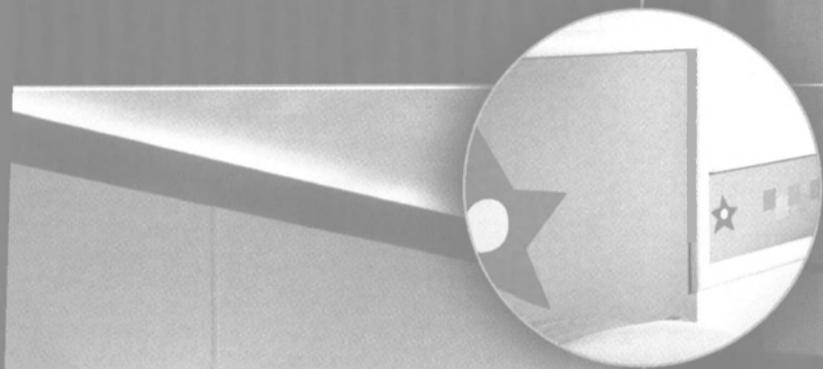
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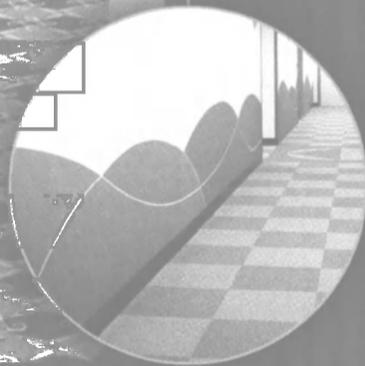


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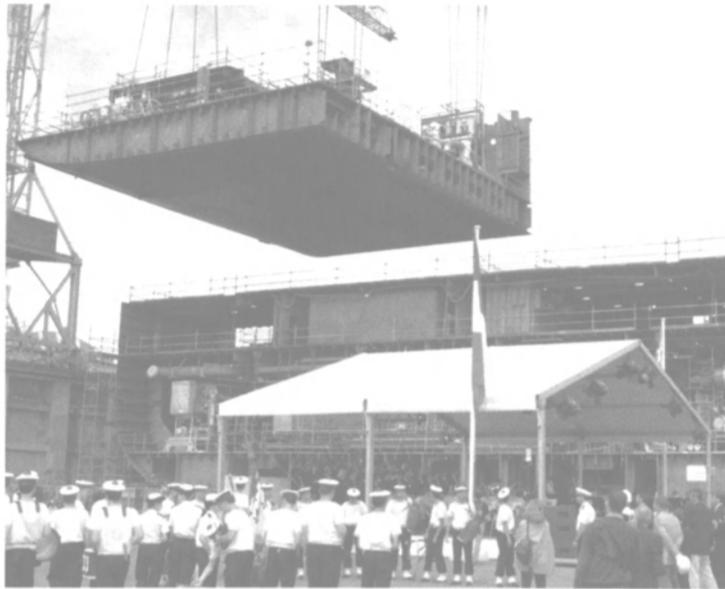


## QM2 Celebrates Keel Laying At French Shipyard

Cunard Line celebrated a milestone when a prefabricated section of the keel was lowered into the building dock of Queen Mary 2. The new \$800-million Cunard flagship will enter service in January 2004 and will be the largest, longest, tallest and most expensive passenger ship ever built. Cunard chose July 4, 2002, as the date of its official ceremony because it is 162 years to the day that its first ship, Britannia, sailed from Liverpool on her maiden voyage to Halifax and Boston.

The first liner to be built since the line's Queen Elizabeth 2 entered service in 1969, QM2 is the first ship for Cunard by the renowned French shipyard Alstom Chantiers de l'Atlantique, one of world's most technically advanced shipbuilders who have built such famous luxury liners as Normandie, France and Ile de France. Because QM2 is a prototype of such unique design, the multi-million-dollar project employs teams of naval architects, engineers and maritime experts, including the marine interior design firms of SMC-Tillberg and Designteam, both based in London. Facilities include 1,310 fully equipped staterooms and suites, nearly three quarters of which will have a private balcony. On the technical side, QM2's powerplant will include two gas turbines and four diesel engines. More than two-thirds of this energy will be used to power a state-of-the-art Mermaid Pod Propulsion System, comprised of two fixed and two azimuthing pod units. The first four-pod installation to date, the powerful new system will provide a speed of nearly 30 knots with low noise and vibration levels and maximum maneuverability.

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## San Fernando Shipyard Gets A RoPax Ferry Order

IZAR San Fernando Shipyard landed an order for building a RoPax ferry to be operated by Strandfaraskip Landsins, the state-owned shipowning company of the Faroe Islands. The contract is a significant step for the yard in the conventional RoRo and passenger ferry market, as it was known until now for its involvement in the steel and aluminum-built fast ferry design and construction.



The vessel is designed to operate in high wind and rough sea conditions, as well as in not easily accessible ports such as those of Faroe Islands. All the onboard equipment and systems are projected to be operational under as low as -20 °C surrounding temperatures.

Besides 976 passengers, payload capacity is planned to include not only cars and trucks and MAFI trailers but even hazardous cargo in two garage decks - one movable of a car-deck type. Access for passengers and vehicles will be arranged by means of two aft ramps, plus an additional ramp on the starboard side.

The vessel will be fitted with two electrically power-driven bow thrusters, an anti-heeling system able to counteract the forces of two trailers simultaneously running in the same side and a pair of retractable stabilizers reducing the vessel rolling by 90 percent.

A propulsion plant, with four diesel MAN / B&W 7L 32/40 engines, coupled in pairs to double input reduction gears driving shaftlines with variable pitch propellers, will be also manufactured by IZAR Propulsion and Energy Division.

With Onboard power will be supplied by two tail generators, four generating sets driven by diesel engines and an emergency generator, the vessel will be supplied with a fully automated, 24-hour "unattended engine room," every operational parameter being monitored and controlled from the bridge control board.

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Main Particulars	
Length, (o.a.)	443 ft. (135 m)
Breadth	74 ft. (22.7 m)
Depth to upper deck	45 ft. (13.6 m)
Draught, design	18 ft. (5.6 m)
Deadweight, design	2,100 tons
Speed, service	21 knots
Propulsion, output	13,440 kW
Range	5,700 n.m.
Passenger, capacity	976
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Passenger cabins	34

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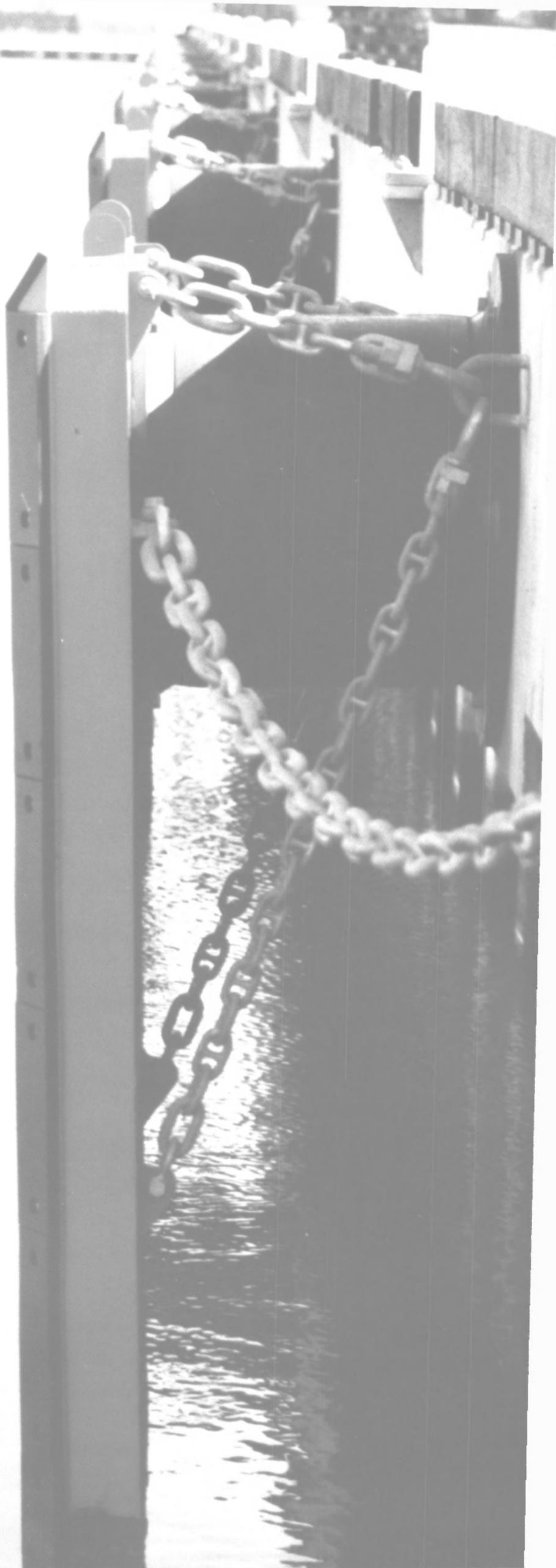
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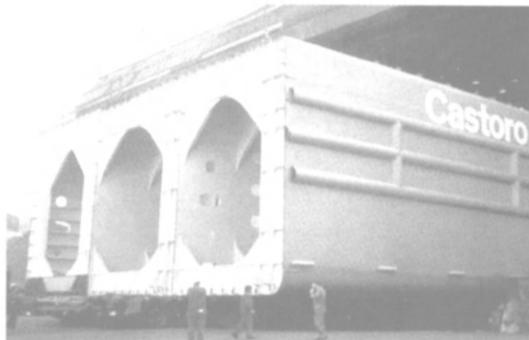


**New & Notable**

## Spanish Yard To Build Snøehvit Barge

IZAR Fene Shipyard has been ordered by Norway's Statoil for the construction of a barge to support a gas liquefaction plant. The LNG barge, scheduled to be completed in August 2003, will house on its deck approximately 24,000 tons of processing equipment for the plant, which will convert natural gas from the Snøehvit field into liquefied natural gas (LNG). With the barge measuring 505 x 177 x 29 ft. (154 x 54 x 9 m) with a net 8,500-ton weight of steel, about 70 cargoes of LNG per year will be shipped out from this floating plant. The deal was signed on June 28 in Munich by Statoil's Fabrication Director, Odvar Birkedal, and the Spanish yard Managing Director, Santiago Garcia, for the unit to be located in the harsh weather environment of the Barents Sea, close to the Melkøya island, in northern Norway. Snøehvit has recoverable reserves of 193 bn cubic meters of gas and 113-m barrels of condensate. The vessel is due to start production in 2006.

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## Austal Delivers Lilia Concepcion To Venezuela

Ferry services to Venezuela's Margarita Island will be improved with the delivery of a second 282-ft. (86-m) vehicle/passenger catamaran to Conferry. Built by Austal Ships, Lilia Concepcion will join a fleet that already includes a similar Austal fast ferry, Carmen Ernestina, delivered in 1999.

The aluminum catamaran offers a more direct service for up to 828 passengers and 243 cars, and has been configured to carry trucks — another first for the Venezuelan fast ferry industry. For Conferry, this capability provides a year round source of income to supplement its more seasonal tourist traffic, while freight companies benefit from a significant reduction in transit time compared to the alternative of driving to Puerto La Cruz and taking a slower conventional ferry.

The addition of truck capability is one of a number of significant differences between Lilia Concepcion and Conferry's first Auto Express 86. Featuring bow and stern doors for drive-through operation, the



garage deck has also been enhanced with a hoistable mezzanine deck. With this raised, 10 trucks may be carried in the three central lanes, which are strengthened for an axle loads of up to 12 tons. When the deck is lowered, a total of 243 cars can be carried, 21.5 percent more than on Carmen Ernestina.

Using the same propulsion package as Carmen Ernestina (4 x Caterpillar 3618 diesels each driving a Kamewa waterjet), Austal's latest Auto Express 86 achieved a loaded speed of just under 41 knots at 90 percent power during sea trials. This represents an increase of 1.5 knots over the contract speed. To ensure that the passengers' journey is as comfortable as it is fast, the vessel is fitted with a Seastate Motion Control System incorporating active interceptors aft. Forward T-foils are not considered necessary for Conferry's service, however provision has been made to allow these to be retrofitted in the future if desired.

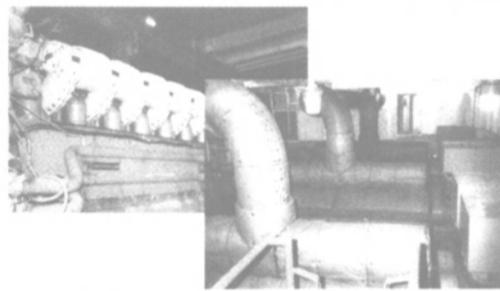
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Main Particulars	
Classification	Germanischer Lloyd
Length, (o.a.)	284 ft. (86.6 m)
Length Waterline	243 ft. (74.2 m)
Beam, (molded)	79 ft. (24 m)
Hull Depth, (molded)	25 ft. (7.6 m)
Maximum draft	10 ft. (3.2 m)
Maximum dwt	400 tons
Passengers	828
Crew	30
Vehicles	243 cars, or 10 trucks (30t each) and approximately 40 cars
Fuel (maximum)	160,000 liters
Engines	4 x Caterpillar 3618; 7200kW at 1050rpm
Gearboxes	4 x Reintjes VLJ 6831
Waterjets	4 x Kamewa 112 SII
Speed	40.95 knots at 90% MCR with 340 tons of deadweight

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## Navy Christens New Guided Missile Destroyer

The newest Arleigh Burke class guided missile destroyer, Pinckney (DDG 91), was christened during a ceremony at Northrop Grumman Ship Systems in Pascagoula, Miss. on June 29, 2002.

The ship's namesake is in honor of



Navy Cook Third Class **William Pinckney**, (1915-1975), recipient of the Navy Cross for his courageous rescue of a fellow crewmember onboard the USS Enterprise (CV 6) during the WWII Battle of Santa Cruz. When an explosion killed four of the six men at his battle station in an ammunition handling room, Pinckney and the other surviving sailor attempted to exit through a hatch to the hangar deck above. In honor of his heroism, Pinckney was awarded the Navy Cross.

Pinckney is the 41st ship of a planned production run of 63 vessels. These multi-mission ships conduct sustained combat operations at sea, providing primary protection for the Navy's aircraft carriers and battle groups, as well as essential escort to Navy and Marine Corps amphibious forces and auxiliary ships, and independent operations as necessary. DDG 91 will be capable of fighting air, surface, and subsurface battles simultaneously. The ship contains myriad offensive and defensive weapons designed to support maritime defense needs well into the 21st century.

The 9,300-ton Pinckney measures 509.5 ft. (155.2 m), has a waterline beam of 59 ft. (17.9 m), an overall beam of 66.5 ft. (20.2 m), and a navigational draft of 31.9 ft. (9.7 m). Four gas turbine propulsion plants will power the ship to speeds above 30 knots.

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## Northrop Grumman Delivers USNS Brittin

USNS Brittin (T-AKR 305), the sixth of seven Bob Hope-class strategic sealift ships being built by Northrop Grumman Corporation's Ship Systems sector, was delivered to the U.S. Navy at the compa-

ny's Avondale Operations in New Orleans on July 12.

Participating in the delivery were representatives of the Naval Sea Systems Command (NAVSEA), the supervisor of shipbuilding, conversion and repair, New Orleans, and Ship Systems officials.

Delivery took place following Brittin's integrated sea trials, which combined

the formerly separate builder's and Navy Acceptance Trials into one evolution.

For the first time, Northrop Grumman Ship Systems' New Orleans and Pascagoula, Miss., facilities were utilized for a sea trial. Subsequently, the ship will remain at Avondale for several weeks of crew training before departing for its homeport in Norfolk, Va.

Measuring 950-ft. (289.5 m), the large,

medium-speed, RoRo ships, which are among the largest in the Navy's Fleet are designed and constructed with more than 380,000 sq. ft. of cargo capacity and are capable of carrying up to 1,000 military wheeled or tracked vehicles and other cargo.

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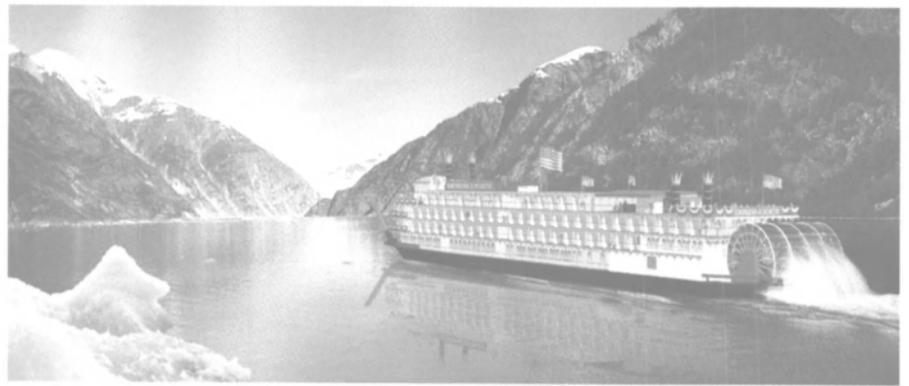
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## New & Notable Empress of the North Scheduled For 2003

Despite the combined effects of terrorist attacks and a sour economy that have left the tourism industry in the doldrums, American West Steamboat reported that new construction activities

are "full steam ahead," with the initiation of the construction of a second sternwheeler cruise ship, the Empress of the North, scheduled for completion in May 2003. Empress of the North was designed by Guido Perla & Associates and is being built by Nichols Brothers Boat Builders in Freeland, Wash. The



vessel will be 360 ft. (109.7 m) and accommodate 236 passengers and 84 crew.

Andrea Piacentini Design, Inc. designed lavish period Victorian interiors for this vessel. Attention to every detail was to be the hallmark of all interiors according to the clients' wishes. Elaborate features of carved columns, vaulted ceilings and filigree screens transform the Dining Room into Imperial Russian era elegance. The Gold Rush/Gay Nineties themed Showroom Lounge, with detailed stage and lighting elements, recall a time of opulence and leisure lifestyles.

The construction of this ship has helped both operator and builder expand their companies. While the new ship will add a new cruise route and increases capacity on the Columbia river for the owner, the builder found the need to increase the size of its shipyard in order to handle a ship of this size. "We have effectively doubled the size of our shipyard", said **Matt Nichols**, CEO of Nichols Brothers Boat Builders. "The increase in size allows us to compete in new markets while maintaining our current customer base" Nichols added.

With just over 11 months to finish the project Nichols said, "The vessel is currently ahead of our production schedule and we are looking for a on time delivery".

Another vessel currently under construction at Nichols Brothers is a 105-ft. (32-m) Fireboat for the Los Angeles Fire Department. The fireboat is being called the most powerful in the world with its ability to pump 31,000 gallon per minute delivered from a total of six pumps. In addition to its incredible pumping capacity, the vessel will be powered by two 1,800 hp Detroit Diesel 12V4000 diesel engines coupled to Cyclodal drives. The vessel will be delivered in November of this year.

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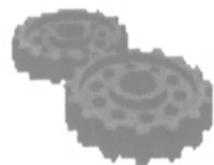
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## Austal USA Sells Second Vessel Into N.Y. Market

Austal USA has signed a contract with Cloud Nine of New York to construct a 135-ft. (41-m) dinner cruise monohull for operation in the Manhattan-Queens area.

This is the second sale by Austal USA to the New York market this year and will further showcase the company's ability to deliver a high quality, customized product.

Cloud Nine specializes in offering private, luxury dinner cruises for social and corporate groups and have developed a large base of repeat customers.

The New York based company currently operate a 95-ft. (29-m) dinner cruise monohull and this new larger Austal USA vessel, due for delivery to New York during April 2003, will enable Cloud Nine to cater for larger groups.

The new vessel will operate at a service speed of 16 knots offering their trademark "New York Skyline Tours" departing from Queens (near Shea Stadium) or Manhattan (at East 23rd St).

### Main Particulars

Length, (o.a.)	135 ft. (40.8 m)
Length, (Waterline)	118 ft. (35.9 m)
Beam (molded)	30 ft. (9.1 m)
Hull Depth (molded)	12 ft. (3.6 m)
Maximum Draft	7 ft. (2.1 m)
Passengers	149
Crew	3 operational ; 9 hotel
Engine	2 x Cummins KTA 38 - M0 delivering 800 bhp each at 1800rpm
Gearbox	2 x Reversing Marine Gearboxes
Propellers	2 x Fixed Pitch Propellers
Gensets	2 x Cummins 6CTA8.3-D(M)
Speed (@70 percent MCR)	16 Knots
Fuel consumption	80 gal/hr.

Capable of accommodating up to 149 guests, the aluminum monohull will be particularly suited to private and corporate functions and will feature a large galley for full on-board catering, two bars, dance floors and a bridal suite for the very popular wedding functions held on board.

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## Manitowoc Launches Tug Ocean Reliance

The Manitowoc Company, Inc. announced the successful launch of the 127-ft. (38.7-m) tug, Ocean Reliance, the first of two tugs being built at Manitowoc's Marinette Marine subsidiary. When delivered, Ocean Reliance and its sister tug Coastal Reliance will be coupled with 155,000-barrel, double-hulled petroleum barges, which are currently

being constructed at Manitowoc's Bay Shipbuilding subsidiary.

Ocean Reliance is powered by 9,280-hp engines and is equipped with an Intercon coupling system that will link the ocean-class tug with its 512-ft. (156-

m) barge. Scheduled for delivery later this year, both tug/barge units are fully compliant with the provisions of the Oil Pollution Act of 1990 (OPA '90).

Both of Vessel Management's new tug/barge units will operate in the Pacif-

ic Northwest and are among the largest and most-sophisticated vessels of their type ever constructed in the United States.

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## New & Notable

### First Lady Laura Bush Authenticates Sub's Keel

Northrop Grumman Corporation's Newport News sector hosted a keel laying ceremony for the second Virginia-class submarine, Texas (SSN 775) on July 12, 2002 with First Lady Laura Bush as the Ship's Sponsor and keel authenticator for the ceremony.



Mrs. Bush authenticated the keel by chalking her initials onto a metal plate, which were then welded and permanently affixed to the submarine. Northrop Grumman's Newport News sector is teamed with General Dynamics Electric

First Lady Laura Bush recently laid the keel for Northrop Grumman's Virginia-Class submarine, Texas.

Boat to build the first four ships of the Virginia-class - Texas is the second ship of the Virginia-class.

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### Bender Shipbuilding Secures \$8-M Contract

Bender Shipbuilding & Repair Co. Inc., Mobile, Ala., is being awarded an \$8-million firm-fixed-price contract for the drydocking selected restricted availability of USS Stephen W. Groves (FFG 29). Work will be performed in Mobile and is to be completed by November 2002. Contract funds in the amount of \$7.9-million will expire at the end of the current fiscal year.

This contract was competitively procured and advertised in the Commerce Business Daily, with three proposals solicited and two offers received. The Supervisor of Shipbuilding, Conversion and Repair, Pascagoula, Miss., is the contracting activity.

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### AMFELS Lays Keel Ahead of Schedule Jack-Up

AMFELS Inc, the U.S. wholly-owned subsidiary of Singapore's Keppel Corporation Ltd., has laid the keel for new jack-up rig, Tonalá — one month ahead of schedule. The \$83-million contract for the rig was signed in April 2002 with Mexican company, Perforadora Central SA de CV.

Tonalá is a KFELS MOD V "B" class jack-up, enhanced with Keppel's proprietary jacking and fixation systems developed by its research and technology arm, Offshore Technology Development.

Due for delivery in the first quarter of 2004, Tonalá is the fourth "B" class rig ordered in two years. The first "B" class, Chiles Discovery, was delivered by Keppel FELS in Singapore, with its sister rig, Chiles Galileo, now under construction at AMFELS for the same owner, Chiles Offshore Inc. - due in September 2002. The third rig, Atwood Beacon, is currently being built in Keppel FELS for Atwood Oceanics Pacific Limited and is expected to be delivered in June 2003.

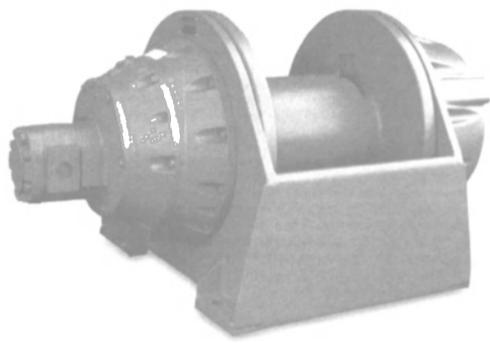
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### Dolphin Towing Adds AHTS to Fleet

The Gulf of Mexico's newest offshore tug boat company, Dolphin Towing, recently added the Rebekah Bruce, to its young fleet. The Rebekah Bruce, a towing and anchor handling tug adds more horsepower to the Dolphin Fleet.

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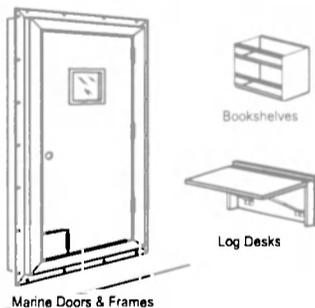
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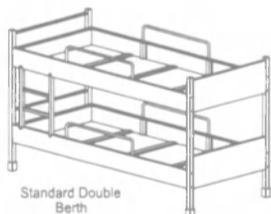
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Maritime Reporter & Engineering News

**Trico Marine Takes Delivery on New Platform Supply Vessel**

Trico Marine Services, Inc., has taken delivery on Northern Canyon, a 279-ft. (85-m) UT 745 design platform supply vessel (PSV). The vessel is designed to serve deepwater markets worldwide. Built in Norway, Northern Canyon is equipped with a DP2 (dynamic positioning) system and is among the largest, most technologically advanced PSVs available in the industry.

The vessel, which will be deployed initially in the North Sea, is quipped as a remotely operated vehicle vessel to perform subsea construction work globally; it has been awarded a three-year contract by Canyon-Offshore, Inc. Trico is scheduled to take delivery of a second 279-ft. (85-m) PSV in September 2002. The company also expects to receive of three new generation 155-ft. (47.2-m) crewboats designed to transport personnel and oilfield products and supplies to offshore drilling and production platforms.

**Halter Lays Keel for Army's ELSV**

HMI, a division of Friede Goldman Halter, Inc. laid the keel of the U.S. Army's Tank and Automotive Command (TACOM) new Enhanced Logistic Vessel (ELSV) — supporting TACOM logistical efforts on a worldwide basis.

The completed vessels will be 314 ft. (95.7 m), have a 60-ft. (18.2 m) beam and an overall depth of 19 ft. (5.7 m) will encompass a construction time of approximately two years.

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**Kvaerner Masa-Yards Signs Letter of Intent**

The Norwegian shipowner Color Line AS and Kvaerner Masa-Yards in Finland have signed a Letter of Intent according to which the parties agree that Color Line will purchase and Kvaerner Masa-Yards will design, build and deliver a cruise passenger ferry.

The Letter of Intent is subject to financing and of a mutually satisfactory shipbuilding contract. The value of the vessel is about \$297 million. The parties will work in an exclusive basis towards finalizing the shipbuilding contract by October 15, 2002.

**Guangzhou Panyu Lingshan Shipyard Prepare for Deliveries**

A pair of self-dumping hopper barges are shaping up in one building shed at the Guangzhou Panyu Lingshan Shipyard on the shore of the Pearl River, while a 62 x 15 ft. (19 x 4.5-m) patrol launch for the Hong Kong Immigration Department awaits the installation of a pair of Cummins QSK19 engines with 3:1 ZF gears in an adjacent shed. The launch, built to Hong Kong Marine Department standards, has a pair of Cummins/Onan generator sets and a 15-knot running speed.

On the inland side of the building sheds, steel is being cut and shaped for additional projects. At the fitting out dock, a 96-ft. (29.4-m) tug, with an 28-ft. (8.7-m) beam and a molded depth of 13-ft. (4.1-m), is having a pair of 12-cylinder 1,200-hp Cummins KTA38-M2 engines fitted - driving through a ZF 6:1 reduction gears to turn four-bladed propellers in kort nozzles.

Known as T.B.Martha I, the 2,400-hp BV-classed

ocean-going tug, was ordered by a Singapore-based broker on behalf of an Indonesian customer. With a free running speed of 12 knots, the bollard pull on the Dutch-built Mampaey Off Shore Industries towing hook will be 40 tons, and a large hawser winch on the bow equips the tug well for ship handling.

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**IHI Delivers Large Ferry To Domestic Owner**

Ishikawajima-Harima Heavy Industries Co., Ltd. (IHI) has delivered the 18,255-gt car/passenger ferry, Lilac, to its owner Shin-Nihonkai Ferry Co., Ltd. of Japan. The ferry, which is the first of two for the owner, had its keel laid at the IHI Yokohama Shipyard in June 2001 and was then launched in September of the same year. The ferry was then towed to IHI Amtec Co., Ltd., an IHI subsidiary company located in Aioi, Hyogo Prefecture, for fabrication of the superstructures and outfitting work, entering service between Niigata and Otaru, Hokkaido, on April 5, 2002. To provide diverse passengers with increased comfort and satisfaction during a voyage, Lilac has more private cabins than the previous ferries. Barrier-free inboard design is another provision for disabled persons; wide doorways and corridors are featured along with automatically operated doors. The new hull design has been developed for decreased fuel consumption after studying the hull forms of the previous ferries built by IHI.

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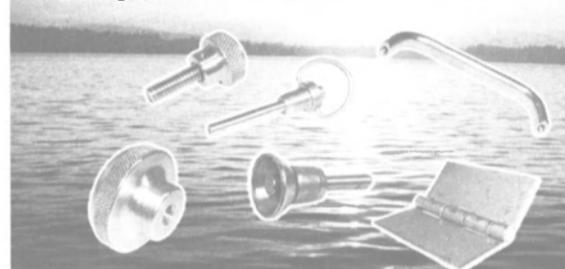
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## News

### VDR and AIS Regulations Go Into Effect

New regulations for certain size ships to carry voyage data recorders (VDRs) and automatic identification systems (AIS) entered effect on July 1, 2002.

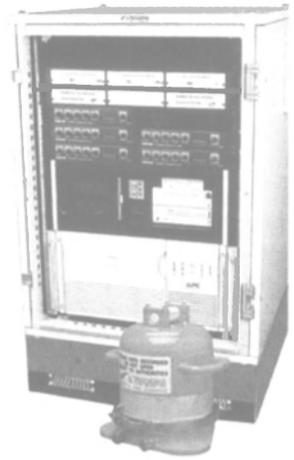
The mandatory regulations are among a raft of amendments to the International Convention for the Safety of Life at

Sea, 1974 (SOLAS) entering into force on July 1, 2002. In addition, under its second phase of implementation, the International Management Code for the Safe Operation of Ships and for Pollution Prevention (ISM Code) became mandatory for most ships trading internationally on July 1, 2002.

The revised SOLAS chapter V (Safety

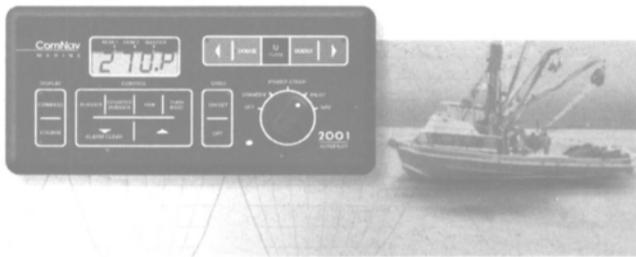
of Navigation), which was adopted in December 2000, includes a number of important new requirements for ships, including those relating to carriage of VDRs and AIS and acceptance of electronic charts as meeting the chart carriage requirements.

The following ships are required to carry VDRs, under regulation 20 of the



Voyage Data Recorders (VDR's), such as this one manufactured by Transas, must be present onboard certain size vessels as of July 1, 2002.

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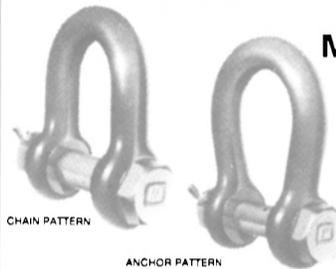
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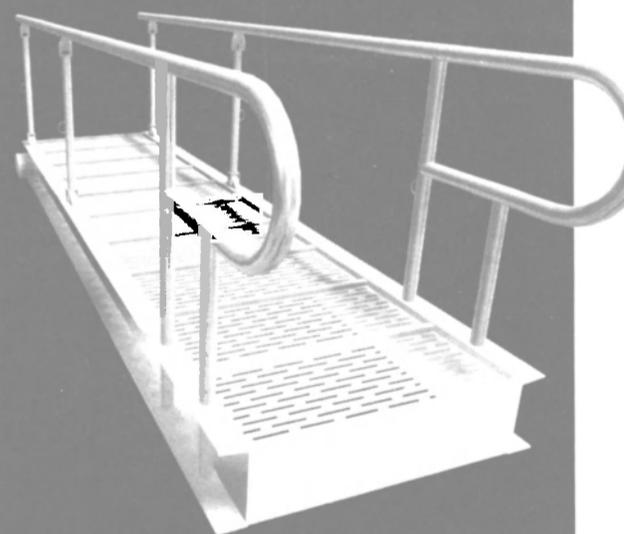
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new SOLAS Chapter V: passenger ships constructed on or after July 1, 2002; RoRo passenger ships constructed before July 1, 2002 not later than the first survey on or after July 1, 2002; passenger ships other than RoRo passenger ships constructed before July 1, 2002 not later than January 1, 2004; and ships, other than passenger ships, of 3,000 gt and upwards constructed on or after July 1, 2002.

The regulation requires AIS to be fitted aboard all ships of 300 gross tonnage and upwards engaged on international voyages, cargo ships of 500 gross tonnage and upwards not engaged on international voyages and passenger ships irrespective of size built on or after 1 July 2002. It also applies to ships engaged on international voyages constructed before July 1, 2002.

## CIMAC to Focus on Engines and Cylinders

It is estimated that 80 to 90 percent of world trade in volume terms is carried by vessel. There are approximately 86,000 ocean going merchant ships over 100 gt in operation. About 97 percent of them are propelled by large-bore, highly supercharged diesel engines. State-of-the-art diesel engines with maximum availability have to be reliable, maintenance-friendly, highly efficient, and they have to operate at lowest emissions. Cylinder condition is a very important item in diesel engine technology and development. Therefore CIMAC has chosen the topic: Interaction Between Engine Design, Cylinder Lube Oil Dosage, and Cylinder Condition, for the CIMAC Circle at SMM 2002, Hamburg on September 26, 2002, which will be held from 1:30-4 p.m. in Copenhagen I - III This type of CIMAC event has been held with great success for several years at major trade fairs like SMM, EUROPORT and ASME Turbo Expo. Participation is free, however, registration via CIMAC Central Secretariat is required. Please contact: [cimac@vdma.org](mailto:cimac@vdma.org) or register through our website: [www.cimac.com](http://www.cimac.com) / Congress&Events / CIMAC Events.

Maritime Reporter & Engineering News

# Maritime Security and the Hazards of Unilateralism

By Dennis L. Bryant, Senior Maritime Counsel, Haight Gardner Holland & Knight, Washington, D.C.

The United States Congress is working hard to enact maritime security legislation. At the same time and under the leadership of the United States, the International Maritime Organization (IMO) is working hard to develop an international convention on maritime security. There is little doubt that Congress will complete its task before IMO completes its mission. There is also little doubt that, in some areas, the U.S. approach will differ from that to be taken by IMO. The international maritime community will thus be facing a situation not wholly dissimilar from that of just over ten years ago when the U.S. Oil Pollution Act of 1990 (OPA 90) challenged the approach taken by IMO with regard to double hulls on oil tankers and related matters. It is hoped that Congress will attempt to minimize the likely differences, but the Senate and House bills from which the final bill will be crafted, upon close examination, give one pause.

While the final version of the legislation remains under negotiation between the Senate and the House of Representatives, various provisions of the bills before the Conference Committee present potentially major international issues.

For instance, one provision would allow the United States to prohibit entry of a ship arriving from (or carrying cargo from) a foreign port found to not maintain effective security measures. It is one thing to place special conditions on a ship that may be carrying suspect cargo (e.g., quarantine), as another provision in the bill would do. It is quite another thing to impose a ban on the ship because, for instance, one container on board was transhipped through a port that did not have a United States Government seal of approval.

The measure also conflicts with at least the spirit of the message being conveyed by USG Administration officials, such as Customs Service Commissioner Robert Bonner, about how the new U.S. maritime security program will be implemented.

## According to IMO Standards...

A related provision would allow the United States to prohibit a U.S. or foreign flag vessel from providing transportation between the United States and any foreign port that is served by vessels navigating to or from a foreign port found not to maintain and carry out effective security measures. This effectively would say that not only must you do things our way, you must also ensure that all your friends and acquaintances do it our way. It raises unilateralism to amazing new heights.

Under the draft international convention, carriers and individual ships would be required to develop security plans in accordance with IMO standards. Yet, it seems clear that these plans would not prove sufficient under the domestic legislation being considered in the United States. In the U.S., under the proposed legislation, vessel anti-terrorism plans would have to comport with national and area plan requirements, identify a qualified individual having full authority to implement the plan, ensure the availability of anti-terrorism measures to deter a



Beginning this month, Dennis L. Bryant, Senior Maritime Counsel at the law firm of Haight Gardner Holland & Knight, Washington, D.C. will be providing a regular monthly column in MR/EN regarding current trends and developments dealing with various issues within the maritime industry.

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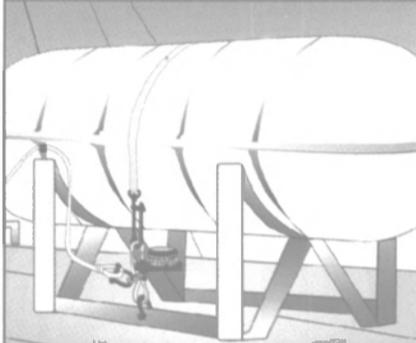
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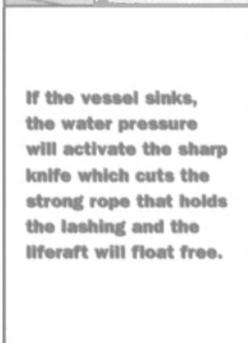
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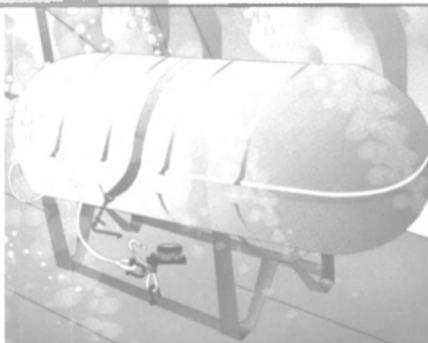
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catastrophic emergency, and describe the training, drills, and anti-terrorism actions of persons on the ship to deter a catastrophic emergency. The plan would have to be approved by the USG. In other words, having a security plan that meets international requirements and is approved by the flag administration would, as it was for oil spill response plans under OPA 90, be insufficient for voyages to the United States. It should be noted that, under the current bill, this anti-terrorism plan would only be required of those vessels that the United States believes might be involved in a catastrophic emergency. The discretion of the federal government is not otherwise fettered in this regard by the current bill.

#### What You Don't Know — May Hurt You

Another worrisome provision would prohibit a vessel from loading for export from the United States cargo for which the exporter has not submitted to the USG all the documentation that the Government wants. The problem is: how is the master to know if that has been done by the exporter to the satisfaction of the USG? Even today, when the USG is demanding less paperwork than it is expected to require in the near future, problems arise with export documents and ships are occasionally required to return cargoes (that were properly loaded) so that the U.S. Customs Service can reexamine them or take other action. There simply is no way for a master to know whether an exporter has submitted to the USG all documents that may be required and whether each of those documents are fully and accurately completed. It's one thing to place a burden on the party responsible for accomplishing a task. It is quite another thing to place a burden on a party who has no such obligation and no effective means of ensuring that the party with the obligation actually does what is required. Would the government prosecute a taxi cab driver or the taxi company for carrying a bank robber from the scene of the crime when the driver had no knowledge that the bank had even been robbed?

The bill will apparently require international shipping containers being shipped to the United States to meet certain standards and to be equipped with such things as tamper-proof seals. Unless there is a clear and obvious method of determining whether a particular container is in compliance

with these standards, it would be both unfair and inappropriate to place a burden on the ship operator or the master regarding the propriety of bringing such container to a U.S. port. And the burden may relate to more than just containers bound for the United States. A container being carried to another nation on a ship that is making an intermediate port call in the U.S. is as potentially dangerous as one actually destined for the U.S. This dilemma highlights the international nature of the problem and why an international, multinational, uniform solution is required.

Another potential threat not fully addressed in the bill relates to use of a ship as a weapon. While certain vessels, such as LNG carriers, will continue to face heightened scrutiny, those are probably not the ones that would be used in a terrorist attack. Security on attractive ships, such as LNG carriers and cruise ships, has already been enhanced. The likely ships that might be used as weapons are small freighters, such as those allegedly owned by Al Qaeda, which will, if the legislation is a guide, receive little scrutiny from the Coast Guard and other federal agencies in the absence of intelligence information. All that would be required is to load such a small freighter with a legitimate cargo of fertilizer (as was done in Oklahoma City), sail it into a major port such as San Francisco, and detonate it near a vital structure such as the Golden Gate Bridge.

These potentials are not cited to engender unneeded concern or to provide a terrorist blueprint, but merely to emphasize that the terrorist threat is many-faceted and requires a broad-based solution. While there are roles for national governments, as well as local governments (e.g., first responders), the private sector, and the crews of individual ships, there is also a major role to be played by international organizations, such as the IMO.

The greatest danger facing the United States if it insists on undertaking all of the unilateral measures contained in the bills under consideration is that it will lose the support of the international community, with the possible result that there is no international convention on maritime security. The U.S. Congress will do itself, and the American people, a disservice if it ignores the proper role of the IMO with respect to maritime security and continues in its more extreme unilateral efforts.

## New SOLAS Regulations Go Into Effect

Amendments to the International Convention for the Safety of Life at Sea (SOLAS) affecting many aspects of ship safety go into effect on July 1, including a new revised SOLAS chapter on fire protection, fire detection and fire extinction, amendments to chapters II-1, IX and X (to make a new High-Speed Craft Code mandatory) and record of equipment attached to safety certificates.

A revised SOLAS chapter II-2 (Construction - Fire protection, fire detection and fire extinction) enters into force, which also makes a new International Code for Fire Safety Systems (FSS Code) mandatory. The revised chapter was developed over eight years by the Sub-Committee on Fire Protection and provides an entirely new structure for SOLAS chapter II-2 which may better accommodate the way port and flag States and ship designers deal with fire safety issues in the future. The new structure focuses on the "fire scenario process" rather than on ship type, as the previous SOLAS chapter II-2 was structured. Thus, the regulations start with prevention, detection, and suppression following all the way through to escape. In addition, to make the revised SOLAS chapter II-2 more user-friendly, specific system-related technical requirements have been moved to the new International Fire Safety Systems Code and each regulation has a purpose statement and functional requirements to assist port and flag States.

## Keppel Acquires Interest in Verolme Botlek for \$17.9 Million

Through its offshore rig-building division Keppel FELS Ltd., Keppel Corp. signed a preliminary contract with Verolme Botlek b.v. to attain an 85 percent interest in the Dutch offshore repair and conversion shipyard for \$17.9 million. The remaining interest will be held by the management (10 percent), and workers' foundation (five percent).

The acquisition of the shipyard, which

Van Oord ACZ, involves the conversion of bulk carrier Kvitnes into the world's largest flexible fall pipe vessel. With work beginning this November, at one of the yard's graving docks, the main tasks, include: installation of an advanced dynamic positioning system

(DP) system; installation of two retractable azimuth thrusters and two additional bow thrusters; alteration of the existing propulsion system; and expansion of safety equipment.

The conversion itself involves the 545 x 80-ft. (166.3 x 24.5-m) bulk carrier

Kvitnes to be drydocked on a 9-ft. (3-m) dock block arrangement in dock 6, one of the yard's three graving docks — requiring 800 tons of steel. Following the conversion, Kvitnes will be re-christened Rocknes by Van Oord as the fourth fall pipe vessel to be operated by the company.

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Drydock No. 7, Verolme Botlek Rotterdam.  
(Top): Jack-up rig Glomar Labrador 1; (bottom): multi-service platform Seafox 1.

is expected to be completed in the next few months (subject to due diligence and definitive agreements), is in synch with Keppel's near-market, near-customer strategy for a stronger foothold in the North Sea and European offshore and marine markets. Mainly, the North Sea holds Europe's largest oil and natural gas reserves and is one of the world's key non-OPEC producing regions — reaching 5.9 million bpd in 2001.

Established in 1954, Netherlands-based Verolme Botlek provides integrated services and activities in offshore repair, conversion and modification work. Reporting a revenue of \$13 million and profit before tax of approximately \$5.9 million in 2001, the yard encompasses a total of 54 hectares. Equipped with three drydocks up to 500,000 dwt and advanced workshop and craneage facilities, the yard's location in the Port of Rotterdam offers convenient access to both the North Sea and most of the industrial hinterland of Western and Central Europe.

Adding to its list of growing contracts, Verolme Botlek was awarded an order for the conversion of the world's largest stone dumping vessel. The contract, which was granted by Gorinchem-based

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News

# After Half A Century, Hamilton Jet Keeps On Pushing

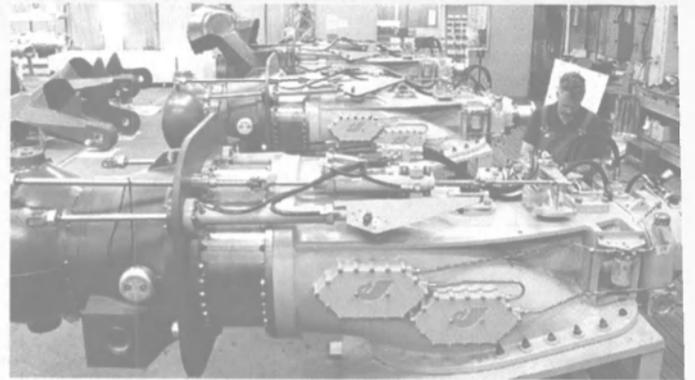
Hamilton Jet has, for almost 50 years, developed and manufactured waterjet propulsion units. A leading supplier in a technologically demanding category, Hamilton Jet recently completed multi-million dollar factory upgrades to accommodate rapid growth.

Offering 15 models, Hamilton Jet's niche is vessels typically up to 164 ft. (50 m). The company's smallest model, the HJ212, is designed as the propulsion mode of choice for small river craft. Hamilton Jet recently introduced the high thrust 4.1HTT "Turbo" impeller for the HJ212 unit, which provides extra power to get out of the "hole" and improves cruising-speed economy. Hamilton Jet's largest model, the HM811 (810 mm diameter impeller), was specified for large work boat and ferry projects in Europe, Asia and the U.S. These orders include a fleet of seven 151-ft. (46-m) passenger ferries to be built by Damen Shipyards Singapore for a Portuguese operator, a pair of crewboats for the Gulf of Mexico oil industry and

another pair of crewboats for operation in Africa. The company has experienced rapid growth from all regions worldwide and many market segments. A 20-vessel 32-ft. (10-m) Patrol Boat project from the Middle East, rescue RIBs in the U.K., whalewatch excursion vessels and passenger ferries in the U.S., and patrol boats for the Mexican Navy highlight the diverse range of opportunities where Hamilton Jet has been successful within the last 12 months.

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Assembly of Hamilton Jet's largest model at its Christchurch, New Zealand factory.

Hamilton Jet's protected impeller and lack of exposed parts helps to eliminate the risk of impact damage. Also, engines cannot be overloaded when driving a waterjet, which reduces engine maintenance requirements and increases engine life significantly.

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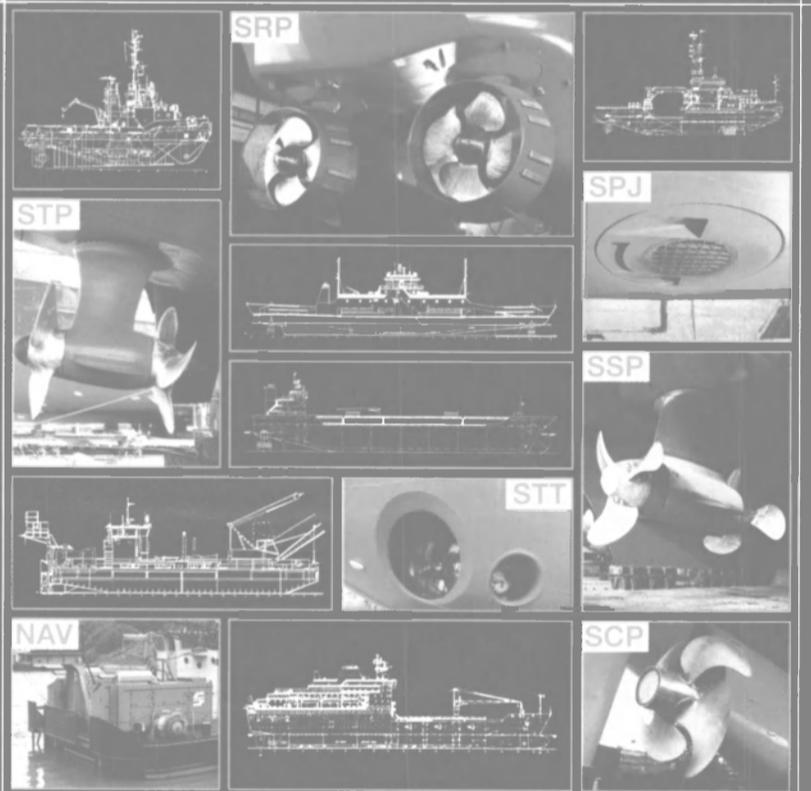
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## Rodriquez To Construct High Speed Monohull

Rodriquez Cantieri Navali SpA of Italy and Arab Bridge Maritime Company of Jordan have signed a contract for a TMV 84 high-speed monohull to operate on their route from Aqaba, Jordan to Nuweiba, Egypt. The ship is scheduled to be delivered in less than a year from now. This route is currently served by a series of older passenger ferries as well as a 1992-built 131-ft. (39.9-m) Flying Cat.

For Arab Bridge Maritime Company, this will be the first new building in the history of the company and will also be the first new passenger ferry ever in Jordan with a Jordanian flag. For Rodriquez, this contract continues the diversification efforts of the company as it is the first contract with a Middle Eastern company in their history and further solidifies Rodriquez as a leading fast ferry builder.

The TMV 84 is an 275-ft. (84-m), 35 knot, all aluminum monohull with a capacity for 710 passengers divided between economy class, first class and a special VIP salon. It can also carry 58 cars or a mix between 10 buses and 18 cars. Loading of both passengers and vehicles will be via the stern ramps with two being dedicated for the passengers and the third being for vehicles only.

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## RINA Backs Emission Cruise Ship Project

SAFENVSHIP, a \$14.9 million EU project to develop design methodologies and testing technologies, which can be used in the development of future large passenger ships, was launched at the Genoa headquarters of Italian classification society RINA on July 5. The project aims to provide the basis for a "safe and almost zero emission" cruise ship or ferry.

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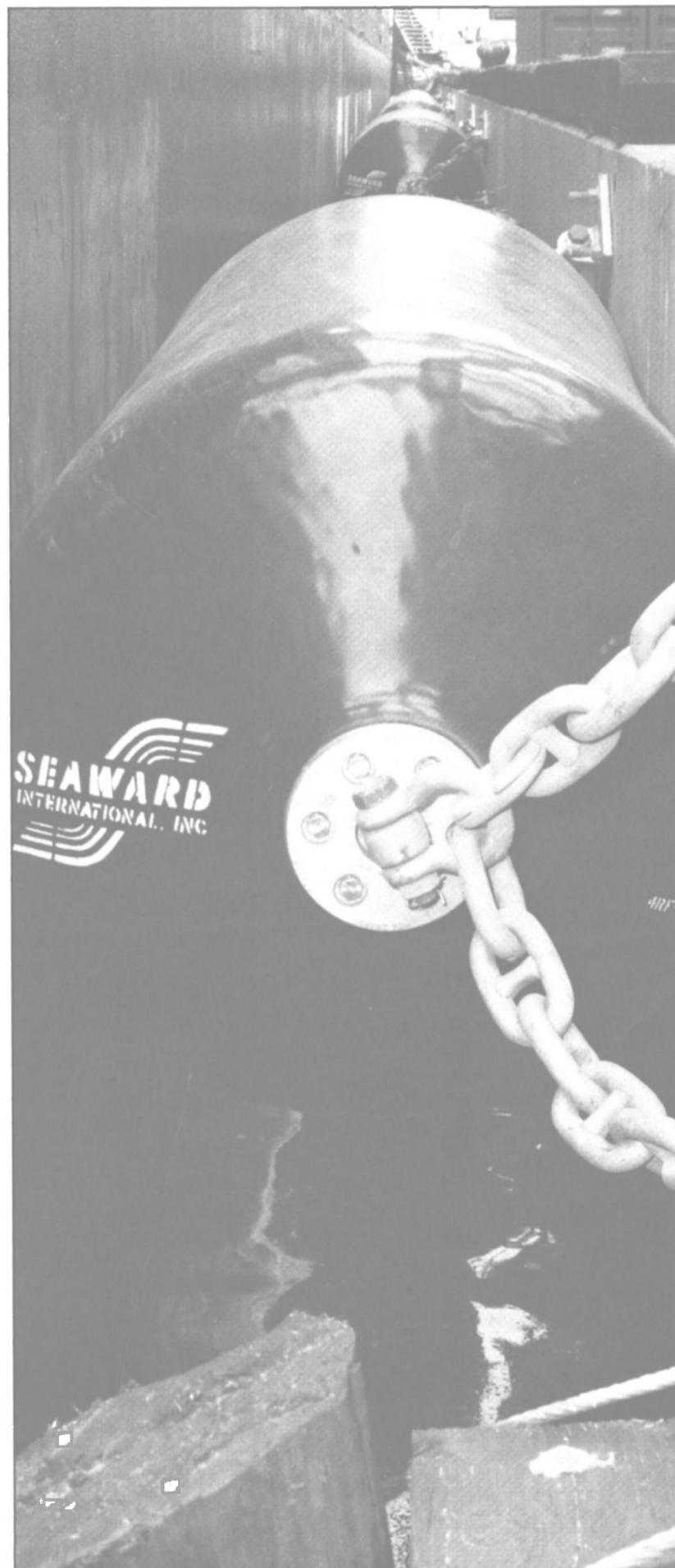
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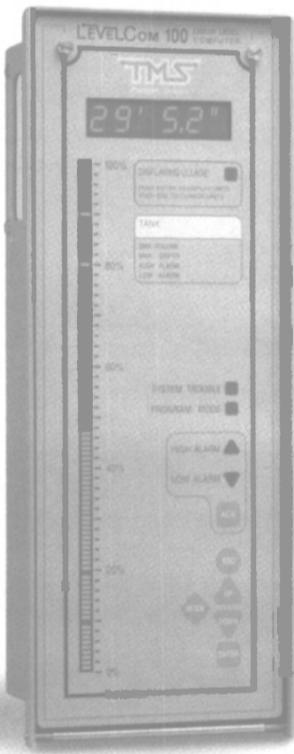
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Classed as Bureau Veritas I3/3E+ Tug Deep Sea, final design details for the new boat were done by the yard's own staff. Cost of the vessel, which was built over an eight month period, was approximately \$1.2 million.

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## Rodriquez To Construct High Speed Monohull

Rodriquez Cantieri Navali SpA of Italy and Arab Bridge Maritime Company of Jordan have signed a contract for a TMV 84 high-speed monohull to operate on their route from Aqaba, Jordan to Nuweiba, Egypt. The ship is scheduled to be delivered in less than a year from now. This route is currently served by a series of older passenger ferries as well as a 1992-built 131-ft. (39.9-m) Flying Cat.

For Arab Bridge Maritime Company, this will be the first new building in the history of the company and will also be the first new passenger ferry ever in Jordan with a Jordanian flag. For Rodriquez, this contract continues the diversification efforts of the company as it is the first contract with a Middle Eastern company in their history and further solidifies Rodriquez as a leading fast ferry builder.

The TMV 84 is an 275-ft. (84-m), 35 knot, all aluminum monohull with a capacity for 710 passengers divided between economy class, first class and a special VIP salon. It can also carry 58 cars or a mix between 10 buses and 18 cars. Loading of both passengers and vehicles will be via the stern ramps with two being dedicated for the passengers and the third being for vehicles only.

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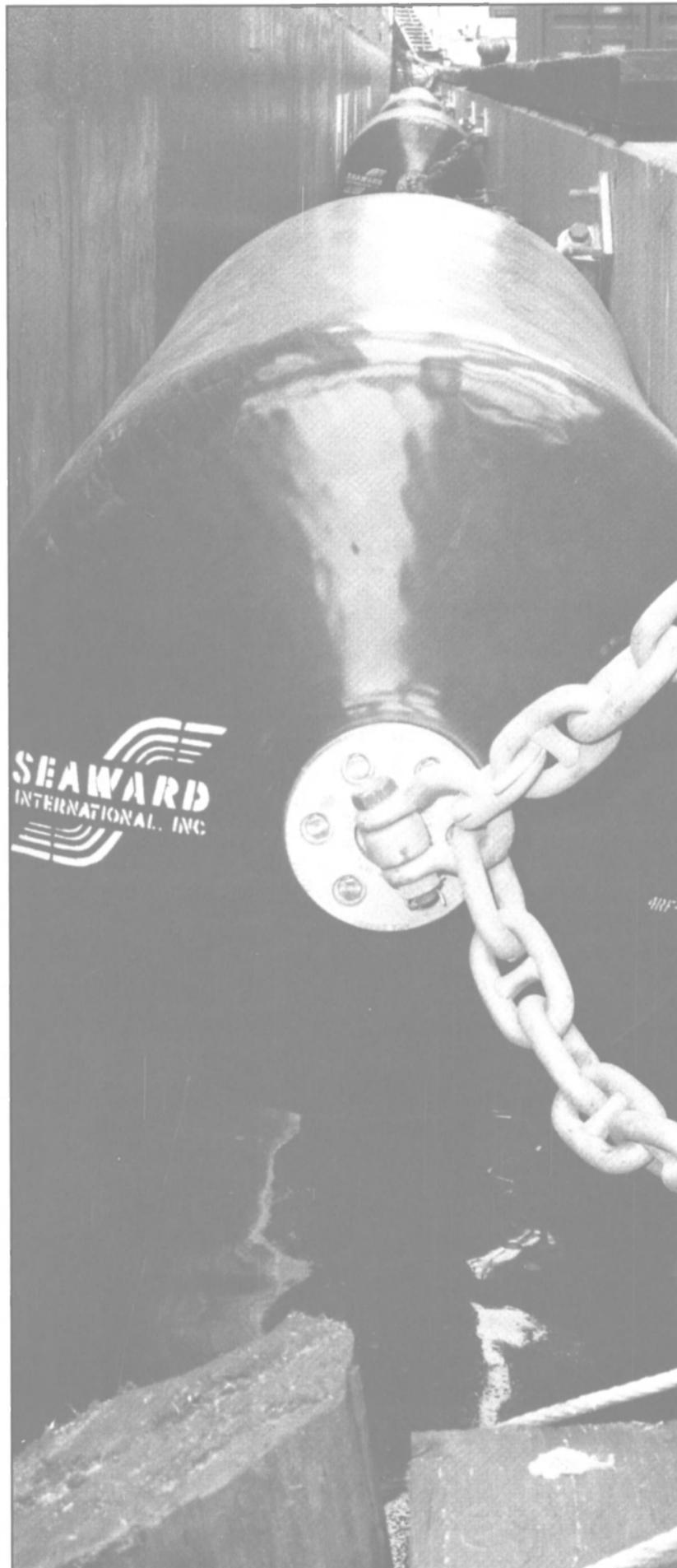
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# Vosper Thornycroft Takes A "Bite" Out of Technology



By David Tinsley, technical editor

Demonstrating a long-term commitment to its U.K. industrial base, Vosper Thornycroft is scheduled to start production next spring at a new, £40-million (\$60-million) shipbuilding facility being created within the Portsmouth Naval Base.

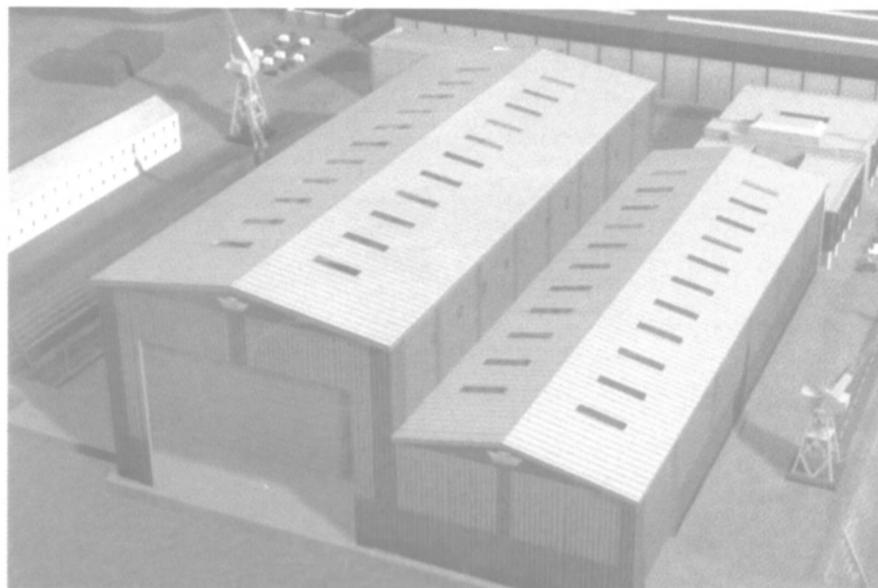
The technologically advanced, undercover yard will cut its teeth on the Royal Navy's Type 45 destroyer program, constructing pre-outfitted blocks of up to 700-ton steelweight for ship assembly elsewhere in the U.K. at yards controlled by BAE Systems.

Described as a shipbuilding factory, in keeping with investments in state-of-the-art production machinery and a lay-

out and logistic arrangements conducive to high productivity, the Portsmouth facility will have the capacity to turn out mega-blocks of up to 6,000-tons, as envisaged for the RN's next generation of aircraft carriers.

Although the yard will initially comprise two, 426-ft. (130-m), fully-enclosed shipbuilding bays and a 10,000-sq.m. production hall, the site provides for subsequent expansion. The circumspect nature of the design project not only reflects Vosper Thornycroft's long-range view of the international naval market, but also its perception of opportunities in the commercial sector. Last year's unveiling of a development project for a 476-ft. (145-m) wave-piercing catamaran RoPax ferry underscored the company's multi-faceted business strategy.

The Portsmouth factory is truly a milestone for the industry in the U.K., where decades of contraction in shipbuilding have obscured the achievements and resilience of the remaining players. Moreover, it will provide an outstanding example of the manner in which modern-day shipbuilding has embraced



An artist's impression of the initial phase of Vosper Thornycroft's new Portsmouth ship factory.

sophisticated technology, contrary to ill-conceived notions in western society of traditional industries being locked into outmoded ways of working and thinking.

"This facility will be among the most modern shipyards in the world," confirmed VT's CEO **Martin Jay**. "The processes will be highly automated and

will enable us to make productivity advances that will help to secure further shipbuilding orders in the U.K. and in our export markets," he added.

Besides the installation of new, faster CNC laser plate cutting machinery and a steel panel line with 10 workstations and a semi-automatic, single-sided seam welder, equipment will be transferred

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from VT's current, main shipbuilding yard at Woolston, Southampton, which is to cease shipbuilding. Much of the advanced manufacturing wherewithal will be concentrated in the steel production hall, which will focus on cutting, profiling and fabrication activities.

One of the new yard's two 426-ft. (130-m) shipbuilding bays will be established on an area prepared by infilling an existing graving dock, and will have the potential for extension by a further 230-ft. (70-m). Moreover, the site could be augmented with a third newbuild berth, by infilling another, adjoining drydock to create a bay up to 623 ft. (190 m).

In the initial configuration, the two shipbuilding bays will be complemented by the availability of at least one drydock specifically for outfitting.

Portsmouth's debut contract for work on the first six Type 45 destroyers will be worth in excess of £200-million (\$300-million) to VT, through its involvement in the design and support as well as production stages of the project. The blocks to be supplied will comprise the bow section, funnel and masts. It is planned that the class will eventually consist of up to 12 ships.

### Cutting Edge Know-How to Cut Smoke

As a further vindication of major Greek investment in marine propulsion research, the state-of-the-art, engine test laboratory inaugurated less than two years ago at the National Technical University of Athens (NTUA) will contribute to a new European project to reduce diesel engine smoke emissions.

Co-ordinated by the Greek CIMAC Association, the EU-sponsored collaborative research program, dubbed Smokermen, was implemented at the outset of July this year, with an intended 36-month duration.

The NTUA's Laboratory of Marine Engineering will lend its experimental testing resources and mathematical modeling expertise to the endeavor, which aims to cut smoke emissions to below the visible limit in transient and low-load conditions.

The EU is providing around 50-percent funding support for the ambitious project, which also involves partners from Germany, the Netherlands and Switzerland, in the shape of classification society Germanischer Lloyd, engine control systems specialist Woodward Governor Nederland and turbocharger maker ABB Turbo Systems. Smokermen is focused on medium-speed and high-speed diesel plant, and aims to curb smoke formation during the critical load phases by improving the air-charging of main and auxiliary engines.

The impulse for the program has come

from shipping company members of the Greek chapter of CIMAC, who have raised concerns over engine smoke emissions, aware of the growing environmental sensitivities associated with smoke from ships' stacks. Greek CIMAC members also intend to make vessels available for onboard measurements, a vital part of the research under-

taking.

The project will evaluate two technologically-advanced solutions to the problem of fuel-air mismatch, which manifests itself during transient loading and leads to increased smoke output.

Two prototype systems and the respective engine control arrangements will be developed and installed on a marine

diesel engine on a testbed, to evaluate performance.

The techniques, which will be used for the prototypes, will be high-pressure air injection to accelerate the turbocharger and feed the engine at the onset of a transient load condition, and advanced pulse turbocharging with variable geometry manifold.



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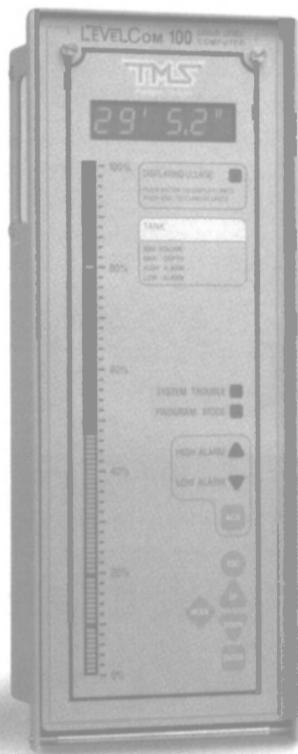
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## Austal Short-Listed to Build Navy Patrol Boats

On June 28, Australia's Minister for Defense, Senator, the Hon. **Robert Hill**, announced that Austal Ships, in conjunction with joint tender partner, Defense Maritime Services (DMS), has been short-listed to design, construct and provide through-life service for the Royal Australian Navy's new patrol boats, due to replace the existing Fremantle class vessels. If ultimately successful, Austal's role in the SEA 1444 project will be the design and construction of the patrol boats, while DMS will provide logistic and maintenance support through the operational life of the vessels, in addition to training of naval crews.

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## Keppel Secures FPSO Contract Trio

Keppel Shipyard has secured three new FPSO contracts worth approximately \$91.7 million from regular customers Single Buoy Moorings Inc (SBM), Prosafe Production Pte Ltd and newcomer Four Vanguard-Servicos e Navegacao Lda. Keppel Shipyard is expected to complete the conversion of Amazon Eagle for SBM by the second quarter of 2003. The 307,431-dwt-tanker, which has arrived in the yard, will be deployed to the Zafiro field off Equatorial Guinea upon completion.

Also presently in the yard is the 94,225 dwt tanker Four Lakes from Four Vanguard-Servicos e Navegacao Lda, a joint venture between Vanguard Floating Production and Premuda SRL. The vessel is expected to be completed in the fourth quarter of 2002. Thereafter, it will be deployed to the Woollybutt field in Western Australia for Italian oil company, Agip Australia Limited.

In addition, the 132,500 dwt tanker Grey Warrior from Prosafe Production, arrived at the yard in early July for conversion to a FPSO. Upon delivery in December 2002, the vessel will be chartered to Agip for the deployment to the Abo Field, offshore of Nigeria in Africa.

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## Stelmar Announces Time Charter Contract

Stelmar Shipping has renewed the Rimar, a 1998 DH product tanker, on a six-month time charter contract for \$13,500/day. The company has secured more than 81 percent of the net operating days of its fleet on profitable time charters for 2002 and 45 percent for 2003, equivalent to \$134 million and \$87 million, respectively. For 2004, it has secured more than 25 percent of the net operating days of its fleet on prof-

itable contracts, equivalent to \$56 million. Stelmar also announced that it has received delivery of the Aquamar, the second of the two Handymax tankers that were purchased from the proceeds of the company's recent secondary offering.

Aquamar, a 1998 DH product tanker, is a sister ship of the Maremar, which was delivered on July 11, 2002.

## Halter Sold To Singapore Company for \$66M

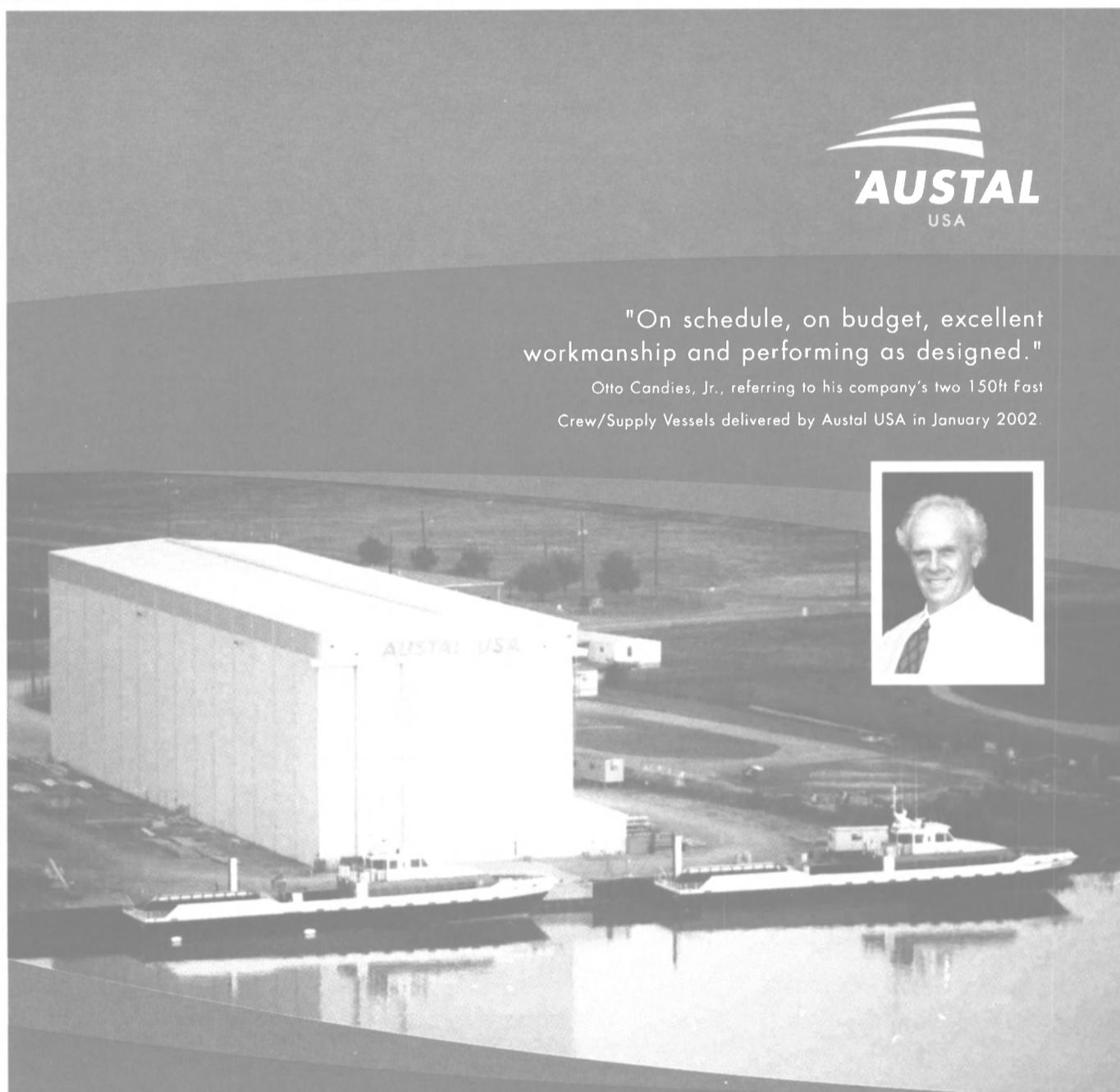
Singapore Technologies Engineering, through its U.S. arm, Vision Technologies Kinetics Inc., has made a successful bid for the assets of Halter Marine, the shipbuilding arm of U.S.-based Friede Goldman Halter Inc (FGH). The acquisition will include seven of FGH's ship-

building facilities located in Louisiana and the Mississippi Gulf Coast. The proposed purchase consideration for FGH's shipbuilding facilities amounts to \$66 million. The final award of the bid will be subjected to the approval of the Bankruptcy Court in Mississippi and other regulatory approvals. Final approvals are expected by the end of August 2002.



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Otto Candies, Jr., referring to his company's two 150ft Fast Crew/Supply Vessels delivered by Austal USA in January 2002.



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# MarAd's Schubert: Building a Better U.S. Business

In part one of a two-part series, **William G. Schubert**, the new U.S. Maritime Administrator (MarAd) speaks with **H. Clayton Cook, Jr.** about the current standing and future direction of maritime activities in the United States.

Mr. Administrator, this interview is being conducted for a piece that will be published in the August 2002 issue of *Maritime Reporter and Engineering News*, the largest magazine of general circulation in the maritime community. So, we have a good many readers who are interested in what you are doing. Your interview will be headlined on the magazine cover. And, we are very pleased that you have agreed to speak with us today.

**Cook:** Would you tell our readers about yourself and life in Washington as the Maritime Administrator?

**Schubert:** It is great to be in Washington, serving the President of the United States. It's a great honor and opportunity that I never imagined when I graduated from the U.S. Merchant Marine Academy (Kings Point) in 1974. After I left Kings Point, I went to sea for 12 years, sailing as an officer aboard U.S.-flag vessels. Also, I served 10 years as a commissioned officer in the United States Navy Reserve. I then worked at the Maritime Administration for nine years, spending four years in Washington (1986-1990) as an offshore industry expert advising the Maritime Administrator in policy development for the management, maintenance and liquidation of assets acquired through defaults under the Federal Ship Financing Program. The following five years (1990-1995), I served as MarAd's regional representative for all of the Agency's program interests in the southwestern region of the United States. During Operation Desert Shield/Storm, I monitored the Port Readiness Program, vessel load-out operations, and interagency planning meetings for the Port of Houston. I have dedicated my entire career to the Maritime industry. And, I believe in the Maritime Administration and in the importance of the MarAd mission.

**Cook:** Do you miss Texas?

**Schubert:** Of course I miss Texas. My home is in Texas. President Bush recently said something that made a lot of sense to me. "My address may have changed, but my home remains in Texas." I was very happy in Houston with my business, International Trade & Transportation, Inc. (IT&T), however, when the President asks you to serve in his Administration, you don't say "no." My son is in college in Texas. My wife Gail is here in Washington with me.

**Cook:** Tell us about the business you left behind in Houston?

**Schubert:** At IT&T we provided transportation consulting services to ocean carriers, project exporters, freight forwarders and lending institutions. We dealt with major international infrastructure projects, which over the course of the last half dozen year aggregated over \$7 billion in value, which generated over \$50 million in revenues for U.S.-flag ocean carriers.

**Cook:** How have your experiences as a transporta-

tion consultant, MarAd regional representative and sailing as a Master mariner shaped your leadership style?

**Schubert:** I believe that I have seen all sides of the picture, from operational to management to government. There is one overriding issue that plagues every aspect of the U.S. maritime industry — a lack of public understanding of the importance of the U.S. shipbuilding and the U.S.-flag merchant marine. We all need to do a better job promoting ourselves, our mission, and expressing the importance of the U.S.-flag merchant marine and U.S. shipbuilding, for protecting our economic and national security.

**Cook:** Many of our readers are not from the United States and may not be familiar with MarAd's mission. Can you explain your agency's mission?

**Schubert:** The mission of the Maritime Administration is to promote the development and maintenance of an adequate, well-balanced United States merchant marine, sufficient to carry the Nation's domestic waterborne commerce and a substantial portion of its waterborne foreign commerce. Our merchant marine must also be capable of serving as a naval and military auxiliary in time of war or national emergency. MarAd must also ensure that the United States enjoys adequate shipbuilding and repair services, efficient ports, effective intermodal water and land transportation systems, and reserve shipping capacity in the event of a national emergency.

Our mission is important and I hope to take it one step further by enhancing the visibility of the U.S.-flag merchant marine worldwide and making MarAd a better agency than when I arrived. MarAd is a great agency with great people who have dedicated their lives to its mission. However, we can do more as a promotional agency to support our existing U.S.-flag fleet as well as looking ahead into the future in developing a U.S.-flag presence where one does not already exist. For example, there are niche markets where the U.S.-flag can succeed, such as carriage of Export Import Bank cargoes and other government preference cargoes.

**Cook:** How have the events of 9/11 changed the Maritime Administration? Will MarAd be included in the new Department of Homeland Security?

**Schubert:** We have had a greater post 9/11 role in the area of training. At the U.S. Merchant Marine Academy we are working on developing opportunities for our graduating midshipmen who do not go to sea or cannot find jobs at sea. Our midshipmen are ideal candidates for the Transportation Security Administration because of their familiarity with the marine environment. Also, they have already obtained training in important related areas, such as small-arms training and anti-piracy safeguards. A year at sea is already a part of their training, so they make great candidates for the new TSA and the Coast Guard.

The Global Maritime and Transportation School at the U.S. Merchant Marine Academy is being considered as a training center for port personnel. In fact, the State of Florida is sending over 20 of its law enforce-



ment personnel for port security training. The school, also known as GMATS, is a valuable resource to train port managers and other people in critical specialties who are charged with ensuring the safety and security of our Nation's ports.

MarAd will remain at the Department of Transportation under the President's proposal and the Coast Guard and the Transportation Security Administration will fall under the Department of Homeland Security.

**Cook:** You mentioned earlier that MarAd seeks to ensure that the United States enjoys adequate shipbuilding and repair services as a part of its mission. What do you foresee in this regard?

**Schubert:** Let me begin by reiterating MarAd's mission — it is absolutely essential that we maintain sufficient infrastructure to build and maintain vessels to meet our military and commercial requirements. That means we must be certain that we are able to domestically build and repair our own vessels during peacetime and declared national emergencies.

The trends in U.S. Shipbuilding over the past twenty years has not been positive. Since the early 1980s it is estimated that shipyard employment has decreased by over 50 percent. During the same time frame, U.S. shipyards have:

- Lagged in productivity compared to other U.S. industries,
- Have not had sufficient Research and Development resources to keep pace with world shipbuilding practices,
- Experienced difficulty in retraining an adequately trained supply of production workers. This is especially critical in a labor-intensive industry such as shipyard repair and construction, and
- Been in the almost impossible position of competing in an international shipbuilding environment that is notoriously heavily subsidized and has significant over capacity.

So, the world shipbuilding market is such that U.S. shipbuilding opportunities are limited.

Now, having said that, I nevertheless believe that

there are existing and near-term U.S. domestic transportation needs which will provide significant building opportunities for our U.S. commercial shipbuilders.

**Cook:** Would you expand on this?

**Schubert:** Certainly. The Jones Act and the Passenger Vessel Services Act reserve the carriage of cargo and passengers between U.S. ports to vessels built in the United States. The most important shipbuilding opportunities are those, which are resulting from the Oil Pollution Act of 1990, and the requirement for double hulled vessels in our U.S. coastwise and Gulf of Mexico services. The OPA 90 and other petroleum related requirements should provide shipyard employment for yards across the entire spectrum of shipyard size. Of perhaps equal importance for our larger shipyards, the ocean-going container and RoRo tonnage fleets in our non-contiguous trades, Alaska, Hawaii and Puerto Rico, are going to require near term replacement. And, there may be opportunities for construction for coastwise container operations. For our smaller yards, perhaps the single most important subject matter may be vessels to meet the expanding passenger and passenger/vehicle ferry service needs.

**Cook:** Could you explain the importance of OPA 90 for our readers?

**Schubert:** OPA 90, The Oil Pollution Act of 1990, requires the replacement of all single hulled tank vessels used in the U.S. petroleum crude and product carrier and related trades in five-year intervals at the end of 2005, 2010 and 2015. The current U.S. flag tanker fleet is comprised of approximately 100 vessels; roughly two-thirds product tankers, and one third crude carriers. Only ten of these vessels are double hulled and of recent construction. The remaining 90 plus vessels will be phased out at the five-year intervals that I've mentioned. The replacement of Alaska crude carrier tonnage by the major energy companies involved in North Slope production is well underway. The replacement of product carriers, the greater number of which are owned by independent operators, has hardly begun.

**Cook:** What about the "non-contiguous trades"? Would you explain the importance of these?

**Schubert:** The container and RoRo vessels of our U.S. citizen carriers serving Alaska, Hawaii and Puerto Rico are old and inefficient. While none of these trades is experiencing rapid growth, the involved vessels are expensive to operate and increasingly expensive to maintain. Replacement build-

ings have been gotten underway. Totem Ocean Trailer Express, which serves Alaska, will be replacing three 1970's vintage RoRo vessels with two newly commissioned 600 trailer vessels now being built at National Steel & Shipbuilding Company. Matson Navigation Company, the predominant carrier in the Hawaiian trade, has recently announced

that it will purchase two new 35,000-dwt container vessels from the Kvaerner Philadelphia Shipyard. If Kvaerner is successful with this delivery, it appears that Matson may be prepared to move forward with Kvaerner for two more vessels of the same Kvaerner design. If so, this would certainly a major step forward for everyone involved in this

transaction and for U.S. shipbuilding more generally.

**Cook:** I see that we are running out of time, what do you believe MarAd should do to support the shipyard and ship repair industry?

**Schubert:** MarAd is committed

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## U.S. Report

100 percent to working with the Navy, our U.S. shipbuilding and repair yards, labor, our U.S. commercial vessel operators, and Congress to develop a unified long-term strategy to maintain our shipyard capacity.

We must address the issues of shipyard productivity, modern shipyard infrastructure, R&D investment, man-

ning and training sufficient skilled workers. To the extent that we expect to be concerned with building for export, we may need to address issues related to international business practices involving subsidies.

On the commercial side, MarAd will work to identify and assist our U.S. shipyards in opportunities in our domes-

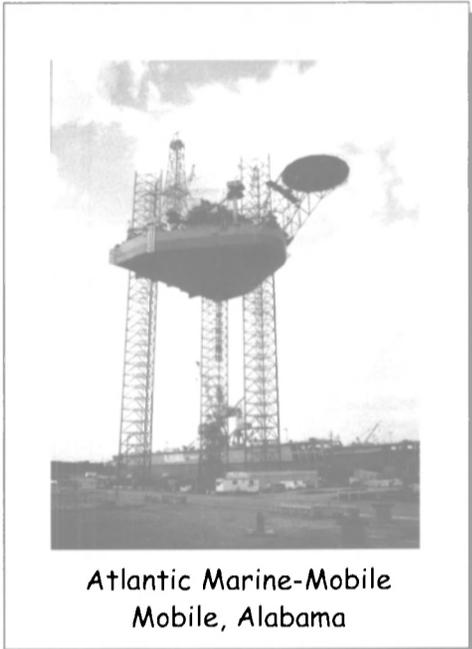
tic trade. Everyone agrees that our shipyards need to identify vessel designs that they can build in series in sufficient numbers to reach adequate economies of scale. The Kvaerner Philadelphia Shipyard may be headed in that direction with its container vessel design. I believe this can be done with other vessel designs and I am up for the chal-

lenge.

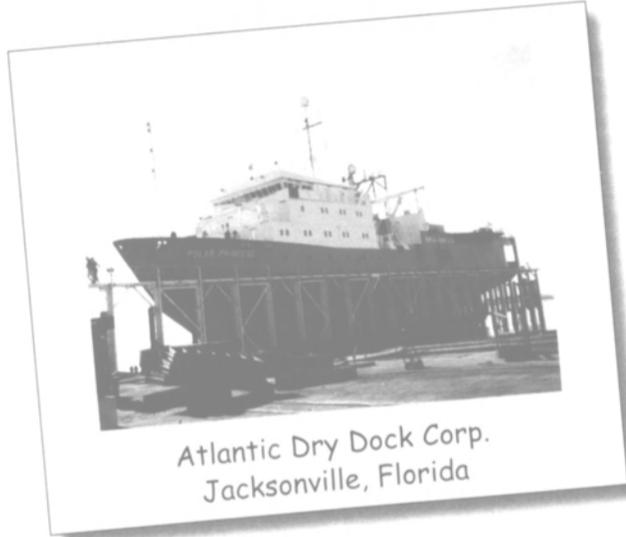
**Cook:** I have one more question. There has been a great deal of concern expressed about port security focusing on non-citizen owned foreign flag vessels and their cargoes entering our ports. However, I have not read anything concerning the monitoring of movements of U.S.-flag vessels entering or already in our U.S. ports that might be chartered to non-citizens. I see that the House Armed Services Committee report accompanying the FY 2003 MarAd authorization urges MarAd to review its post 1992 policy of "blanket" approval of "time charters and other forms of temporary use agreements" to non-citizens and requests a report back to the Committee by November 1. Would you comment?

**Schubert:** Yes. We believe that these charters to non-citizens present a potentially serious problem. MarAd has had the problem under study for some time. The House Committee report request comes, as it were, mid-stream in MarAd's work on the problem. The world is a different place today from what it was in 1992. A time charterer determines what cargoes will be loaded and discharged, and directs the vessel's schedule and its ports of call. We are concerned. And, we will wish to have the benefit of the Maritime community's thinking on the problem. We will be publishing a notice in the Federal Register inviting public comment through written submissions.

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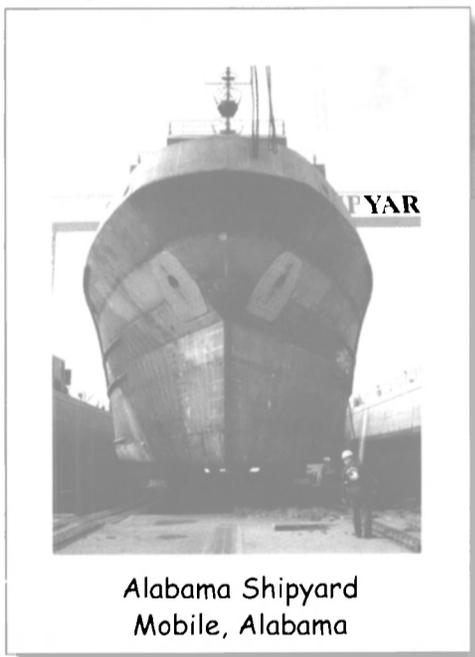


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### About the Author

**H. Clayton Cook, Jr.**, B.S. Princeton University, LLB The University of Virginia. Mr. Cook served as General Counsel of the U. S. Maritime Administration from 1970 to 1973, where he was responsible for the implementation of the Merchant Marine Act of 1970, and the drafting of the Federal Ship Financing Act of 1972. Upon completing his government service, Mr. Cook joined Cadwalader, Wickersham & Taft as the partner responsible for the development of that firm's Washington Maritime practice. Mr. Cook continues his law practice today as Counsel to Bastianelli, Brown & Kelley, Chartered, in that firm's Washington, D.C. offices. He is also a partner in Management & Transportation Associates, Inc., a management consulting firm based in Essex, Conn. Mr. Cook's email address is PlimsollDC@aol.com.

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# Opportunities Plentiful

In considering activities in the U.S. maritime industry for the short and long term, it is unwise to start the conversation without a mention of the patrol and defense needs of the country in the mounting effort to secure nearly 95,000 miles of coastline. As plans emerge during the coming weeks, months and years, the only certainty is increased funding for a variety of ships, boats and marine-borne electronic surveillance systems geared toward meeting and defeating enemy attacks, both large and small.

An embodiment of the push for new technology is embodied in the activities of companies such as **Larry Wieber's** Aluminum Chambered Boats Inc. (ACB) in Bellingham, Wash. ACB has maintained a low profile during its first four years of operation, but with a growing demand for security craft, ACB and its product line have shone brightly in front of government buyers. Fresh from a defense exhibition in Virginia where his boats were put through rigorous paces, Wieber reports that the opportunities currently presented are vast, ranging from large contracts on the Federal level extending to a vast multitude of opportunities on the regional and local level. Wieber's ACB is well positioned to capitalize on the current and projected future spending spree by the U.S. government to shore up port, coastline and inland waterway security. As homeland security plans and funding still take shape, it is impossible to gauge the depth or breadth of the impact on small boatbuilders across the nation.

"There's a lot of jockeying for position right now," said Wieber. "With FEMA taking an active part in homeland security, there will be a lot of money funneled to local police and sheriff departments." Thus, demand will be high for a lot of 23 to 26 ft. trailerable boats, creating a highly mobile fleet able to be marshaled in a hurry.

"There is quite a large amount of money available for small boat procurement" for both the Navy and Coast Guard, echoed **Rob Neal**, a spokesman for U.S. Representative **George Nethercutt** (R-Spokane). For the Navy alone, the budget for the procurement of small boats more

Bellingham, Wash.-based Aluminum Chambered Boats is well positioned to prosper from increased funding for patrol, police, rescue and firefighting boats from the federal, regional and local levels.

than tripled from \$12.6 million in FY '01 to \$37.3 million in FY '02. President Bush's Budget Request for FY '03 includes \$33.6 million for Navy small boat procurement. Congressman Nethercutt was instrumental in introducing ACB technology to the Navy, and being that he is Vice Chairman for Defense Appropriations, he was the right man for the job.

Aluminum Chambered Boat was established by Wieber four years ago. The origin of the concept comes from New Zealand and Australia.

The flexibility of the ACB boat is embodied in its wide variety of applications, from recreational craft to heavy duty commercial workboat to military and patrol craft. One high-profile ACB owner is **Jean-Michel Cousteau**, who chose an ACB 2600 with twin 150-hp Evinrude outboards for work with the Ocean Futures Society.

About two years ago, a rapid succession of planning, opportunity and luck helped to put ACB firmly on the map, and on top of the wish list of public and private entities that seek a rugged, versatile and high performance boat with astounding weight-to-power ratios and low fuel consumption.

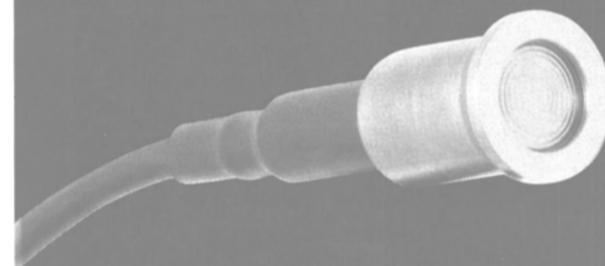
Wieber credits Congressman Nethercutt of having information on the boats put before the Navy. According to Neal, a spokesman for Nethercutt, the Congressman jumped onboard an ACB earlier this year for a test ride and immediately became aware of the boats potential for use in military and harbor patrol capacities. Neal said his office regularly works with small companies in Washington State — small companies without large lobbying dollars — to introduce them to decision makers in Washington. "We made the initial contact and delivered a video, but the boat sold itself," Neal said. That point was obvious, as just two days after viewing the tape Wieber received a call from NAVSEA saying "We are very, very interested in your boats ... where have you been hiding? We are coming to see you."

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## U.S. Report

DD(x) and Deepwater projects, respectively, have grabbed headlines while announcing billions in new business opportunities that will sustain the U.S. maritime infrastructure for some time to come. The trickle down from military and coast guard projects will be significant to all sectors of the U.S. business,

but the opportunity offered under the broad category of "port and waterway security" — which will include federal, regional and local dollars — should not be underestimated.

The waterborne forces tapped to protect and patrol, both near and far, is literally being reinvented. Military author-

ities are actively pursuing the integration of small, fast, versatile craft that will allow a vast expansion in the collection, dissemination and utilization of information so that larger, slower, more expensive assets such as aircraft carriers, can be further shielded from potential harm. A vessel central to this concept



— Westpac Express — though considered a surrogate technology, has won rave reviews from all corners of the military.

The 331-ft. (101-m) high-speed Theatre Support Vessel delivered to the U.S. military by Austal Ships has exceeded all expectations in its first year of operation. Having traveled in excess of 85,000 n.m. at an operational availability rate of practically 100 percent, Westpac Express is now also playing an important role in the development process for future advanced vessel concepts for military use.

The U.S. Army Tank-automotive and Armaments Command (TACOM) has tasked the Carderock Division of the Naval Surface Warfare Center (NSWC-CD) to conduct a range of propulsion, fuel economy and seakeeping trials on the Austal TSV 101. This information will not only provide baseline technical data for the wider Theatre Support Vessel program but will also establish performance thresholds against which future advanced vessel concepts can be compared.

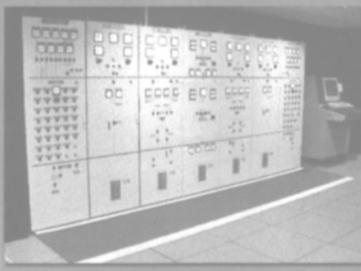
"Austal considers the enhancement of the military sector's understanding of the true capabilities of its high speed craft platforms to be an important process in furthering their use in defense applications, and is thus keen to assist in projects of this type," said managing director, **Bob McKinnon**. "We are very pleased that Westpac Express has been selected for this project."

That role includes the deployment of troops, vehicles and cargo in the Western Pacific region for the Third Marine Expeditionary Force (III MEF) of the US Marine Corps based in Okinawa, Japan. Westpac Express arrived in Okinawa on July 12, 2001 to begin a proof-of-concept period of operation. The success of the vessel during this period led to a three year contract with the U.S. Military Sealift Command being signed in January this year — the first time the U.S. Military has contracted a commercial vessel of this type for military support. The vessel has impressed the U.S. Marines, as Lt. General Gregson, Commander of the III MEF in Okinawa, described the Austal catamaran as "a faster, better and cheaper way to deploy than any other we have had before. Not only has it lived up to our expectations, it has exceeded our expectations."

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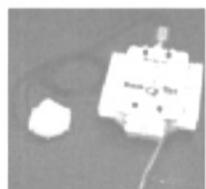
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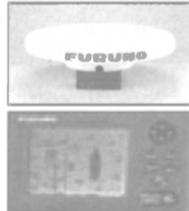
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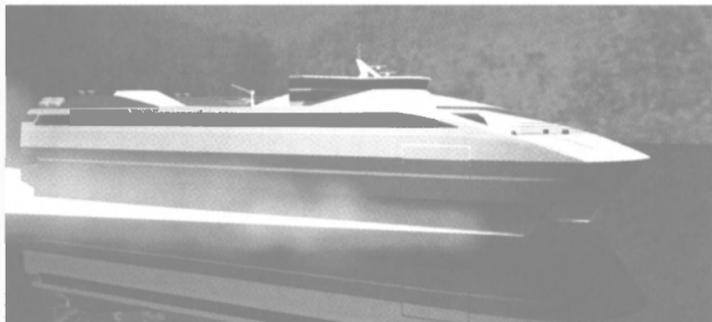
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## Derecktor Cuts First Plate of AMHS Ferry



Derecktor Shipyards held a plate cutting ceremony on July 15 at its Bridgeport, Conn., facility for the first piece of plate cut for the high-speed ferry Fairweather. With **Joe Perkins**, Commissioner of State of Alaska's Department of Transportation & Public Facilities kicking off construction of the 235-ft. (71.6-m) ferry with one button push, thus began the computer controlled machinery, cutting the first plate for the ferry's hull. The \$70-million project, which is funded by the Federal Government, will allow the State of Alaska to link Sitka to Juneau with fast modern boats, capable of an expedient one-day round trip, thus improving service to communities in Prince William Sound. The first of the two-part vessel series will go into service in 2004 — the second vessel will follow one year later. It was also made known at the ceremony that \$12 million will be set aside for the option for a third boat. Derecktor, which teamed with naval architects Nigel Gee & Associates will use one of the firm's original designs — developed expressly for the Alaska project. Designed to DNV standards, the new boats are created to be safe, high-speed RoRo passenger ferries that are cost-effective and can transport 250 passengers on the main deck and 35 large vehicles at a service speed of 35 knots.

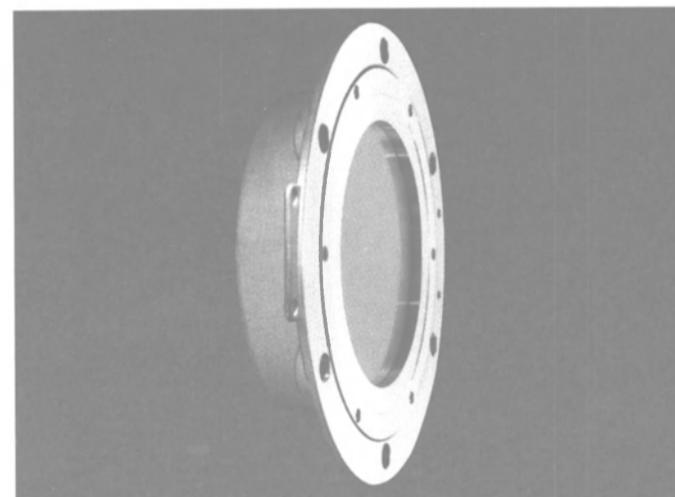
A NC carriage guided a plasma torch to cut the vessel's first plate.

### Main Particulars

Naval architect	Nigel Gee & Associates
Builder	Derecktor Shipyards
Hull material	Aluminum alloy
Classification	DNV
Length, (o.a.)	241 ft. (73.4 m)
Length, (waterline)	209 ft. (63.8 m)
Beam	59 ft. (18 m)
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## Gulf Craft Delivers World's Largest Crew/Supply Vessel

Touted as the world's largest Crew/Supply Vessel, in late May Gulf Craft Inc. delivered M/V Granville C. McCall, to Seacor Marine, Inc. The vessel is powered by five Cummins KTA-50-M2 diesel engines rated at 1,800 bhp @ 1,900 rpm, each coupled with a Twin Disc, model MG-6848, 2.93:1 reduction ratio gear. Each engine turns a four blade Teinbridge 54 x 54-in. Nibral propeller providing a light ship speed of 25 knots and fully loaded speed of 20 knots. The vessel also features a Thrustmaster 400 hp azimuthing thruster, powered by a Cummins N-14-M diesel engine. Twin 99KW Cummins 6BT5.9-G2 generators supply electrical power for the vessel's services and a Cummins 6CT8.3 diesel engine powers the Leroy WE 150 IIM - 80 PSI bulk compressor.

The Granville C. McCall measures 190 x 35-ft. (57.9 x 10.6-m) and can carry 46,000 gallons of fuel, 82,000 gallons of drill/potable water, dry bulk capacity of 3,000 cu. ft., 2,500 gallons of ship's water, 600 gallons of main engine lube oil, 125 gallons of gear lube oil, 90 gallons of hydraulic oil, 6,000 gallons of gray water holding and waste oil capacity of 180 gallons. Aft deck space measures 112 x 28 ft. (34.1 x 8.5 m) providing 3,136 sq. ft. of loading area and deck cargo capacity of 400 long tons. It is capable of discharging drill water at 700 gpm @ 160 ft., discharging fuel oil at 350 gpm @ 130 ft. and dry bulk at 780 cu. ft./hr. @ 80 psi. In addition to servicing offshore facilities, it has fire fighting capabilities to pump 900 gpm via the stern fire monitor and 2,650 gpm via the main fire monitor.

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## Cascade General Completes Columbia Upgrades

The 418 ft. ferry M.V. Columbia, owned by the State of Alaska, returned to service on the Bellingham-Skagway run after a winter layover at Cascade General. The 30-year-old ship emerged from the Portland Shipyard with a re-designed restaurant and cafeteria, re-furbished car-deck doors, renovated solarium, and with a laundry conveyor/elevator installed above the car deck. On the car deck, inspection of the port and starboard side doors revealed significant wear.



August, 2002

A total of 16 dog rods, 10 pneumatic cylinders, plus hoses and seals were replaced. The hydraulic system on the stern door was also overhauled.

A new linen-storage area was fabricated and suspended above the car deck forward. It is serviced by a conveyor from below and an elevator up to the main deck. The project also included a dry-docking for inspection of rudders, C.P. propellers, stern shafts and bowthruster. All sea chests and valves were checked and the hull water-blasted. The M.V. Columbia is one of nine ships in the Alaska Marine Highway fleet, all of which have visited the Portland Shipyard in recent years.

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## United Defense Completes Acquisition of USMR

United Defense Industries completed its acquisition of United States Marine Repair (USMR), for \$316 million to expand its services for the U.S. Navy. United Defense financed the acquisition by amending its existing credit facility to borrow an additional \$300 million, and using cash on hand for the balance.

## Bollinger Proceeds on 8-Boat Fleet Modernization



Bollinger Shipyards, Inc. earlier completed the conversion of the Crescent Towing tug, Florida, from a single engine to a 4,000-hp, twin-engine boat. The vessel is significant, as it is the first of eight Crescent Towing 105-ft. (32-m) sister ships to undergo the same major conversion at Bollinger's Algiers (New Orleans) repair and conversion shipyard. Florida now features two Caterpillar 3512B engines coupled to Reintjes WAF 673 reduction gears driving 83-in. Bollinger stainless steel propellers. They were installed in 84-in. type 37 kort nozzles with stainless steel inner rings and leading and trailing edges. It has a 45 degree rudder angle for better maneuverability and its new power package is designed to generate 100,000 lbs. or 50 tons of bollard pull. The boat's stern was also modified to accommodate the new propulsion system.

Bollinger also reconstructed the Florida's wheelhouse with low profile stacks for maximum visibility and installed new radars, GPS, depth sounders, hailers, VHF radios, fax machines, sound powered telephones, fuel emergency shut off systems, and remote control start and stops for the main engines.

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Engineering Marvel

# Raising the Kursk

On August 12, 2000, a massive explosion ripped through and sank the Russian nuclear submarine Kursk, leaving all 118 aboard dead 328 ft. (100 m) below the surface of the Barents Sea. Mammoet Smit was given the technically challenging and politically delicate task of successfully raising and returning the vessel to its owners.

— by Greg Trauthwein

**W**hen news broke regarding the explosion onboard and sinking of the Russian nuclear submarine Kursk in August 2000, the world watched with wonder as a massive rescue effort was launched to save sailors believed to have survived the disaster. With the effort to save lives failed, the ensuing weeks and months saw a political storm, as accusations of circumstances surrounding the sinking led to charges (as it turns out, unfounded) that an errant mine or ship of Western origin had run into the 9,000 ton Oscar type 2 nuclear sub. Once political fervor and emotions subsided, the question stood: What exactly should be done with the ship, which housed the bodies of 118 sailors, two nuclear reactors, and a slew of Russian military secrets.

Once the decision was made to recover the vessel, the real challenge was at hand. Mammoet was selected to take charge of the project, which was immediately assigned to Mammoet Smit, the company's joint venture operation with Smit International. The ensuing plan and project execution is nothing short of an engineering and operational marvel, as the company created the plan, manufactured new systems, and carried out the flawless recovery of Kursk ... all within *five months*.

## Starting from Scratch

Under the agreement, Smit was responsible for all marine activities, including the conversion of its 24,000 dwt semi-submersible Giant 4 barge for the role of lifting platform. Mammoet was responsible for the provision of the lift system and the performance of the main lifting operation, while DSND Subsea of Norway and a Russian naval diving team supplied diving services, based aboard the support vessel Mayo. While the entire project had to move in concert to ensure a successful completion before the winter whipped the Barents Sea into a state that would prohibit recovery, the first agenda item to consider was the removal of the heavily damaged bow section. It was determined that leaving the bow section on during a full vessel recovery would be unwise, as it could easily break away and jeopardize the mission, as well as lives. An innovative new cutting system — consisting of a special cutting wire equipped with cutting brushed coated with abrasive metal, connected to a hydraulic system and two enormous suction anchors— was devised by Smit. (See illustration middle of page 33.) The procedure to remove the bow took 10 days.

Concurrently, work was at a feverish pace to ready Giant 4 for the lifting and transportation end of the operation. Designed to carry massive loads on its deck, Giant 4 had to be completely modified to retrieve and carry a heavy load underneath. Lift-

ing the mammoth ship from more than 100 meters successfully meant that a constant tension had to be applied on all points, all the time. Twenty-six strand jacks were mounted to Giant 4, each with a 900 ton lifting capacity. The strand jacks lift hydraulically, with a special gripping motion, much like climbing a rope hand over hand. Complicating matters further were the need for a 54-cable bundle for each gripping, or a total of 1,404 cables. Each jack required a large reel, each precisely handling miles of cable each lest the deck of the 426-ft. (130-m) Giant 4 become a virtual spaghetti bowl of cables. To ensure constant tension during the critical lift, each strand jack was fitted on top of a heave compensator, which acted like shock absorbers on the rough seas. Keeping the Kursk tight under Giant 4 for the 70 mile journey back to Murmansk was a top priority. Giant saddles were mounted under the barge, designed to precisely fit the outer hull of Kursk, and under the bow of Giant 4 a huge hole was cut to accommodate the sail. The complete conversion, carried out in Amsterdam, took only two months.

## Diving Deep

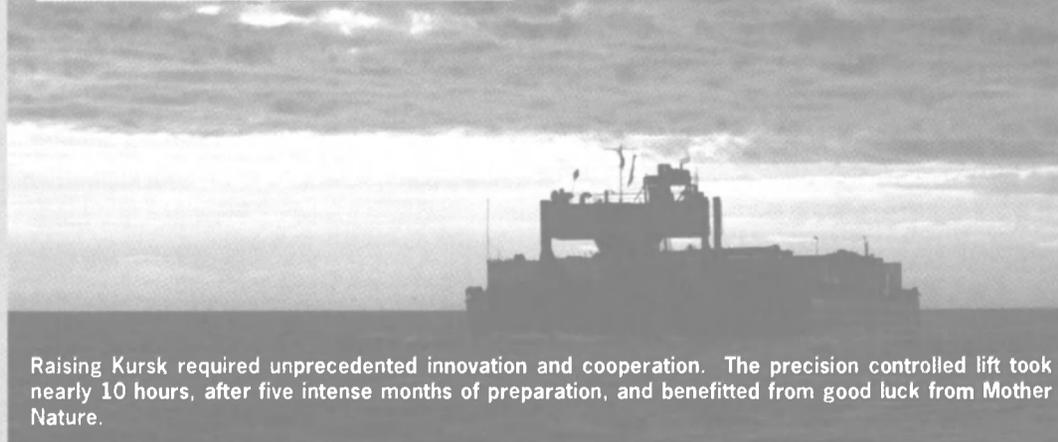
Simultaneously, dive teams from Norway and Russia were preparing in Aberdeen, Scotland. Because of the depth of the dive, divers were required to stay for 28 days under the same pressure, meaning they had to live, sleep and eat in a special chamber aboard the support vessel Mayo when not on one of their six-hour shifts. Divers were another critical factor in the successful lifting of the Kursk, from accurately positioning the suction anchors and cutting wire during the bow removal, to the cutting of 26 holes in the outer and inner hull of Kursk to accommodate the lifting mechanisms. No small detail was the constant fear of nuclear radiation from the ships' reactors. Divers worked around the clock to ensure that each hole on the Kursk was prepared correctly, each with a special gripper sleeve that had to be precisely positioned to allow the special hydraulic gripper plug to properly fit. Once the holes were set, it took six days to position and secure each of the 26 grippers to Kursk.

Once set, lifting operations began, a process which took more than 10 hours from sea bottom to barge bottom. The journey back to Murmansk took another two days, where Kursk would finally be returned home to an awaiting drydock. The last challenge was getting barge and Kursk into the drydock, as the combined draft was much deeper than that of the drydock. The solution was the manufacture of two massive pontoons, which were filled with water, slipped under the barge, and then ballasted to raise the Giant 4/Kursk combo more than 20 ft. (6 m).



It took two months to completely convert the Giant 4 from a vessel designed to carry massive loads on deck to one designed to carry a massive load underneath. Twenty-six strand jacks were mounted to Giant 4, each with a 900 ton lifting capacity. The strand jacks lift hydraulically, with a special gripping motion, much like climbing a rope hand over hand. Each gripper required a 54-cable bundle (inset), meaning that there were 1,404 cables stretching nearly 200 miles aboard Giant 4. To ensure tension was constant during the lifting operation, each strand jack was mounted to a heave compensation system.

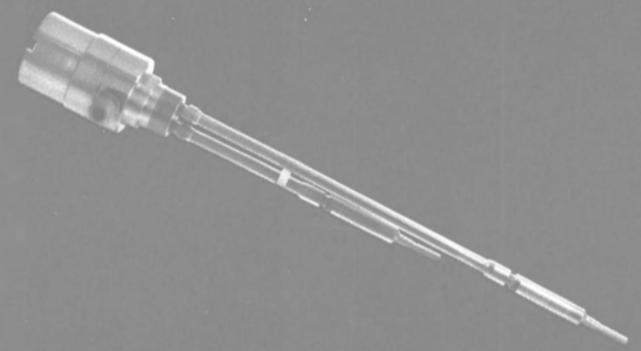
An innovative new cutting system — consisting of a special cutting wire equipped with cutting brushes coated with abrasive metal, connected to a hydraulic system — was devised by Smit to remove the heavily damaged bow section and increase the stability of the vessel for recovery. It took 10 days to cut off the bow.



Raising Kursk required unprecedented innovation and cooperation. The precision controlled lift took nearly 10 hours, after five intense months of preparation, and benefitted from good luck from Mother Nature.

For more information on the capabilities of Mammoet Smit  
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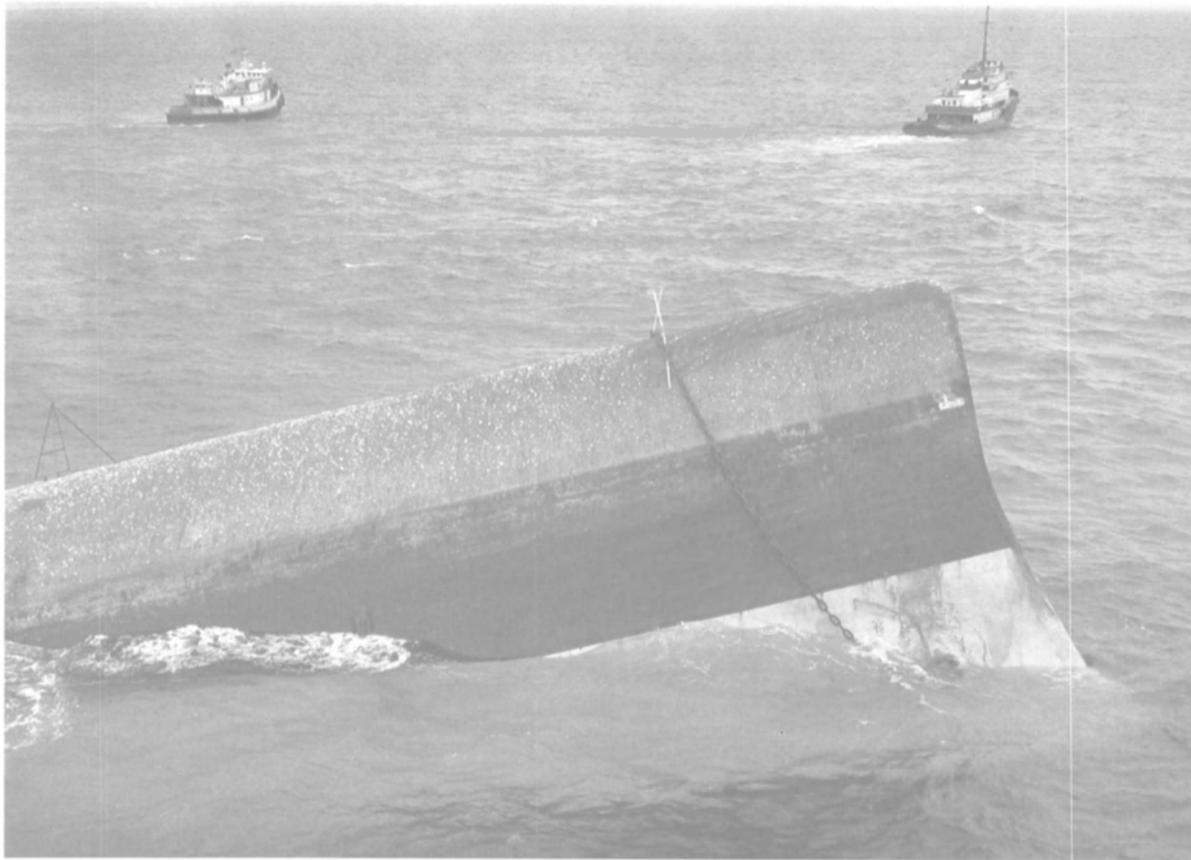
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# Spiegel Grove: Saved to be Sunken

It was supposed to be the world's largest artificial coral reef for scuba diving, located off the coast of Key Largo. More than eight years ago, a group of divers from the area devised a plan to sink a 510-ft. (155.4-m) retired Dock Landing Ship (LSD) to the bottom of 130 ft (39.6 m) of water. For the next several years, Spiegel Grove became Key Largo Chamber of Commerce's pet project. With various local dive shops, businesses and dedicated individuals participating in this venture, the vessel, which had been decommissioned in 1989, was towed last June from the James River Reserve Fleet, to a shipyard in Portsmouth, Va., so that workers could ready the vessel for its intentional sinking. With work stopping abruptly when funds were low, things started up again this past January when Spiegel Grove was towed to Chesapeake, Va. to its new contractor, which finished up the job. With all going along as planned the Chamber of Commerce was thrown a curve on May 17, when the vessel, which had been brought down to Key Largo just weeks before for its final preparation — began sinking just a few hours before it was to be intentionally sunk.

By Regina P. Ciardiello, managing editor

When the panic began to subside, the Key Largo Chamber of Commerce feared that professional help to get this vessel back on its side was going to be expensive and time-consuming. The Organization's fears



Tugboats, tethered to the upside-down hull of Spiegel Grove, begin to pull on June 9, 2002 in an effort to rotate and fully sink the 510-ft. (155.4-m) vessel.



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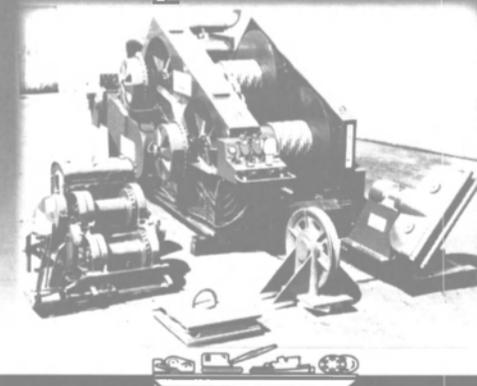
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were soon eased when it enlisted the help of Port Everglades, Fla.-based Resolve Marine Group.

When Spiegel Grove sank prematurely and landed upside-down, Resolve received the call and immediately dispatched salvage master **Frank Leckey**, and salvage engineer **Todd Schauer** to the scene. The two assessed the situation, spending the evening compiling engineering data, Resolve was informed at approximately 10 p.m. that night that the job was theirs. With the non-profit organization Key Largo Chamber of Commerce, price was a big factor in selecting a salvage team. According to Resolve's president, **Joe Farrell, Jr.** "We (Resolve Marine) don't take advantage of other people's misfortunes," he said. "We're there to do a job."

While the new contract may have been cause for celebration at Resolve, there was no time, as hard work



A technical diver from Resolve Marine pumps air into a giant lift bag. (Photo Credit: **Bob Care**/Florida Keys TDC).

and research was required immediately — a 510-ft. (155.4-m) vessel had to be righted and sunk down to 130-ft. (39.6 m) of water. "It was a challenging job," Farrell said. "We had to really give everything a hard look before we went in there. This was probably one of the toughest salvage jobs we've ever pulled off."

#### Experience Pays Off

Resolve is no stranger to participating in jobs under the media microscope — and this was no different. The company has participated in other high-profile jobs such as the Value Jet recovery and assistance in 1996, and provided aid to vessels in need during Hurricane Andrew in 1992.

With daily updates via news outlets from CNN to the local Florida news broadcasts, Resolve became known as the company that had a seemingly impossible task. Following a helicopter survey flight and prior to the initial presentation to the Key Largo Chamber of Commerce, Schauer and Leckey had to devise a salvage plan that would not only work — but would be affordable as well. According to Schauer, his confidence lied mainly upon his own knowledge and just a pure "gut feeling" that the plan would work, but he also realized that a significant amount of engineering would still be required.

After going through all the initial data and running all the numbers back at Resolve's Port Everglades headquarters, the company decided what types of equipment, and how much, would be used for the job.

"We first had to assess the amount of compressed air and lift bags we would need, as

well as the types and locations of tanks we would use for air," Schauer said. "We also had to figure out the angle that we would roll the vessel to be successful - before we even got there." Farrell said that the sinking part did not worry him, since LSD ships, which resemble a large parking garage — able to hold landing and hover craft — "are designed to be sunk."

#### Sinking and Thereafter

Following the initial sinking attempt, Spiegel Grove ended up with its bow pointing towards the Florida sky. The stern of the vessel began to slip beneath the ocean prematurely — while an excessive amount of air remained in the bow. As the stern sank and the bow raised up, the water rushing in created an imbalance with the air trapped inside, causing it to roll starboard. The vessel then came to rest upside-down with the stern laying on the ocean floor and the bow protruding above the ocean's surface due to air still trapped inside the hull.

Since Spiegel Grove had been thoroughly prepared for sinking as an artificial reef by cutting large holes throughout its superstructure and hull, there was very little buoyancy remaining in the wreck that would assist the salvors in righting the vessel. Thus, the salvage team, which was stationed alongside Spiegel Grove from its salvage vessel, Lana Rose, decided to cut anchor holes on the port side in order to attach approximately 70 airbags, which would aid in the lift-

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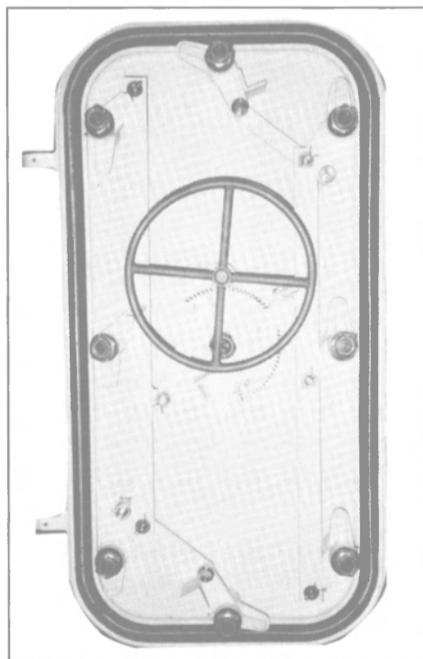
With the largest of the inflated airbags measuring 25 ft. and able to lift 25 tons, air was then pumped into the vessel's off-center ballast tanks so that it could be rolled over. Numerous compressors and manifolds were utilized onboard Lana Rose and were connected to the wreck via a complex bundle of air lines (more than 10,000 ft. of hose) to deliver more than 2,000 tons of buoyancy into one side of the vessel to assist in the roll.

In addition to the Lana Rose, two other tugs assisted with the raising, American Patriot, and Smith Maritime's 5,000-hp triple screw tug, Elsbeth III, which were attached to Spiegel Grove via steel cable and heavy hawsers rolling the ship upright.

According to Farrell, the righting of the vessel seemed like the longest five minutes of his life. Once



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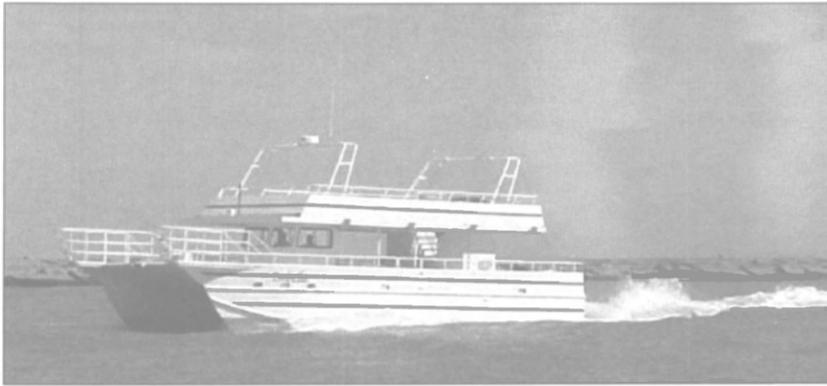
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the vessel disappeared beneath the surface, Farrell was watching from the Lana Rose — trying to figure out what angle Spiegel Grove was at. Farrell describes what was probably the most poignant moment of the job: "We didn't know what angle she (Spiegel Grove) was at," Farrell said. "But as soon as we saw (from the Lana Rose), the three-ft. bubbles boiling from the water's surface — that's when we knew we had it. That the vessel had rolled over and dumped the air out of its sides."

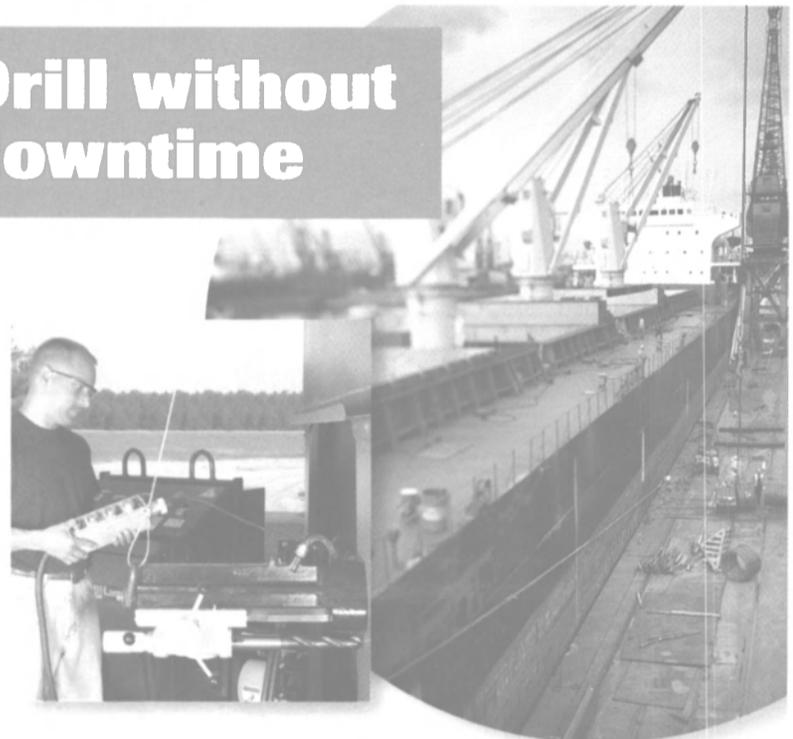
Currently, Spiegel Grove lies beneath the sea on its starboard side. Not the original plan that was intended but one that has proven beneficial for the Key Largo Chamber of Commerce and the recreational divers who plan to explore the vessel. According to Todd Schauer, there are benefits to it being on its side. "Since the ship is on its side, more of it

is available to novice divers in the 40 to 50-ft. depth range." Schauer added that divers can also view items that they normally would not see if the ship were upright, such as the vessel's propellers and lower hull. "It provides divers with a new perspective — they can see the entire ship," he said.

Resolve's Farrell has expressed his desire to work with Key Largo again, if and when they decide that they want to right the ship, which at a price upwards of \$400,000, would encompass the use of barges with hydraulic lift frames with 2,000 tons of lift on one side.

For now though, it seems that divers don't mind that the vessel was not completely 'righted,' as it has been reported that the Chamber, in the weeks following the vessel's sinking, received an average of 2,000 inquiries — on diving the Spiegel Grove.

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## Salvage & Recovery

# Titan Re-Floats Clipper Cheyenne

On June 3, 2002 the 5,970 dwt, 341 x 67 x 16 ft. (104 x 20.5 x 4.9-m) Clipper Cheyenne, sunk alongside the dock at Foynes, Ireland in the waters of the

River Shannon, while ballasting to load a floating dredger.

The vessel sank in a position alongside and parallel to the quay with the bow of the vessel to seaward, a list to starboard and laid in approximately 36 ft. (11 m) of water at low tide. The tidal range was about 4 meters on spring tides with virtually zero visibility and conditions out-

side of the hull were further exacerbated by a strong river current. Clipper Cheyenne had 244 tons IFO 180, 36 tons of diesel oil, and 11,000 liters of lube oil onboard.

Immediately upon being notified of the incident, a Titan Salvage Master and Salvage Engineer were dispatched to the scene via a chartered aircraft from



Clipper Cheyenne sunk alongside the dock.

Titan's U.K. Salvage Depot. Soon after arrival, Titan was awarded a contract to plug vents to control the escape of hydrocarbons from the vessel.

Titan was awarded the re-floating contract on a Lloyd's Open Form on June 5, 2002 and quickly began mobilization of equipment and personnel from its New Haven, U.K. and Ft. Lauderdale, Fla. warehouses. A total of 19 Titan personnel, including a naval architect, and diver/salvors were sent to the site.

During discussions with the local Harbor Master and Coast Guard, it was decided that the risk of pollution was greater if an attempt to remove the hydrocarbons prior to re-float was undertaken. Therefore it was decided to completely contain the hydrocarbons.

Various refloating scenarios were evaluated using detailed computer models. The models showed that without any external support the vessel had very little, if any, stability when she left bottom. This lack of stability was the principal challenge for re-floating the vessel. To provide this support it was decided to first roll the vessel to port and then let her lay against the pier during the re-float. A barge was then attached to the stern of the vessel to provide additional waterplane area during the most critical phases. As an additional effort to improve the stability, the crane booms of Clipper Cheyenne were lowered and removed, thus decreasing the overall center of gravity.

For the refloat, the vents on the wing tanks were blanked and fitted with blow down fittings and modified vents. To prevent the air from escaping from the ballast tanks, all the valves for the ballast system had to be closed by divers. Pumps were then fitted in the accommodation and foscle areas to give buoyancy up forward and increase the ground reaction aft.

The starboard wing tanks were blown down which caused the vessel to roll to port and come to rest against the pier as planned. After further prep, the watertight door to the pump room was opened and the remaining wing tanks were blown down in a calculated and controlled order, bringing the vessel to the surface on July 7, 2002.

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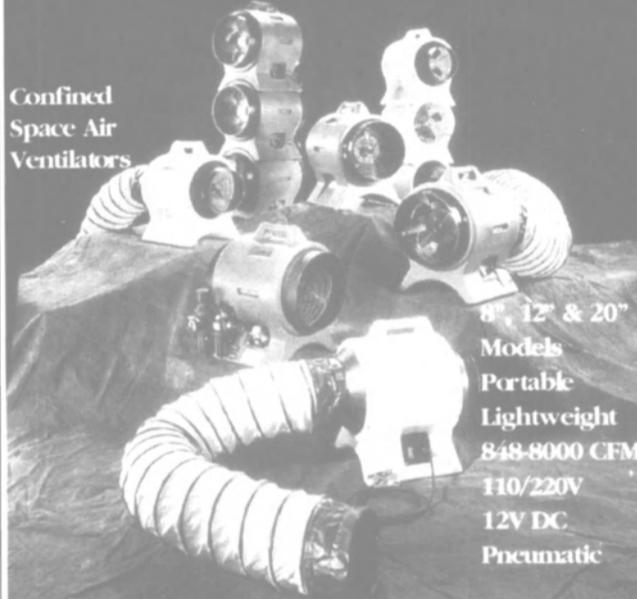
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# Using a Simulator With Eyes Wide Open

By Dr. Alex Speransky, Product Manager  
for Shiphandling simulators, Transas

*High-quality visual presentation systems are critical for successful simulator-based training. Although the existing DNV standards for maritime simulators don't specify detailed requirements for simulator visual systems, experience shows that the latest graphics and computer technology will help greatly to increase the overall knowledge and skill transfer rate of simulator training.*

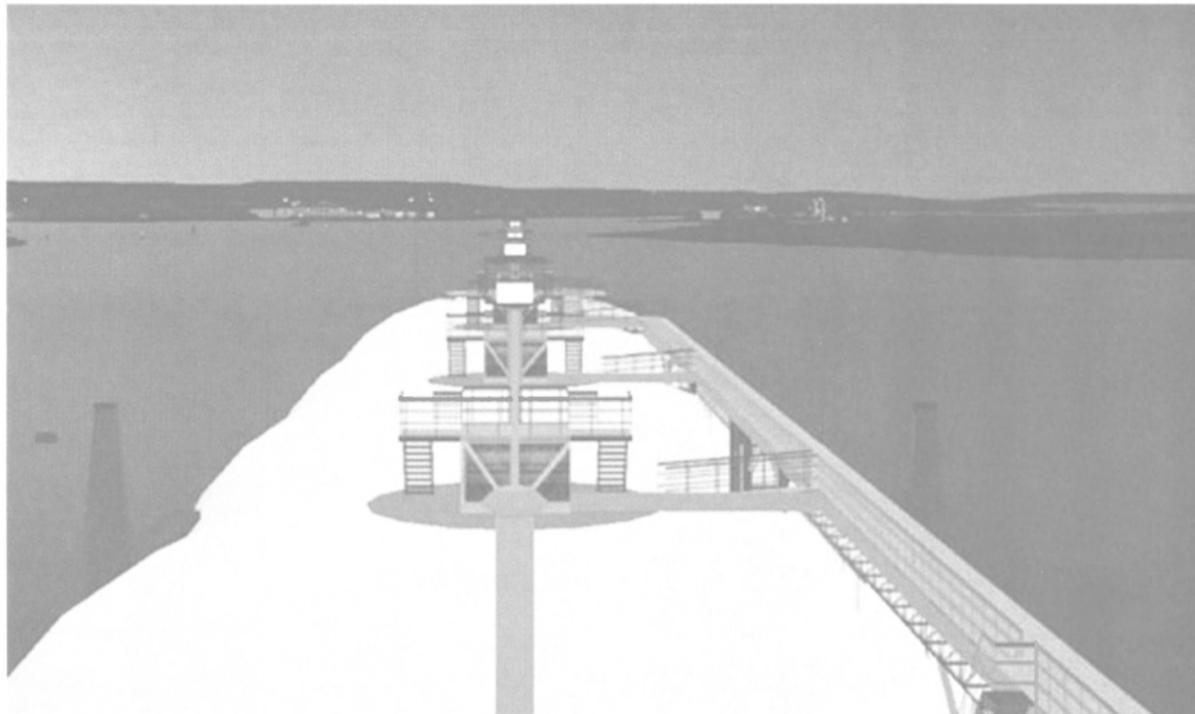
## Basic Components of Visual Situation Analysis

The navigator visually assesses the surrounding navigational environment based on the following components:

- Visibility range, state of the sky and position of stars and planets;
- Sea state;
- Distance to islands, reefs, drying areas and shallow waters;
- Identification of navigational marks, navigational barriers and location of the vessel relative to these objects;
- Motion elements of other vessels in the area and collision danger.

The importance of the correct assessment by the navigator of the situation around the vessel can hardly be overestimated. Often, a wrong decision taken based on unprofessional conclusions made on the assessment of the above-mentioned checkpoints, leads to the loss of money, property and sometimes, even lives. Simulator training already is and should be used to train future masters and officers of the watch in all kinds of difficult situations they may encounter onboard. And the quality of the visual image used in the simulator is one of the most vital elements that make this training truly efficient.

In the first half of 2002, Transas introduced the next generation of its visual presentation system, signifying a breakthrough in the quality of such systems used in marine simulators. The new Transas visualization software, named Seagull\_Vis 4000, represents the synthetic environment with a formally unachievable level of realism and includes a number of advanced effects



designed specifically for marine applications and developed to further improve the efficiency of simulator-based training.

These advanced new features include:

- New textures of fog and clouds;
- Visible positions of the sun and moon in the true phase on the sky, positions of stars and planets;
- Visual effects of horizon lighting;
- Sun and moon lighting paths on the water surface;
- Rain and snow precipitations dynamically changing their direction depending on the vessel's speed and course.

All these visual effects, when encountered in real life at sea, can help to or prevent the navigator from assessing properly other components of the navigational situation.

Availability of the new sea wave texture and especially, the white caps now shown by the simulator, as well as new algorithms of showing pitching and rolling of other vessels in the area, allow judging of the wave direction and wave height with more realism than ever before.

Moreover, the realistic spreading of water over dry-

ing areas during high and low tides with dynamically changing color palette of the water surface is extremely helpful for the professional assessment of distance to islands, reefs, drying and shallow waters.

Other unique visual effects of the Transas system, such as highlighting of moving and fixed object edges either in the light or in shadow, as well as glare from the sun's rays, can hinder or help to correctly discern the color, numbers and top figures on various navigational aids (lighthouses, buoys and beacons). The same is true for the presentation of lights in fog.

The new quality level of displaying three-dimensional bow waves and wakes that change their intensity and geometry depending on the vessel's speed and sea state are important for the assessment of movement of surrounding vessels and the danger of collision.

It should also be noted that the advanced modeling of the stars' globe incorporated in the Transas visual image modeling system, satisfies the task of Seagoing Astronomy training that can also be provided using the Navi-Trainer shiphandling simulator from Transas.

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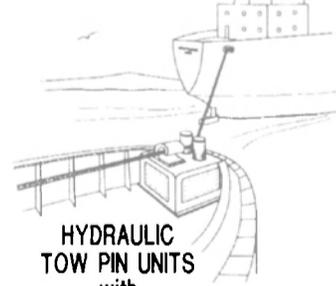
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## Integrated Bridge

### CMA To Utilize Transas Z-Drive Simulator

Transas installed a new Z-Drive Console for the full mission ships bridge simulator at the California Maritime Academy (CMA), in mid-June. The Z-Drive simulator models a "reverse" trac-

tor tug with Z-Drive propulsion modules located at the vessel's stern.

The Z-Drive tractor tug simulator was provided by Transas USA, and installed by Transas and Buffalo Computer Graphics using a control console manufactured for the Academy by Seaman's

International Union of Piney Point, Md.

A pilot course at the Academy taught by Captain **Greg Brooks**, one of the leading experts on tractor tugs and tug operations in the country, was conducted with students from Millennium Maritime, Inc. of San Pedro, Calif.



### USS Nimitz Is C-MAP's Latest Military Subscriber

The USS Nimitz was recently outfitted with a Raytheon Pathfinder ECDIS system, which is compatible with C-MAP's CM-93 database, joining more than 50 other U.S. military vessels using CM-93 electronic charts. Over the past several years, C-MAP has been supplying CM-93 to the United States Navy as well as thousands of other military and commercial vessels sailing throughout the world.

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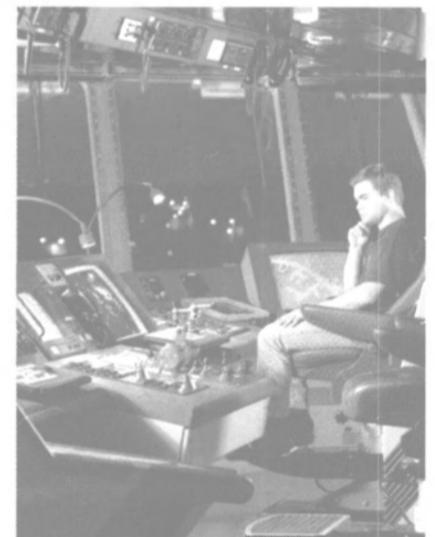
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### KMSS Granted \$1.2-Million IBS Order

Kongsberg Maritime Ship Systems (KMSS) has received an order worth \$1.2-million from the Hyundai Mipo Dockyard located in Ulsan, South Korea to supply its Integrated Bridge System - BridgeLine. The product will be housed on four 2,826-teu container-ships owned by Suisse Atlantique and Ahrenkiel. The complete Integrated Bridge System (IBS) installed in KMSS BridgeLine Consoles provides Radar/ARPA with the latest generation antennas and receivers, Steering Control System, Track Pilot, Speedlog, Echosounder, ECDIS, DGPS and GMDSS.

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## Nobeltec Produces First Vectored Versions

Nobeltec has signed a licensing agreement with Nautical Data International (NDI) signifying the purchase of the company's first vectored versions of CHS charts. The first vectored versions of CHS charts available for Nobeltec Navigation, software users can find the charts in Passport Deluxe Canada regions — the first being P1 — which is now available for \$299.



Various functions of the new vectored charts include Nobeltec navigation photos, which are 49-ft. (15-m) geo-referenced photographs of satellite and aerial pictures that provide the extra information for safe navigation. Tide and currents, which displays tidal station bars and current arrows on electronic charts for easy indication of tidal height and current. And chart layering and coloring: Passport World Charts are true vector charts, storing chart information as data rather than a graphical file. This technology enables data layers to be turned on and off and chart colors, font size and font type changed.

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## ChartCo Is Successful During Sea Trials

ChartCo, a supplier of marine information via satellite, recently concluded what it termed to be successful sea trials for delivery of weekly Electronic Navigation Charts (ENCs), in conglomeration with Primar and the Stolt Nielsen shipping company.

The successful trial has proven ChartCo's ability to successfully deliver ENC updates and coverage catalog updates to ships at sea on a weekly basis. Beginning with the launch of oceanXpress at Europort 2001, the first step towards ENC delivery occurred then.

The same hardware used to receive paper chart corrections — can now be utilized for automated receipt of corrections to the official Primar ENCs.

Subsequent to software development on land, oceanXpress service then underwent engineering sea trials with tanker operator Stolt Nielsen onboard

the recently constructed 5,440-dwt chemical tanker Stolt Fulmar, which were concluded successfully.

Via an agreement with Primar and Stolt Nielsen, Stolt Fulmar received weekly ENC updates at sea using the ChartCo broadcast, which will be followed by support for official navigation data types such as the recently intro-

duced Admiralty Digital List of Lights.

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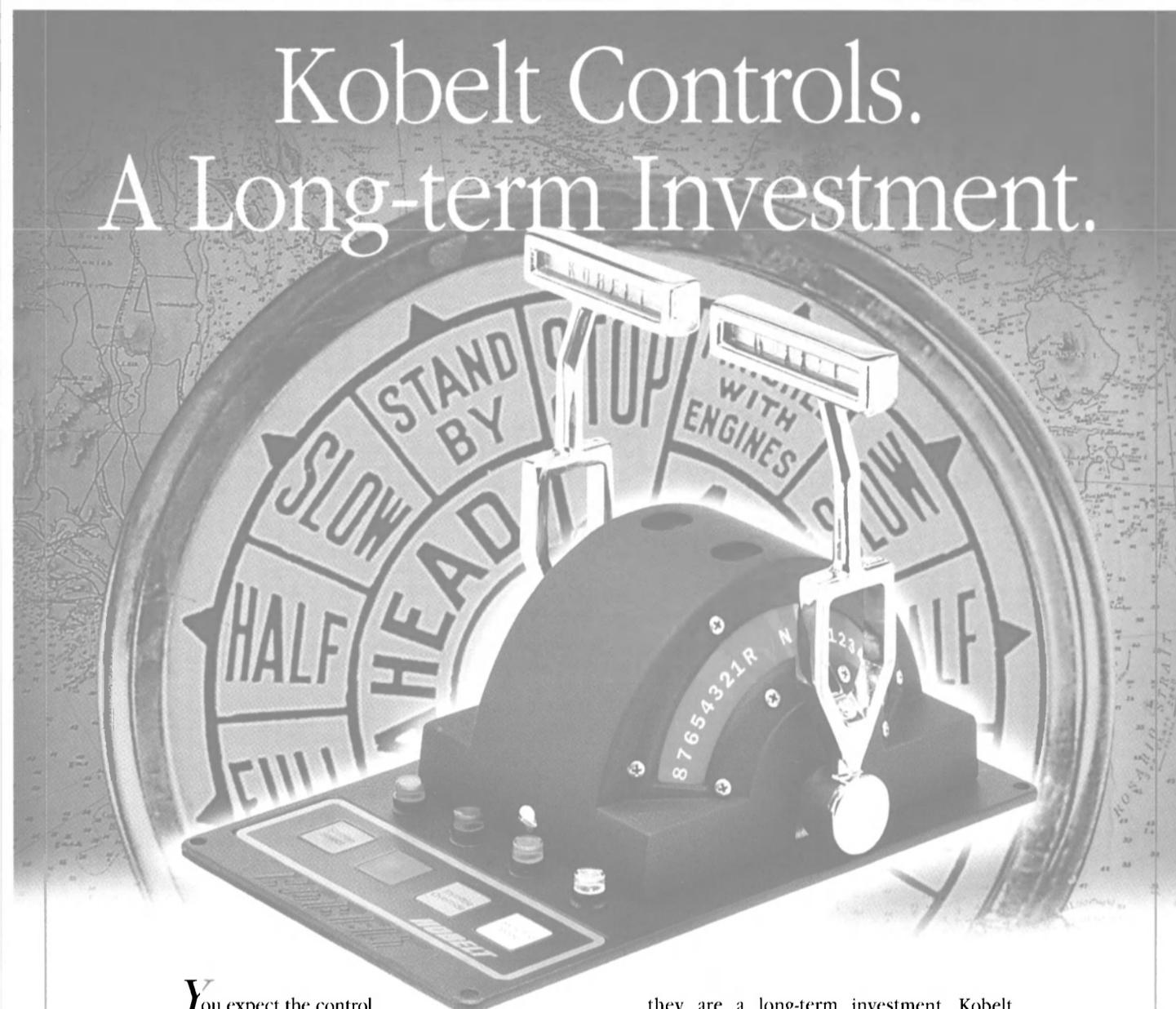
## Maptech Adds GPS

Maptech has released an all-in-one solution to its Pocket Navigator software by adding a GPS sleeve by NAVMAN for the Compaq iPAQ. The Pocket Nav-

## Integrated Bridge

igator/GPS Solution gives access to detailed USGS topographic maps, NOAA nautical charts and FAA aeronautical charts (sold separately) with a direct GPS hardware integration. The new Pocket Navigator/GPS Solution offers real-time moving map display.

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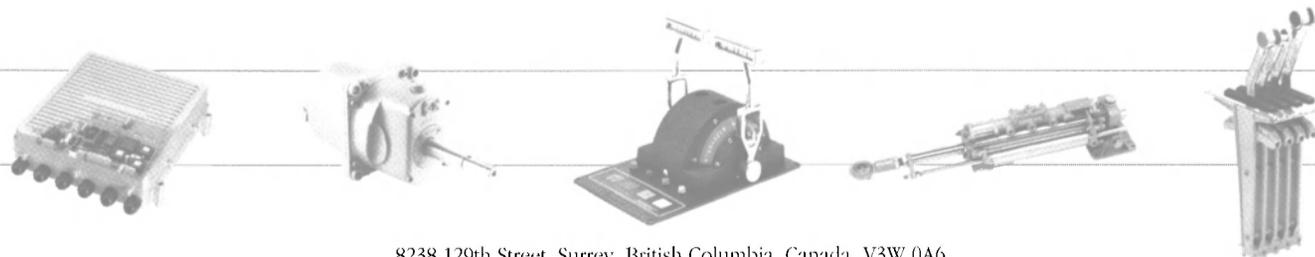


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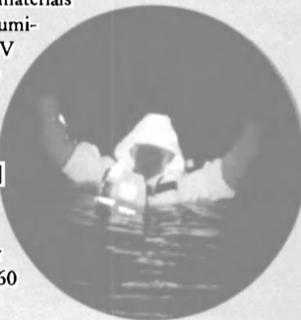
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## New Light Saves Lives

A revolutionary marine searchlight developed by Swedish company, ColorLight AB, is fast becoming an invaluable aid to rescue teams when searching for people and small boats in distress at sea. Even passenger ferries and container ships are beginning to install it as a part of their navigation and safety equipment. The ColorLight searchlight is unique in that it is dual-headed offering both halogen and UV (ultra violet) lights in one unit. Although halogen lights are sufficient during normal darkness and clear conditions, the UV light offers advantages during difficult conditions such as rain, fog, snow and darkness, as the invisible UV beams can cut through such obstacles more effectively. Furthermore, many materials are fluorescent becoming luminous when exposed to UV light beams. In clear weather, the halogen light range is approximately 4,000 m while the UV light range is some 1,400 m. Remotely operated by a joystick, the searchlight can be rotated in either direction through 360 degrees.



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SeaArk Marine, Inc. of Monticello, Ark., is one of the nation's leading suppliers of aluminum Patrol boats to the Federal Government, ranging in size from 17 to 65 ft. With over 40 years of manufacturing experience, SeaArk specializes in providing Government agencies with high performance vessels designed and outfitted to meet the rigorous requirements of continuous patrol boat duties. All SeaArk products are available for direct purchase through GSA contract. SeaArk is currently supplying the United States Navy with Harbor Security boats for both the Atlantic and Pacific Fleets. Others that have selected SeaArk include the U.S. Border Patrol, U.S. Coast Guard, U.S. Army Corps of Engineers, and a host of other Federal, State and municipal agencies. [www.seaark.com](http://www.seaark.com)

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## Zodiac Debuts Armorflote

Zodiac unveiled Armorflote (patent pending), an inflatable bulletproof system for inflatable boats. The Armorflote system inflates in about 40 seconds to protect troops and inflatable tubes from gunfire. The Armorflote system shown is installed on the Zodiac F470 CRRC (Combat Rubber Raiding Craft), which is used by military and special forces operations worldwide. (Photo credit: Bob Wheeler)

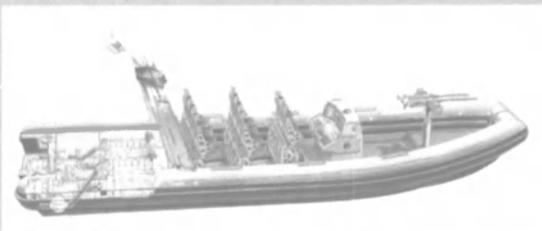
The inflatable Armorflote system made its debut on the Zodiac F470 CRRC inflatable boat, which has a long history of military and special forces operation. The Armorflote system is available with either soft or hard armor protection, made from a bulletproof material provided by Simula, Inc.



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## Nautica X-36 Special Ops RIB

Nautica International Inc., is considering opportunities in the Special Operations market with a new design RIB, the Nautica X-36 Special Ops Rib. Nautica, established in 1982, specializes in custom applications of its product line. Nautica produces more than 30 models, ranging in size from 9 to 39 ft., powered by outboard, inboard, diesel and jet-drives. Nautica developed many of military RIBs in use today by the U.S. Navy Seals, U.S. Navy Mammal Programs, U.S. Coast Guard, Marine Patrol, Drug Intervention, U.S. Marine Corps, U.S. Customs, Special Operations Command, including fast boats powered by high performance diesels and jet drives up to 900 hp. Nautica won a bid to build a 30-ft. RIB as a developmental prototype for the U.S. Navy. It was judged superior in performance, sea-keeping ability, payload and range in the U.S. Navy test results.



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## Jered Industries Inc.

Pictured is an aircraft on one of four aircraft elevators on the CVN-73, the USS George Washington. These elevators are designed and manufactured by Jered Industries Inc., located in Brunswick, Ga. The Jered Industries' design employs the wire rope suspended type of deck edge elevator platform. The sub-system components are matched for maximum efficiency, reliability and maintainability. This proven design safely and smoothly transports the elevator platform and its payload from the hangar deck to the flight deck. The design employs both a manual and an automatic means of operation while maintaining high standards of safety for both personnel and equipment.



Courtesy of Northrop Grumman Newport News

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## Hatteland Display to Outfit 5 New Frigates

Jakob Hatteland Display AS in Norway won the contract to supply naval 20.1-in. displays to Kongsberg Defence & Aerospace for delivery to the five new Norwegian Frigates.

The contract includes delivery for all 5 frigates. Delivery will start autumn 2002 and will be completed autumn 2004.

The 20.1" display from Jakob Hatteland Display will be integrated in the command and control system delivered from Kongsberg Defence and Aerospace. The award of this contract demonstrate that Jakob Hatteland Display now have a product range which meets technical requirements from the naval market. For more information regarding the product range from Jakob Hatteland Display,

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# Ultra Large Containerships:

## *Will Security Measures Impede Operations?*

As the U.S. — and the world — tries to thwart terrorist attacks in the planning stage, container shipping has become a focal point. From electronic seals to radiation detection devices mounted on container cranes, the effort to ensure attack from the sea does not come via a 20-ft. equivalent unit is comprehensive and ongoing.

Prior to September 11, 2001, the push to design, outfit and build ever larger containerships — vessels capable of carrying 8,000 TEU and much more — was a consistent theme on the industry conference rounds. Replaced with that, in large, are discussions on terrorism, specifically targeting container shipping and the threats inherent with this mode of transportation. This is not to say that the larger ships are inherently less secure. The need for larger, more efficient means to move containers is clear. Predictions show that in the next 20 years, the number of container boxes coming into U.S. ports will quadruple from the current level of six million.

When SeaLand's **Malcolm McLean** essentially invented the container shipping industry in the 1960s, it is safe to say that protecting against the delivery

### **U.S. Port Security**

#### **Fee Scheme Proposed**

During a meeting of the Conference Committee that is attempting to draft a unified U.S. port and maritime security bill, it was proposed that a Port Security Fee be assessed to fund various port security initiatives.

Fees on international cargo shipments would, under the scheme floated by Sen. Hollings (D-SC), be:

- \$15 per regular TEU
- \$20 per TEU containing HazMat
- \$4 per vehicle
- \$4 per passenger
- \$.30 per metric ton of crude oil
- \$.45 per metric ton of petroleum product
- \$.50 per metric ton of chemical product
- \$.60 per metric ton of liquid gases (LNG/LPG)
- \$.02 per metric ton of dry bulk cargo
- \$1 per metric ton of other cargo.

Based on calendar year 2000 data, this would collect approximately \$692 million each year. The monies, to be collected by the Customs Service, would be deposited in a new Port Security Trust Fund. Half the monies would be allocated to ports for security enhancements. Of the remainder, 25 percent would be set aside for discretionary grants for protection of miscellaneous maritime assets and for shipper security programs and the other 25 percent would be available to generic security programs at the Maritime Administration, TSA, Customs, and the Coast Guard. These generic programs would include credentialing, Sea Marshals, AIS implementation, R&D on seaport security technology, and cargo screening equipment.

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## Maritime Security Guidebook



Constructed by Samsung Heavy Industries, the 983-ft. (299.8-m), 6,200-teu containership owned by NYK is an example of the new, larger, more efficient containerships.

of "dirty" nuclear weapons did not enter his mind. Fast forward to 2002: container shipping has proven to be an efficient and indispensable means of moving goods from point A to point B. But the future look, outfitting and operation of these vessels will undoubtedly be altered by rules and regulations emanating from safety concerns.

### Developments in Ship Shape

Prior to heightened security efforts and the downturn in the world containership trade, development of ultra large containership, with future estimates of ships ranging to the 15,000 to 18,000 TEU range, were regular fodder for publication. Germanischer Lloyd's **Hans G. Payer**, a longtime and persuasive proponent of the design and technical details of these mammoth ships reasoned that economy of scale (which includes

much larger ships with much less crew) effects in container shipping have led to a rapid increase in ship size for all types of vessels, from feeders to the large intercontinental carriers, in a paper presented at the Society of Naval Architects and Marine Engineers (SNAME) annual meeting in September 2001.

Mid last year, Knud E. Hansen A/S and Bureau Veritas teamed to develop the design for an Ultra Large Container Vessel — without question, a landmark vessel — capable of carrying 12,500 TEU, and came up with the following technical specs:

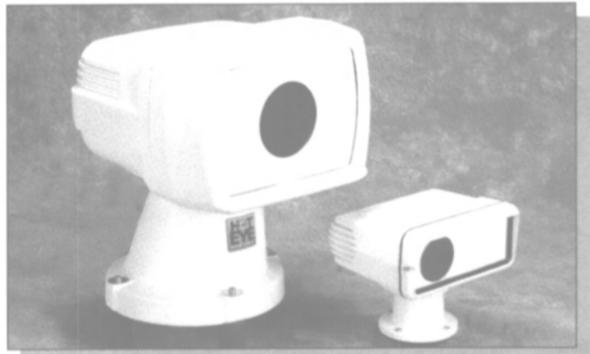
Length, o.a.	1,312 ft. (400 m)
Length, b.p.	1,240 ft. (378 m)
Breadth, molded	178 ft. (54.2 m)
Depth, molded to upper deck	95 ft. (29 m)
Design draft, molded	43 ft. (13 m)
Scantling draft, molded	46 ft. (14.5 m)
DWT at design draft	127,000 tons
DWT at scantling draft	152,000
Main engines output MCR	2 x 57 MW
Speed, service	25.5 knots
Range	26,500 nm
Bowthrusters	3 x 2,500 kW
Generator capacity	4 x 4,000 kW
Containers, below deck	6,234 TEU
Containers, on deck	6,289 TEU
Containers, total	12,523 TEU
Reefer plugs	1,250 FEU



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### Machinery Innovations

While there are numerous challenges in designing such a large ship that is designed to weather the rigors of sea duty for 25 years or more, perhaps the biggest challenge is the propulsion solution. Last year ABB and Samsung teamed to develop a new propulsion con-

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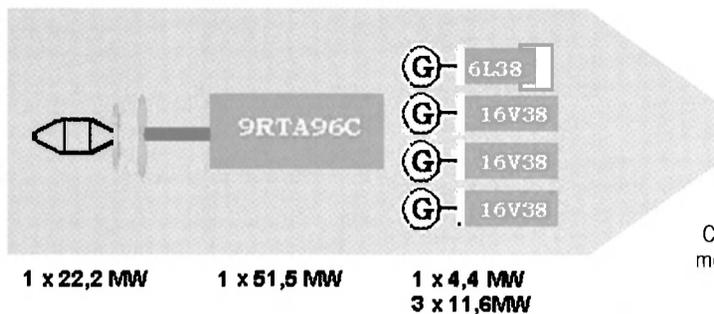
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Maritime Reporter & Engineering News



CRP Azipod arrangement for 12,000-TEU Containership.

ment and maintenance of an anti-terrorism cargo identification and screening system for containerized cargo shipped to and from the U.S.

The U.S. Customs Service has the primary Federal responsibility to ensure that all imports and exports comply with U.S. laws and regulations. The Custom Service is spearheading two initiatives

to improve container security, the Customs Trade Partnership Against Terrorism and the Container Security Initiative, both of which focus on the goal of checking the security of cargo before it reaches the U.S. While final details are not yet set, and some will never become public knowledge, it is a sure bet that both will rely heavily on technology and

cept for Samsung's 12,000 TEU container ships. In comparing the CRP Azipod solution to two other propulsion systems — a single engine and a twin main engine — tests conducted at Samsung's Ship Model Basin found that the CRP Azipod system performed impressively, showing good economic potential. Instead of having a rudder, the CRP Azipod unit is mounted directly behind the standard propeller. Located on the same axis, but without any physical connection, the pod's pulling propeller will contra-rotate in relation to the shaft-driven main propeller. This arrangement gives an improvement of more than 10 percent in hydrodynamic propulsion efficiency.

According to the model tests at Samsung's facilities, this solution showed a hydrodynamic efficiency of 7.1 percent better than single screw and 11.4 percent better than twin screw/twin skeg solutions.

Total propulsion efficiency was determined as all calculated transmission losses added to needed propeller power. The result gave the CRP Azipod an advantage of 4.9 percent compared to single screw, and 9.1 percent compared to twin screw/twin skeg solutions. Regarding machinery operation costs, including fuel, lubrication oil and maintenance, the Samsung test showed that the cost for the CRP Azipod were eight percent lower than for the twin skeg, and four percent lower than for the single screw solution at service speed.

**New Security Measures**

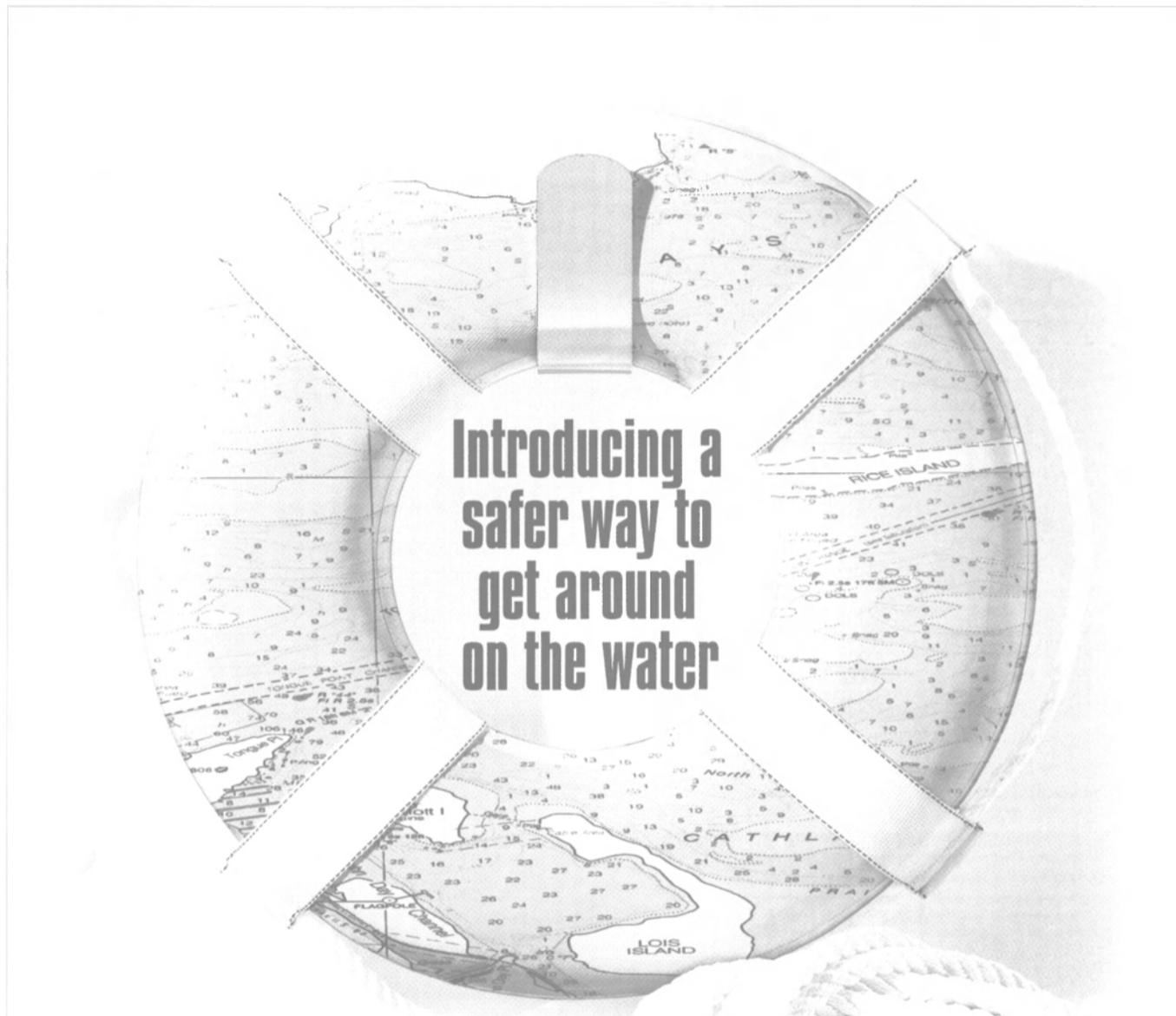
The uninterrupted flow of ships and cargo through U.S. ports is vital to the world economy. Slowdowns resulting from September 11 and the resulting security tightening lingers today, though the importance of seamless transportation is realized by all.

According to the Maritime Transportation Anti-Terrorism Act of 2002 that was recently approved by the U.S. House, by no later than June 30, 2003, new section 7011 requires the develop-

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**U.S. Annual Marine Statistics**

- Value of Cargo through Ports .\$.1 trillion
- No. of Containers . . . . .6 million
- No. of Mariners . . . . .200,000
- % of Cargo Volume by Ship . . . . .95%



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## Maritime Security Guidebook

be well funded.

The result of tougher security measures while retaining time sensitivity is the creation of a cottage industry of sorts involving innovative applications of new technologies in and around ports. From radiation sensors mounted on container cranes to whole container X-ray capabilities, many companies that previ-

ously were outside of have quickly embraced the maritime market.

One such company is General Defense Systems, Inc., which introduced its Shipping Container Inspection System (SCIS), an advanced chemical, biological and radioactive inspection system for shipping containers. "Without impeding the movement of containers,

our SCIS system enables inspection of up to 100 percent of the shipping containers moving through U.S. ports, minimizing risk and significantly curtailing vulnerability," states **Frank Fawcett**, president and CEO of General Defense Systems, Inc. (GDS). "With more than six million shipping containers entering U.S. ports annually and only approxi-

mately two percent inspected pre-September 11, the threat to national security is viable. SCIS can mitigate the potential for disaster."

GDS' SCIS system deploys highly sensitive, accurate detection devices on the cranes and lift trucks that move the shipping containers in and out of U.S. ports. The port cranes control close to 100 percent of the shipping containers that pass through these ports, hoisting the containers on and off shipping vessels.

SAIC is another company that has history in port security, serving the maritime market for more than 20 years. To protect port approaches, SAIC harbor systems, used by the U.S. Navy as well as other U.S. and international customers, integrate sensor systems and response assets. The harbor systems are designed to give a clear picture of the port - on land and underwater.

Once in port, SAIC systems, based on the Automated Gate System (AGS), come into play. These systems are used for container identification and processing as cargo containers move through terminal depots, warehouse, and distribution centers. AGS-based systems process cargo, drivers, and vehicles by using high-resolution digital video technology, interactive kiosk, proprietary optical character recognition algorithms and associated knowledge-based software, and radio frequency Automatic Equipment Identification. It is claimed that AGS processes containers at five times the speed of conventional operations. In port intermodal facilities, damaged and high-risk containers, quickly identified by an AGS system, are routed through another proven and highly effective SAIC technology: Vehicle and Cargo Inspection Systems (VACIS). A VACIS unit is designed to reliably scan a 40-ft. container in less than six seconds.

Gamma ray technology scans the contents of containers, vehicles, and railcars, without harming cargo, and a real-time image shows system operators the contents of containers, verifying that cargo is consistent with a declared manifest and revealing voids, false walls and ceilings, and other secret compartments.

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 General Defense Systems, Inc. . .38  
 Germanischer Lloyd .....39  
 SAIC .....40  
 Samsung .....41



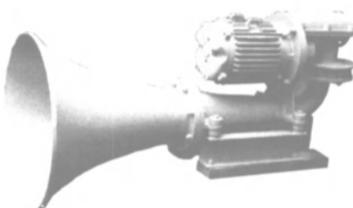
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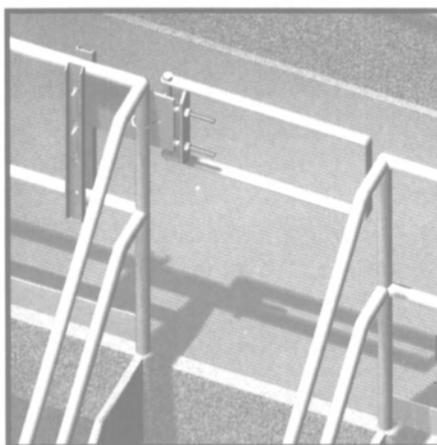
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## Premiere Maritime Security Exhibition to be Held in NYC

For the first time ever, a conference and exhibition will be dedicated solely to the area of maritime security — an area that is so vital to protecting our nation's ports and harbors. Scheduled to occur from September 18-19, 2002, at the Jacob Javits Convention Center in New York City, both the conference and exhibition is expected to draw participants from the CIA — to shippers and port administrators.

Since the tragic events of September 11, 2001, constant efforts have been focused within maritime security, including threats of cargo entering the U.S. that could contain dangerous and/or hazardous chemicals, and both biological and chemical weapons of mass destruction. The exhibition and conference will offer companies displaying their security "weapons" against terrorism, as well as various members of the maritime community offering speeches and ideas on how our industry can win the war on terrorism.

Some of the companies scheduled to participate in September's events are Kongsberg Simrad, Maersk Sealand, ABS Consulting, L-3 Communications and Lockheed Martin, as well as various government agencies, namely the U.S. Merchant Marine Academy, and the National Security Council, who is sponsoring this event.

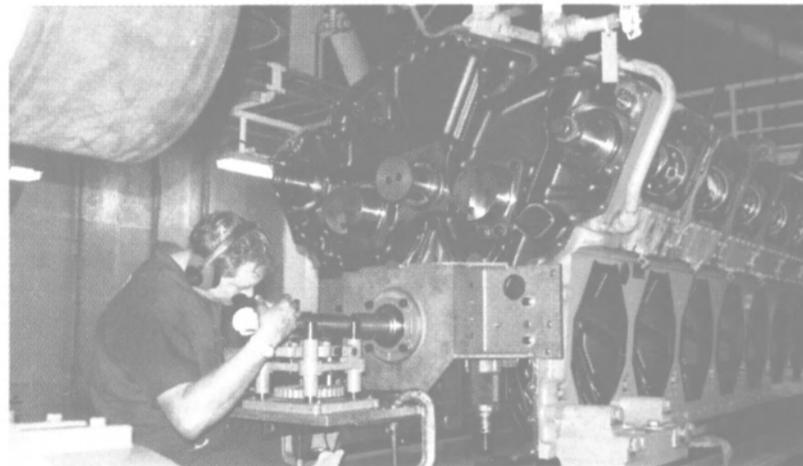
Expected to speak at the conference are **Thomas Thune Anderson**, president, Maersk Sealand, who will offer his views on "The Shipping Industry and Port Security;" and **Joseph Billy**, Special Agent in Charge, FBI, New York City office, who will discuss Weapons of Mass Destruction and Port Security. Also invited to attend, but not yet confirmed to speak are New York Governor **George Pataki**; and **Gordon R. England**, who currently serves as Secretary of the Navy.

For further information on attending the conference, or for exhibition details, please contact: Ms. **Benedicte Aubrun** at E.J. Krause & Associates, 6550 Rock Spring Dr., Bethesda, Md. 20817, tel: (301) 493-5500. In addition, the conference registration form can be downloaded via [www.maritimesecurityexpo.com](http://www.maritimesecurityexpo.com) and then faxed to (301) 493-5705.

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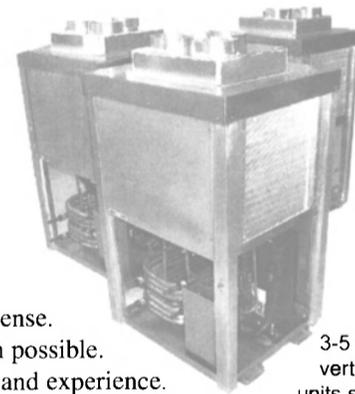
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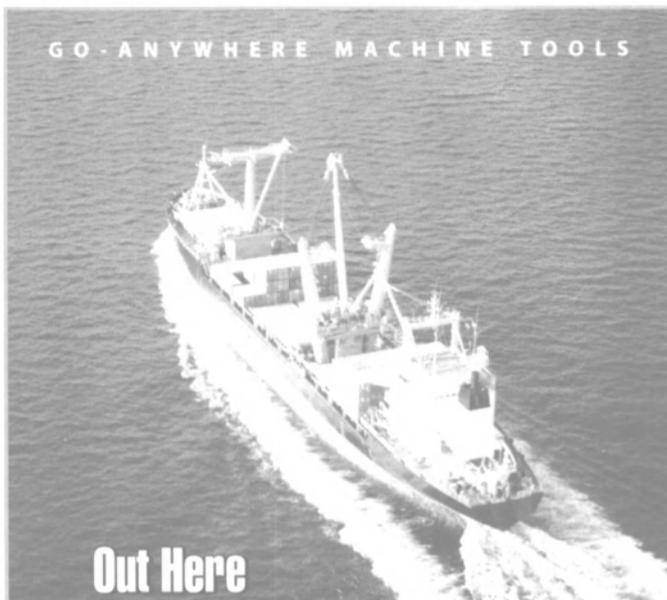
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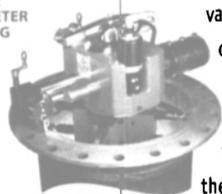
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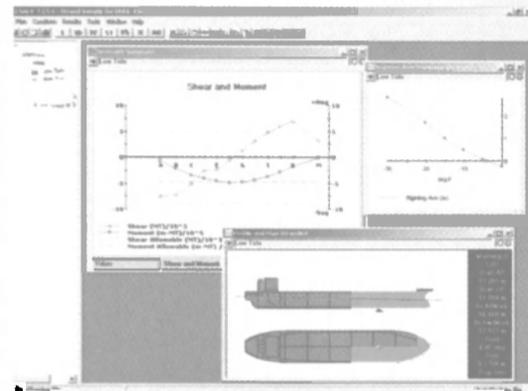
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# Get Ready for the New OPA 90

## For Ship Owners, Choosing The Right Salvage Engineer Will Be Key

Ship owners take notice. The USCG has updated OPA 90\*, with a Notice of Proposed Rulemaking that outlines the expansion of the salvage and firefighting response requirements of the existing OPA 90 rule (see Federal Register issue May 10, 2002). The rule, which is scheduled to go into force soon, lies on the basis of improved salvage and response plans.

Ship owners/operators will, ultimately, need to prove, within their Vessel Response Plans (VRP), that the salvage and firefighting response contractors they have chosen can handle their worst-case marine crisis scenario within the response time limits listed in the new rule. A salvor just can't be listed; a contract must be signed and they have to be able to meet the myriad of different response times listed in the new rule — particularly in the areas of assessment of damage and developing salvage plans. Apart from having heavy equipment such as tugs, cranes, etc. available, the Salvor needs to be able to respond with reliable damage assessment info, a salvage engineering analysis and a salvage plan submitted to the USCG within hours. In order for the Salvor to do that, it is therefore necessary to have a real salvage engineer with access to a pre-built salvage engineering computer model of the vessel.



A salvage engineering analysis performed on a stranded oil tanker using the salvage engineering program, HECSALV, displays the compartments that were damaged from the vessel's grounding.

According to the new rule, the Salvor will be in direct communication with the Qualified Individual (QI) from the get go. This is the best order of things because the earliest involvement by the Salvor may prevent a small incident from turning into a major crisis. For example, a grounding of an oil tanker with no damage could turn into a major oil spill if the Salvor is not informed early on in the process. History has proven that the small incident is cheaper to fix than the major oil spill — or the sinking.

JMS Naval Architects & Salvage Engineers, located in Groton, Conn. provides a 24/7 emergency salvage engineering service called ERnet (Emergency Response network) to a number of oil transportation companies such as Reinauer Transportation, Maritrans and others along the East Coast. Over the past 15 years JMS has responded to numerous small to medium sized marine incidents that were prevented from becoming major salvage crisis with the use of solid salvage engineering know-how. So much of preventative salvage response is just knowing what type of situation your vessel is in; how hard aground is she, is she overstressed in certain areas, what compartments are flooded, etc. The faster you know these things the faster and better you can stabilize the crisis and work on a plan. This is where a pre-built salvage engineering computer model (also a requirement of OPA 90) of your vessel becomes indispensable.

JMS has built, and maintains, HECSALV computer models of each of its ERnet member's vessels. These ERnet member companies such as Reinauer and Maritrans are already covered under the new OPA 90 response time rules. Many of these same members also have CargoMax loading instruments on-board that 'speak' to the HECSALV models with up-to-date cargo and liquid loading particulars. This gives the salvage engineer the last known condition of the vessel and the all-important remaining trim, stability and strength it had before it got in trouble. In response, the USCG has already implemented the HECSALV program exclusively — allowing the determination of consensus on salvage plans to be a lot easier. The quicker the salvage plan is approved, the quicker the lightering can begin, or the next opportune tide-cycle won't be missed, or your good weather window, etc.

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For additional information on JMS' emergency salvage engineering response, please contact Rick Fernandes at: [rick@imsnet.com](mailto:rick@imsnet.com)

\* Oil Pollution Act of 1990. Also see CFR 33 155 parts 240, 245

## M/V Tanner Christened In Texas

The United States Army Corps of Engineers (USACE), Galveston District recently christened a unique 48-ft. (14.6-m) vessel for use at its moorage facility. The 48-ft. utilizes the uniquely innovative Stolkraft hull form, and will be put into service surveying the coastal waterways in the Galveston District.



Art Anderson Associates assessed the match of the Stolkraft hull to the Galveston District's specific requirements for a survey launch, and provided the plans and specifications for the Tanner's design.

The Stolkraft is a hull form, patented worldwide, with applications to high-speed vessels. The hull consists of a trimaran shape forward that transforms into a catamaran aft. As the vessel moves forward, it forces air beneath the scoops formed by the tri-hulled forebody. The air acts as a cushion that decreases frictional resistance, provides additional lift, and decreases fuel consumption. Tanner's design provides the capability to operate in higher, rougher sea conditions than is possible with the Galveston District's current survey launches.

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## NASSCO Extends Tribon Agreement

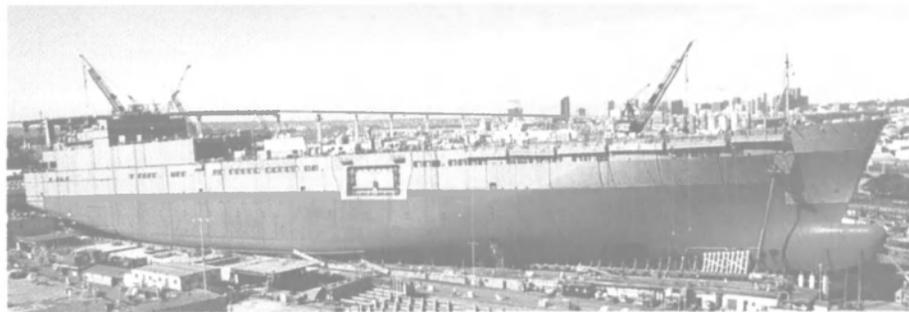
The National Steel and Shipbuilding Company (NASSCO), has signed a five-year agreement to continue its use of the Tribon Shipbuilding System. NASSCO will use the Tribon system for the design and production of all of their naval and commercial ships. NASSCO implemented the Tribon Hull system in 1995 on the Sealift New Construction program for the U.S. Navy. In 1997 NASSCO implemented the entire Tribon system including, all hull and outfitting applications.

All of the ships in NASSCO's existing order book are being designed and built using the Tribon Shipbuilding System. These ships include: USNS Soderman, M.V. North Star, four state-of-the-art double hull tankers for the carriage of crude oil from Valdez, Alaska, to BP's

U.S. West Coast refineries and the first two ships in the T-AKE program, a new class of combat logistics force ships.

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Constructed at NASSCO, USNS Soderman will boast the Tribon Shipbuilding System.



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# Rolls-Royce Helps Power Combat Boat Success

*Versatile, small high-speed craft are becoming an essential tool for modern naval and paramilitary forces, however the roles of these vessels are expanding. Rolls-Royce's Andrew Rice looks at the evolution of the Combat Boat 90.*

More than 10 years ago, revised Swedish defense planning called for a radical increase in the mobility of coastal defense forces. As a result, the Combat Boat 90 project began, developed by the Swedish Defense Material Administration (FMV). A concept that is proving to be a world beater.

The prototype contract for two units required Swedish shipyard Dockstavarvet to produce all calculations and engineering/construction drawings based on the FMV project design. Within 10 months of contract award, trials on the first prototype were a success. The boat fulfilled all requirements with broad margins and the system test period was cut from 12 to six months. As a consequence, the first production batch of 12 boats commenced ahead of schedule. So successful has the Kamewa aluminum water jet-driven design become that hundreds of examples of the boat have been built for the Swedish forces and for export, including 147 for the Royal Swedish Navy, who will take their final deliveries next year.

Today, the high-speed aluminum hull form is to be found carrying out a wide range of tasks including peace keeping and anti-drug operations in locations around the world. It is interesting that present production boats are almost unchanged, except in detailed design and performance. The standard engine rating has risen from 2 x 460 kW to 2 x 500 kW, and with continuous improvements in Kamewa waterjet technology, loaded top speed is now more than 40 knots. Fitted with the optional higher engine rating of 2 x 590 kW, light ship performance is around the 50-knot mark.

The electronic package has been modified, and includes an integrated digital global positioning and radar, linked to a sophisticated command system plus intercom and external communications. Detailed engineering refinements incorporate lessons learned during more than 200,000 hours of actual operational experience. In analyzing the combat boat's rousing success, **Karl-Anders Sundin**, Dockstavarvet's managing director, said, "It is a combination of factors. We specialize in developing and building high-speed aluminum craft for a range of applications. Excellent

maneuverability and a maximum continuous speed of 45 to 50 knots are important, and having a reinforced hull means that they can take some pretty rough treatment. The boats are quite light, and are easy to transport by road."

Speed and maneuverability prove to be a good combination when chasing criminals, and a bow ramp means that - when required - men can be put ashore for landing parties, quickly and easily.

The Combat Boat 90s are built to withstand the considerable rigors posed by duty in the Royal Swedish and Royal Norwegian Navy's operations in the Baltic and Arctic waters. The standard design has a displacement of 16 to 17 tons, fully crewed and tanked, and is capable of carrying 21 fully equipped soldiers, or up to 4.5 tons of cargo. The two Kamewa FF water jet propulsion units, each driven by a diesel engine, provide the speed and the maneuverability. The waterjets,

which house all of the moving parts, allow for safe, shallow draft operation as well. They also eliminate the need for a heavy gearbox, as astern thrust is achieved by reversing the water discharge from the nozzles.

Heavy machine guns can be mounted in a fixed installation or stabilized and remotely controlled from a console in the wheelhouse. Regardless of its intended use - navy, coast guard, border patrol, anti-drug ops - Dockstavarvet is able to customize the vessel as required. For example, adding an extended 1.8 m bow ramp, forward deck, crane and a fire pump turns the combat boat into an agile firefighting vessel.

With the good references of success serving the Royal Swedish and Royal Norwegian Navies, Dockstavarvet has been exporting the technology, with the delivery of 40 combat boats to the Mexican Navy, and delivery of 12 boats for the Royal Malaysian Navy. Delivered in 2001, the contract included base maintenance systems and boat handling systems. The boats are used to police Malaysia's lengthy coastline, mainly in and around Sabah and Sarawak.

New versions continue to evolve as navies respond to changing roles, as they require more flexible fleets. After carefully evaluating two prototypes, the Swedish Navy is adapting the 27 Combat Boats remaining in build for international peace-keeping missions. The adaptation embraces three areas: personnel protection, biological/chemical protection and operation in a Mediterranean-type climate, and comes as the Swedish Armed Forces place an increased focus on international peace-keeping activities, as well as a demand from the UN to support joint international missions with personnel and material. Deliveries have commenced, and the final boats are scheduled to be in service by mid 2003.

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Dockstavarvet's 52-ft. (16-m) Combat Boat 90H has a top speed of 45 to 50 knots and is propelled by two Rolls-Royce Kamewa aluminum FF waterjets.

*The preceding was excerpted, in part, from Rolls-Royce The Magazine, Issue 93, June 2002. All photos courtesy: Ake Nordlander/Fredrik Forsman - Dockstavarvet AB.)*

# SMI: Helping to Spread British Marine Technology Worldwide

By John Murray, Chief Executive,  
Society of Maritime Industries (SMI)

Since the time of the Romans, the evolution and development of the maritime sector has been of vital importance to Britain's commercial and economic interests. Early links were established with trading partners worldwide, links that endure today — particularly in our relations with the U.S.

As befits a country with arguably the third largest navy for defense in the world, our expertise in systems and equipment integration is much sought after by shipbuilders across the globe and, understandably, many U.K. marine equipment companies view the U.S. Coastguard Agency Deepwater project with more than a passing interest.

So where does the Society of Maritime Industries fit into the picture? Put simply, our mission is to promote and support the interests of all U.K. companies doing business in the maritime industries. More grandly, we are the voice of U.K. maritime business representing suppliers of equipment and services to naval and commercial shipping; ports and terminals; offshore oil and gas; pollution control and clean-up.

If we look specifically at our members' marine equipment interests, it is perhaps an under-recognized fact that this sector represents approximately \$1.5 billion a year in export sales — the U.K. is one of the largest players in the market. Which equipment appeals to customers? Well, besides our skills in ship design solutions and systems integration, the U.K. is also a market leader in propulsion systems, generators, weapons systems, navigation and communications, HVAC, accommodation, and deck and cargo equipment.

Within the context of platforms with a defense role, the U.K. itself has a significant domestic market, with more than \$25 billion allocated to a new carrier program and air group, the first batch of T45 destroyer class ships, the Astute class submarine and further sums on a number of support vessels.

Naturally the new technologies for these classes of ships will be available to share with our defense partners — providing a very credible reason why U.K. suppliers should receive more than a cursory glance from U.S. designers and procurement managers.

Of course, a large number of U.K. companies in the maritime sector have already set up business in the U.S., either through joint ventures or subsidiary companies, and we know more are on the way. It is not only the big players such as BAE Systems who have a presence in the U.S., but also smaller

companies such as Young & Cunningham of Glasgow, Scotland. Y&C set up facilities in Houston many years ago and have been long-standing suppliers to Avondale and NASSCO, recently win-

ning the contract to supply valves to the T-AKE class of ships.

Moving back to the work of the Society in all this, one way we support companies in bringing their products to mar-

ket is by participation in major international maritime trade shows and conferences. However, our promotional work

(Continued on page 59)



## The Art of Simulation Has Reached a New State

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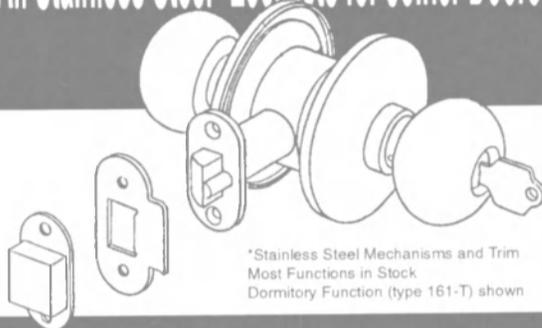
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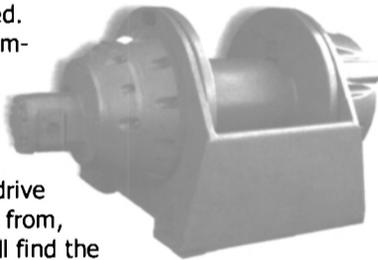
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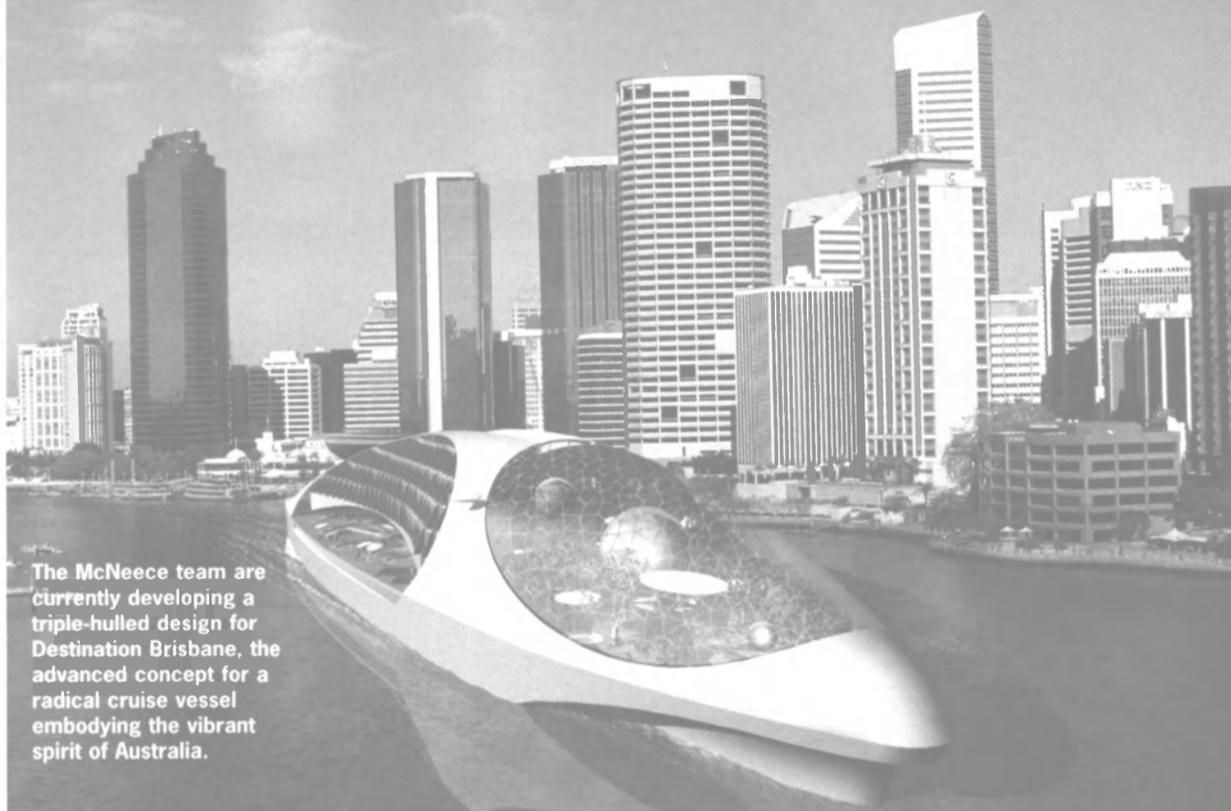


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## McNeece Unveils Unique Hull Concept



The McNeece team are currently developing a triple-hulled design for Destination Brisbane, the advanced concept for a radical cruise vessel embodying the vibrant spirit of Australia.

London-based McNeece again delivers to the world a unique ship shape, this time with the development of the triple-hulled design for Destination Brisbane. McNeece, with references on some of the worlds most fabulous cruise liners, also has a strong record of pushing the design envelope to deliver what some may classify as outrageous design concepts.

With **John McNeece** recently departing the company to "pursue other interests," the McNeece reputation is now led by **Mark Hilferty**. Destination Brisbane is touted as a breakthrough, advanced concept for a radical cruise vessel embodying the vibrant spirit of Australia. Destination Brisbane has already generated much interest from both consumer and business media outlets: lifestyle magazines from China to Scandinavia have featured the vessel, while the broadcast media, CNN and The Discovery Channel, have also featured this 'modern icon' from Hilferty's design team.

The marine team has recently been awarded two major contracts: the first to design a newbuilding cruise vessel intended to alter the brand posi-

tioning of a European operator; the second to design a quantum leap in on-board facilities and interior fit-out for a long-distance ferry operator. McNeece also recently appointed Anna-Louise Thomas in a new role, business development manager. Thomas joins McNeece from international design consultancy, Imagination, and will be responsible for a wide range of tasks including strategic business development and client care. With previous experience in the retail, leisure and development sectors, including major international hotel groups, she brings into the business a world-class track record in key McNeece markets.

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### RFA Brambleleaf Refit At A&P Falmouth

Completing its latest refit at A&P Falmouth, RFA Brambleleaf dry docked in Falmouth on May 1 for a refit and repair program which included full hull coating preparation and painting, rudder repairs, propeller blade replacement, remedial work on the anchors and cables, a full overhaul of the ships salt water system and also a major repair/remedial work program carried out on the ships cargo and ballast systems — all within tight parameters of both time and quality control.

Further work was carried out after the vessel undocked. This involved the refurbishment of the crews living quarters, freshwater system, galley and food storage areas and the installation of a new sewage treatment plant.

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### Marine Purchasing System Available

Marine Software Ltd. delivered its Marine Purchasing Systems for Windows to Midocean (IOM) Ltd., for the Saint Roch, Rosa Delmas and the Ursula Delmas. Midocean manages these vessels on behalf of the Delmas group.

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### Solar Solve Approved By DNV

Solar Solve Marine recently achieved DNV accreditation for its SolaSolv range of products following months of trials and tests. This adds to Lloyds and ABS type approvals. In addition, the company announced one of its largest orders ever from Korea, nine shipsets of screens from four different shipyards.

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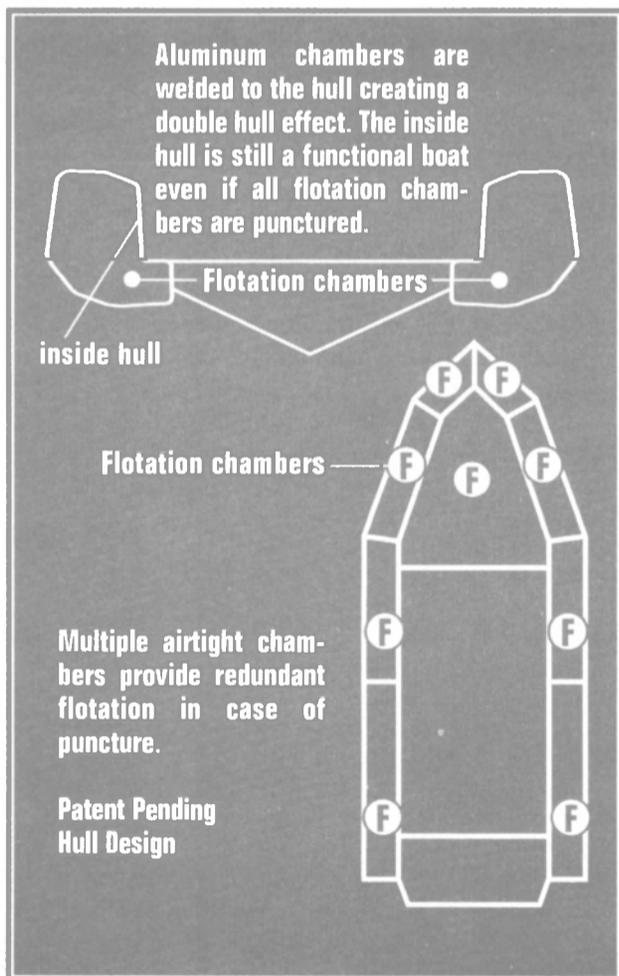
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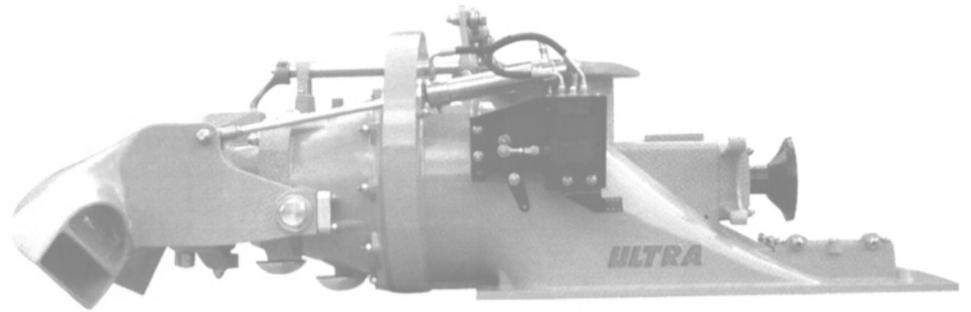
26/29 ACB towed from San Diego to Canada with 1/2 ton pickup.



**U.K. Report**

# Ultrajets Chosen by FBM Babcock for Military Project

Ultra Dynamics has agreed to supply 305 waterjets for a new military project. FBM Babcock Marine with 14 UltraJet According to **Mike Lane**, managing



director, "The UltraJet 305 is the highest selling unit in the UltraJet range of marine jet drives and although successfully exceeding the specified static thrust with the UJ305 waterjet, Ultra Dynamics have been working for the last year to produce an even higher thrust unit with a similar installation envelope and weight."

"The NEW unit designated the UJ305 HT (High Thrust) is being launched at SeaWork in June 2002. It has been specifically produced for Bridge Erection and towing purposes and for the numerous times in the commercial market, where boats actually exceed the weight to that originally specified by the builder due to the many additions by the end customer."

"The NEW UJ305HT (High Thrust) has 10 percent higher thrust than the UltraJet UJ305 with only a four percent increase in weight and 95 percent of components/parts being common with the UJ305."



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## Ultrajet Selected For Aircrew Training Vessels

Ultra Dynamics has been awarded an order for six UltraJet UJ305 Waterjets by FBM Babcock Marine for six 88-ft. (27-m) Aircrew Training Vessels ordered by SMIT International (Scotland) Ltd. The training vessels are of aluminum construction, powered by twin Cummins KTA19M4 522 kW engines to propellers with an additional center-line engine fitted to the UltraJet UJ305. The UJ305 is driven via a cardan shaft by a Cummins 6CTA 8.3M marine diesel engine rated at 261 kW at 2,500 rpm.

The UltraJet drive provides enough thrust to achieve approximately seven knots in calm water (with main engines stopped) and enough directional thrust to maintain heading and steerage at sea in sea state 4 and strong head and beam winds. It will also provide astern thrust of about 0.5 ton. It will also provide astern thrust of about 0.5 ton.

The engines will be flexibly mounted with torsional coupling and drive via flanged-on gearboxes. Two ZF550 nominal 2.0:1 gearboxes will be fitted.

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# New Cutter for Port of London Features Cat Power

The U.K.'s largest Port Authority has specified a Caterpillar 3056 marine engine to provide propulsion power onboard a new 32-ft. (9.7-m) salvage cutter. The Port of London Authority ordered the new vessel to replace an aging cutter, which has been part of a team of three boats providing support for the authority's two salvage ships Hookness and Crossness since the early 1970s. Being built by Wickham Marine of Colchester using an innovative jig system, which creates a mold in which the steel-hull vessel is built, the boat is open-decked and similar in design to its predecessor. The build method means that the vessel is built from the outside in, i.e. the hull structure is built first, before equipment and systems are installed. The method requires considerable work when building the first hull, but reportedly makes the construction of subsequent vessels, using the same mold, time and cost efficient.

## Wickham Targets Small Workboats

Wickham Marine of Colchester is targeting the smaller end of the workboat market with a new jig-based construction method. The company is able to offer the same combination of rugged hull design and vessel-matched Cater-

pillar power, as well as a new range of multi-purpose 29, 39 and 49-ft. (9, 12 and 15-m) jig-built vessels, to other port authorities and operators of small general purpose workboats worldwide. Using this 'jig' method — which requires precisely measured, CNC machined steel plates, future copies of the same vessel using the same mold become very cost effective. Interestingly, Wickham did not charge the Port of London Authority for the design of the initial vessel, on the basis that the builder retained the right to market the product more widely in order to grow to business. "We are using the same build method for a new Cat-powered nine-meter workboat, and will do the same for a 15-m workboat featuring twin Cat 3056 engines shortly," said **Stuart Eldridge**, company director. "At this stage, we are building for sale rather than to order, so confident are we that there is a strong level of demand for simple, robust and well-designed steel-built workboats both in Europe and beyond, and this is one of the reasons why we prefer Caterpillar engines." The new PLA cutter is extremely robust, with 6 mm shell plating and very heavy lateral framing to protect it against crushing when operating between vessel



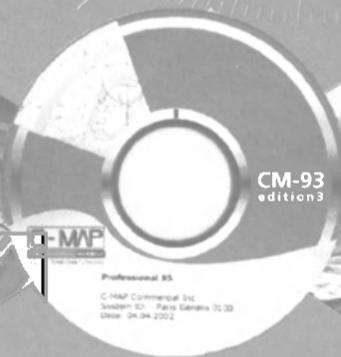
hulls and wharves, or when handling wires for the mother salvage ship. The Cat power onboard, a 3056NA engine rated 125 bhp at 2,600 rpm is integral to a propulsion system that features a sealed keel cooling arrangement, designed to eliminate the problem of cooling water inlet filters being blocked by the silt and other debris in the River Thames. The engine is also supplied with a Power Take Off (PTO) shaft and three grove pulley.

It is not the most complex or sophisticated vessel in the world, but it does play a key role in our navigation maintenance and salvage operations ... and it will need to be reliable and robust for a great many years of service."

The new vessel joins a fleet of 40 engaged in maintaining quality navigation between the entrance to the Thames estuary and Teddington lock.

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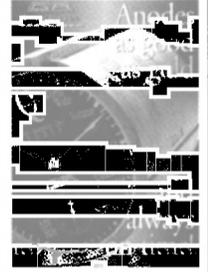
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With over 30,000 waterjet units installed around the world, Hamilton Jet represents the latest in waterjet technology. Hamilton provides efficient propulsion of a wide range of high speed work and patrol boats, fast passenger ferries, crew boats, fire boats, fishing vessels and landing barges.



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[www.maritimereporterinfo.com](http://www.maritimereporterinfo.com)

### ITT

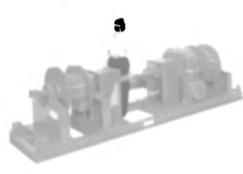
Plateflow heat exchangers from ITT Standard are designed to provide close temperature control of fluids for heat recovery applications where space is a prime consideration. The compact, plate-and-frame design offers an attractive alternative to shell-and-tube exchangers, especially for many CPI applications.



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### Jeamar

Jeamar is introducing its extended line of wide center power winches. This new line can be electrically, hydraulically or air powered. An extensive range of options are available such as controls, limit switches, dual braking systems, plain or grooved drums, pressure rollers and many more. This new line is designed and built to the clients' specific requirement with line pulls and speeds to suit. All models conform to the most stringent world wide standards.



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### Flexco

"Maintenance Made Easy", a new color brochure from Flexco, presents a variety of belt conveyor products, accessories and replacement parts that solve everyday operating problems by removing carryback residue, keeping belts tracking true, avoiding off-center loading, barring fugitive material from jamming tail pulleys, and preventing spillage under skirtboards. A special section opens to show a complete line of original-equipment Eliminator® brand replacement parts for maintaining best cleaning efficiency, with detailed ordering information plus a panel of maintenance "Tips and Hints".



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### Maritime Associates

Maritime Associates has the capabilities to supply signage needs, including complete ship-board conversion projects and sign upgrading services. They are a manufacturer with the flexibility to produce signs, cost-effectively in the U.S., in a wide range of materials, mounting and installations methods. Order online, or contact them for a free CD product guide. See their new product lines, including their innovative photoluminescent material, bright white, and the SlimLine Low Location Lighting System.



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[www.maritimereporterinfo.com](http://www.maritimereporterinfo.com)

### Anchor Lamina

Powerful hydraulic drilling equipment makes a 2-in. hole in seconds, yet is compact and portable. It is heavy-duty, easy to operate and needs less maintenance than electric equipment. Drill and tap vertically or horizontally. Five heads are available, with a variety of quick-change tools. Lamina drills are built for continuous operation and meet applicable standards in North America and Europe. Units have been in service for over 30 years. Very little training is required, and convenient, handheld controls further simplify operation.



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[www.maritimereporterinfo.com](http://www.maritimereporterinfo.com)

### AGM Container Controls

To ensure protection of vital equipment from damage, the Navy is installing KevLok Tie Down Shelving in an increasing number of spaces. Manufactured by AGM Container Controls, Inc., this shelving can be installed in a variety of configurations to accommodate the various space requirements. The shelving consists of two or more six-inch wide aluminum extrusions in lengths up to eight feet, covered with rugged vinyl padding, and mounted on brackets cantilevered and bolted to bulkheads.



**Circle No. 111**  
[www.maritimereporterinfo.com](http://www.maritimereporterinfo.com)

### Stonewood Audio

Stonewood Audio have drawn from their broad Professional Intercom expertise to offer offshore and marine intercom systems. Where reliability, functionality and ease of use are paramount. All offshore and marine intercom equipment has been designed to ensure full operation in hostile environments. The Belt Pack is manufactured in extruded aluminum to provide a light weight ruggedized product specifically for this industry.



**Circle No. 112**  
[www.maritimereporterinfo.com](http://www.maritimereporterinfo.com)

### Marisco

Marisco is one of the largest marine and industrial services companies in Hawaii. This firm offers a wide spectrum of services including dry-docking, machining, welding, blasting, painting, Industrial cleanup, pipefitting, rigging, machinery troubleshooting and repairs. In fact, Marisco operates the largest commercial drydock and biggest industrial machine shop in the state.



**Circle No. 113**  
[www.maritimereporterinfo.com](http://www.maritimereporterinfo.com)

### NLB Corp.

There's a simple solution to virtually every product removal challenge you face: high pressure water jetting from NLB Corp. With NLB water jets (1,000 to 40,000 psi, or 70 to 2,800 bar) you can quickly remove built-up residue or clear hopelessly-clogged tubes and screens. Water jets cut quickly and cleanly through a wide range of materials, without any blades to be sharpened or sanitized.



**Circle No. 114**  
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### Schottel

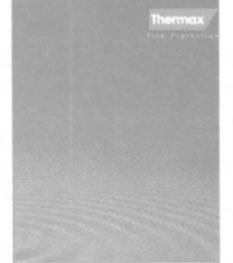
Schottel's product range embraces 360-degree steerable propulsion systems rated at up to 30 MW maneuvering devices, and also complete conventional propulsion packages. Through our worldwide sales and service network we offer economical and reliable solutions for every imaginable maritime application.



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[www.maritimereporterinfo.com](http://www.maritimereporterinfo.com)

### Thermax

Thermax, non-combustible, non-toxic, marine construction boards are used worldwide for joiner bulk heads, panels, liners, ceilings, door and furniture cores. Thermax has all major regulatory body certificates (USCG, Canada, DNV et al) and meets the requirements of IMO/SOLAS resolutions. Thermax is sold, distributed, warehoused laminated and cut to size in North America by PSI.



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The image shows three overlapping screenshots of the '2002 Global Marine Directory' software. The top screenshot displays search filters for Company, Vessel, Hail Port, Business, Country, and State. The middle screenshot shows a list of vessels with columns for Vessel No., Hailing, Vessel, Official No., IM, Gross Tons, Net Tons, HP, Len., Breadth, Depth, and H.A. The bottom screenshot shows a detailed view of a company record for 'A & K FISHING', including contact information and a list of other companies in the same region.

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\*System Requirements: Windows/PC Platform, 32 MB Ram, 30 MB of available hard disk space.

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## Products

### Offshore Inland Marine

Offshore - INLAND Marine & Oilfield Services is the premier topside repair, inside/outside machining, and engineering resource on the Gulf Coast. They provide tubing, piping, steel fabrication, and installation for the Marine and the Offshore Drilling industry. They travel to your facility, go offshore, or provide pier space for you near their facility in Mobile, Ala.

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Offshore INLAND

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### Beaird

Maxim Evaporators is a proprietary product of Beaird Industries, Inc., which has over 200 years of on-site design engineering. We calculate the engine heat balance to maximize fresh water production without compromising the performance of the engine. Maxim is synonymous with quality and is still supporting equipment that has been in service for over 40 years.



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### Reagan Equipment

Since 1946, Reagan Equipment Co. has serviced the needs of the marine and petroleum industries in Louisiana and Texas. Its marine division in Plaquemine, La., continues that great tradition with the winning combination of Guascor and John Deere marine engines, Reagan's Kilo-Pak generator sets and Pump-Pak for barges.



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### WEB-TEC

WEB-TEC chafe guard is a revolutionary new line protection system designed to protect ropes from the most abrasive marine environments. WEB-TEC is an extremely flexible, yet rugged wrap of high-tech urethane coated nylon and Kevlar fabrics. Designed to offer either fixed or sliding protection, WEB-TEC is available for any line diameter or length. WEB-TEC excels in protecting Spectra-based lines made from Ultra-High Molecular Weight Polyethylene (UHMWPE) fibers.



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### Marine Vibrations

Marine Vibrations' new Handheld Vibration Meter enables on-board personnel to take vibration measurements. The meter can give an indication of the vibration's severity even if the vibration is not physically evident. Utilizing this information the user has an early warning of an impending problem; they can monitor a vibration induced by a mechanical fault, a damaged coupling, or bent shaft. Corrective action can then be taken before eventual damage occurs.



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### Edgewater Machine & Fabricators

Edgewater Machine & Fabricators, Inc. has been a diversified manufacturer within the marine industry in excess of 40 years. They have the talent, equipment and facilities to engineer, prototype, rest and finish to specifications. Edgewater operates a quality assurance system with rigid adherence to the MIL-145208A standards for quality and excellence, assuring compliance to all customer specifications.



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### Marlow Ropes

Marlow Ropes, an approved ISO 9001 company, are worldwide leaders in pioneering the use of specialist fibers and rope constructions for the marine and offshore industries. Their success is based on technical knowledge, understanding the application requirement and satisfying the user needs. This ensures that Marlow products are used with confidence in diverse and demanding markets.



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### BAE Systems

BAE Systems/Marine Products is committed to supplying the marine industry with quality marine windows, wipers, clearview screens, doors, hatches and scuttles. They specialize in custom made windows of bronze, aluminum and stainless steel frames with heated, non-heated, laminated and ballistic glass.



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### JGB

JGB supplies every style of industrial, hydraulic and stainless steel braided metal hose and fittings to the commercial business sector. Since 1977, JGB has been a leading supplier of hoses and hose assemblies for commercial and military applications throughout the world.



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### William E. Williams

The Williams Emergency Shut-Off Valves (ESOV) are utilized in major refineries, petrochemical plants, dockside marine installations, fuel storage terminals, pipeline distributions, and offshore rigs throughout the world. They are recognized for their quality and dependability. In addition to the basic ESOV, Williams offers six modified emergency valve systems: Pneumatic actuated, Nema-7 Solenoid, High Pressure switch, Temperature Sensitive, High Level Shut-Off and Gas Overpressure Shut-Off.



Circle No. 126

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### Desmond-Stephan

Desmond-Stephan's Swirl-Off is a tool that can remove paint, rust, scale and other hard coatings from almost any hard surface. The Swirl-Off tool gives the best performance when a disc sander with speeds from 1500 to 4000 is used. Features for this tool include: built-in safety guard, balanced design for easy operation, operates underwater, environmentally safe, fits 5/8 in. - 11 shaft, no lubrication or maintenance required, drive adaptors for 3/8 in. or .5 in. drill chuck available and cutters for all models are interchangeable and self-cleaning.



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### Taylor Made

Environmental supplies marine HVAC solutions under the Cruisair and Marine Air Systems brand names. Product lines include self-contained seawater-cooled units and split-gas systems, as well as chilled-water systems. The company offers extensive applications engineering support and a worldwide service network.

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### Servomex

Servomex Co., Inc., announced a contract with Lyondell Chemie Nederland B.V. for 48 of its new Servomex 2200 paramagnetic oxygen transmitters. Each Servomex 2200 paramagnetic oxygen transmitter consists of a measurement transmitter and a separate microprocessor-based control unit capable of accepting inputs from on to six transmitters. The Servomex 2200 provides digital data communications to production control computers and has all the key features needed by current and projected process plant technology.



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[www.maritimereporterinfo.com](http://www.maritimereporterinfo.com)

### Hardigg Cases

Hardigg Cases has introduced a full line of rugged protective cases, called Storm Case, that has incorporated a proprietary latch design. The Storm Case line of injection-molded cases is designed to complement the line of larger shipping cases used extensively in the commercial electronics and marine marketplace. The line was developed in response to customer request for a series of more compact, equally durable cases for smaller equipment.



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### C M R

C M R's Clarine Marine Rack 101 is a completely centralized, self-contained small-ship monitoring/alarm system. It mounts flush in wheelhouse console, which features a display for main monitoring functions, complete with a 12 in. multi-page LCD screen, integrated logic, black box function to record monitored events. It has rugged design for harsh environments, and utilizes CAN-Open high-speed network for local and networked monitoring, providing most efficient use of data and space.



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### Superbolt

The new edition of Superbolt's "Solutions to Bolting Problems" catalog is now available. The catalog contains technical information on mechanical stud/bolt tensioners including new High Temperature designs, updated installation and removal procedure and many application examples. Superbolt products retrofit your existing nuts and bolts and require only hand torque wrenches to tension bolts tighter than any other method.



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## SMI: Helping to Spread British Marine Technology Worldwide

(Continued from page 51)

for British firms goes well beyond putting on a good show. We also take groups of companies on Trade Missions to visit potential customers on their home turf. The concept of doing group missions to overseas customers is an ideal one for small companies wishing to enter a market for the first time and start the process of building relationships before they go to the expense of a full sales trip or exhibition presence.

The Society also undertakes more traditional methods of marketing its members' products and services, with the publication of an annual directory containing information on members interspersed with articles on the state of the industry.

However, whereas the Directory is a much sought after reference tool, the industry now demands a more direct and up to date method of procuring equipment, and this summer saw the launch of our new web portal [www.maritimeindustries.org](http://www.maritimeindustries.org) which provides an extremely functional approach for procurement personnel to search for marine equipment — including the ability to find quickly the technical information they require. Once the desired equipment or service has been selected they can email from the site to the equipment supplier to receive more information, a quotation, etc. The fact that this web portal also acts as a comprehensive information resource for anyone involved with our five sectors is an added bonus for the visitor.

While so far I have discussed the promotional efforts we undertake on behalf of member companies, I must also stress that we have a responsibility to the industry as a whole: we constantly research information and ensure it is collated and disseminated to as wide an audience as possible. This work can range from producing indices on the size and economic effect of our sectors to inform government, the media and corporate analysts to specific original research on potential markets for members' products and services. The demand for an authoritative independent source for such information has led to the decision to employ a Director of Research to the Society's staff this August to spearhead our work in this area.

An area of increasing relevance, which cuts across all our sectors, is the environment. The Society of Maritime Industries has under its umbrella the British Oil Spill Control Association (BOSCA), which was launched in order to coordinate actions of companies in oil spill shoreline clean-up and has since developed into an association which represents all forms of oil spill prevention and remediation. Through BOSCA, the Society is now instrumental in the setting of standards for the sector and

responsible for running the independent accreditation scheme for oil spill contractors, with the support and sponsorship of the regulatory environmental authorities in the U.K.

To conclude this brief tour of the Society's work on behalf of its members, I must not forget the important role we

perform as the conduit by which businesses in our sector can lobby government on issues, which affect the competitiveness of the industry. (Although increasingly we find we need to keep one eye on the deliberations of the European Commission as well.)

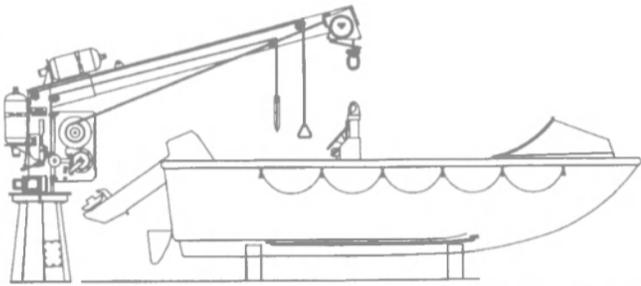
This function is in fact the second key

aim in our strategic plan, a reflection of its importance to a trade association such as ours. Put simply, our two primary aims of promotion and lobbying are all about 'opening doors' so that our member companies can do the business with a range of products and services that we offer.

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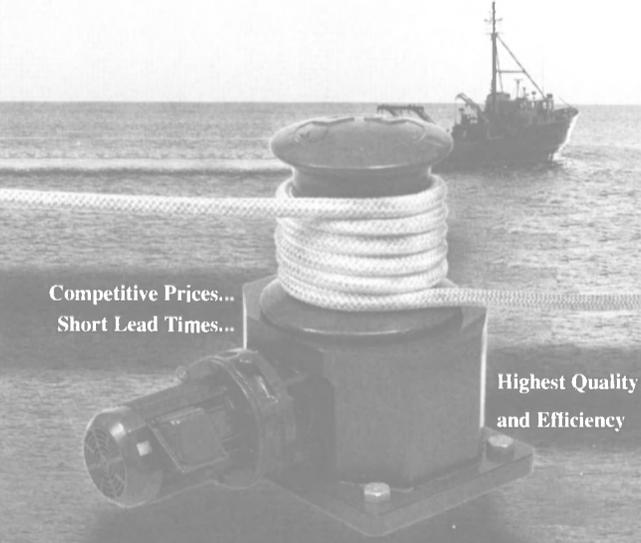
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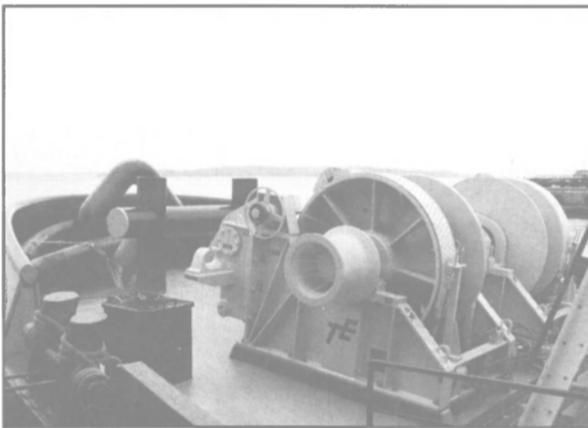
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# BUYER'S DIRECTORY

This directory section is an editorial feature published in every issue for the convenience of the readers of MARITIME REPORTER. A quick-reference readers' guide, it includes the names and addresses of the world's leading manufacturers and suppliers of all types of marine machinery, equipment, supplies and services. A listing is provided, at no cost for one year in all issues, only to companies with continuing advertising programs in this publication, whether an advertisement appears in every issue or not. Because it is an editorial service, unpaid and not part of the advertisers contract, MR assumes no responsibility for errors. If you are interested in having your company listed in this Buyer's Directory Section, contact Mike Lowe at (212) 477-6700.

## ABS/USCG APPROVED VALVES

Norrisal PO Box 40525 Houston, TX 77240

## ACTUATORS, VALVE

J.A. Moody Equipment Specialist, Inc., 3223 Phoenixville Pike, Malvern, Pa 19355, (800) 355-9810 (Northeast); 809 Pecan Forest Court, Chesapeake, VA 23322, (757) 641-0080 (Southeast); 2130 7th Ave. W, Seattle, WA 98119, (206) 691-1000 (West); www.jamesi.com

## AIR CONDITIONING AND REFRIGERATION

Adrick Marine, 81 Mahan St., W. Babylon NY 11758  
Bailey Refrigeration, 4986-1 Euclid Road, Virginia Beach, VA 23462  
Cospolich Refrigeration, 14695 River Highway 61, Norco LA 70079  
Flagship Marine 2427 SE Dixie Highway, Stuart, FL 34996  
Port-A-Cool, P.O. Box 2108, Center, TX 75935  
Stork Bronswerk Inc., 3755 C. Boul. Matte, Brossard, Quebec Canada J4Y2P4  
Taylor Made Environmental PO Box 15299 Richmond, VA 23227

## AIRHORNS/SIGNALING EQUIPMENT

Kahlenberg Marine, P.O. Box 358, Two Rivers, WI 54241

## ALARMS, FACTORY MUTUAL APPROVED

NREC 1701 Engineers Rd Belle Chase, LA 70037

SELCO 353 A Asbury Commons Dr., Atlanta, GA 30338

## ALUMINUM BOATS

Island Boats 6806 Highway 90 East New Ibera LA 70560  
Sea Ark Marine PO Box 210 Monticello AR 71655-0210  
William E Munson Co., 18130 Sunset Way, Edmonds WA 98026

## ANCHORS AND CHAINS

Crandal Dry Dock Engineers Inc., P.O. B. 505804, Chelsea, MA 02150  
K. Wortelboer Jr. B.V. P.O. Box 5003, 3008 AA Rotterdam, Netherlands  
Washington Chain Inc., Box 3645, Seattle, WA 98124

## AUTOMATED SELF UNLOADING

Seabulk Systems Inc., Suite 100, 3751 Shell Road, Richmond, British Columbia, CANADA V6X2W2

## AUTOPILOT SYSTEMS

Beier Radio1990 Industrial Ave Harvey, LA 70058  
ComNav Marine Ltd., #15-13511 Crestwood Place, Richmond BC V6V 2G1  
Mackay Communications, 2721 Discovery Dr., Raleigh, N.C. 27616-1851

## BALLAST

Ballast Technologies, 4620 S. Coach Dr., #5714, Tucson, AZ  
Redland Genstar Inc., Executive Plaza IV, Hunt Valley, MD 10912-1031

## BEARING—Rubber, Metallic, Non-Metallic

American Babbit Bearing PO Box 3069 Rt 2 Huntington, WV 25702  
Craft Bearing 2506 58th St Hampton, VA 23661  
Kahlenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241  
Orkot Composites, 2535 Prairie Rd., Unit D, Eugene, OR 97402  
Schro Turbomachinery 132 Gilbertville rd PO Box 889 Ware, Mass 01062  
Thornd Bearings Inc., 3225 Mainway, Burlington, Ont., CANADA L7M 1A6  
Vesco Plastics, P.O. B. 40647, Cleveland 2022 SOUTH AFRICA

## BILGE SYSTEMS

Fast Systems 14040 Santa Fe Trail Dr. Lenexa, Kansas 66215-1284

## BLOCKS & RIGGING

Skocum, P.O. Box 280, Hubbard, OR 97032

## BOILERS (HEAT RECOVERY)

Deltek LLC 2805 Northwest Blvd Ste 150 Plymouth MN 55441 USA

## BOATBUILDER

Alien Marine PO Box 1049 Sitka, AK 99835  
Hike Metal, Box 698, Wheatley, ON Canada NCP 2P0  
Kivchak Marine, 469 NW Bowdon Pl., Seattle WA 98107  
Sea Ark Marine PO Box 210 Monticello AR 71655-0210  
Washburn Doughty, P.O. Box 296, E. Boothbay ME 04544

## BOLLARDS

Maritime International, 100 E. Vermilion Street #212, Lafayette, LA 70501

## BROKERS

Marcon International, Inc., P.O. Box 1170, Coupeville, WA 8239-1170  
Mowbray's Tug & Barge Sales Corp., 35 De Hart St., Morrisstown NJ 07960

## BRUSHES

Sohre Turbomachinery Inc 132 Gilbertville Rd PO Box 889 Ware, MA 01062-0889

## BULKHEAD SEALS/PANELS

CSD North America, 880 Candia Rd., Unit 10, Manchester, NH 03109  
Thermax, 15006 Shaw Rd., Tampa, FL 33625-5500  
Thermax 3115 Range Rd Temple TX 76501

## BUOYS

Datrex, P.O. Box 1150, Kinder, LA 70648

Urethane Products 9076 Rosecrans Ave Bellflower, CA 90706

## BUTTERFLY VALVES

Norrisal PO Box 40525 Houston, TX 77240

## CABLE TRANSIT SYSTEMS

CSD North America, 880 Candia Rd., Unit 10, Manchester, NH 03109

## CALIBRATIONS

Standard Calibrations Inc., 908 A Ventures Way, Chesapeake VA 23320

## CAD/CAM SYSTEMS

Albacore Research, 4196 Kashtan Place, Victoria, B.C. Canada V8X4L7  
Autoshop Systems Corp., #403, 611 Alexander St., Vancouver, BC Canada V6A1E  
Creative Systems, Inc., P.O. B. 1910, Port Townsend WA 98368  
Kockum Computer Systems AB, PO Box 50555, S-202 15 Malmo SWEDEN  
Scientific Manne Services, Inc., 101 State Pl., Suite F, Escondido, CA 92029  
Ship Motion Associates, 10 Danforth St., Portland, ME 04101-4567

## CAP TREADS

Washington Aluminum, 1330 Knecht Ave., Baltimore, MD 21229

## CAPSTANS

G. J. Wortelboer Jr. B.V. P.O.B. 5003, 3008 AA Rotterdam, Netherlands  
Superior Lidgerwood Mundy, 1101 John Ave., Superior, WI 54880

## CARGO MONITORING & CONTROL SYSTEM

Hermatic Inc., 4522 Center St., Deerpark, TX 77536

## CAST IRON REPAIR

In-Place Machining 1929 N. Buffum St., Milwaukee, WI 53212

## CHAINS

Crandal Drydock Engineers PO Box 505804 Chelsea, MA 02150

Washington Chain, P.O. Box 3645, Seattle, WA 98124

## CHEMICALS

Uniservice Americas 57174 Hardin Rd. Slidell, LA 70461

## CLASSIFICATION SOCIETY

Lloyds Register 71 Fenchurch St London EC3M 4BS

## CNC PLATE CUTTING

Advanced Fabricating Inc PO Box 3721 Galveston, TX 77552

## COATINGS / CORROSION CONTROL / PAINT

American Safety Technologies 565 Eagle Rock Ave Roland NJ 07068  
Anker Marine Paints, 21 Charles Street, Westport, CT 06880  
Aqua-Dyne, 3620 W. 11th St., Houston, TX 77008  
Chesapeake Specialties Products, 5055 North Points Blvd, Baltimore Md 21219  
Chugoku Marine Paints PO Box 73 47932H Finaart The Netherlands  
DeFelsko Corporation, 802 Proctor Avenue, PO Box 676, Ogdensburg NY 13669  
Esgard, Inc., P.O. Drawer 2698, Lafayette, LA 70502  
Ferro Corp., 1301 North Flora St., Plymouth, IN 46563  
Flow International corp., 23500 64th Ave south Kent WA 98032  
Jameson Distrib., P.O. Box 348, Jamestown, RI 02835  
Jouin Paints Inc., 1401 Severn St., Baltimore MD 21230  
Mascoat Products, 10890 Alcott Unit 102 Houston, TX 77084  
Nace Intl., 1440 South Creek Dr., Houston, TX 77043  
Resto Motive Laboralones PO Box 1335 Morrisstown, NJ 07962-1235  
Sherwin Williams, 101 Prospect Avenue, Cleveland OH 44115  
Wassler High Tech Coatings, 8041 South 228th St., Kent, WA 98032

## COMMUNICATIONS SERVICE

Comsat Maritime Services, 6560 Rock Spring Drive, Bethesda, MD 20817-1146  
Marile Marine Communications, 16 E. 41st St., NY, NY 10017  
Maritime Telecommunications Networks, Inc., 3044 N Commerce Pkwy Miramar FL 33025

## COMPOSITE PILINGS

Composite Composites 618 Lambsons Lane New Castle DE 19720

## COMPOSITE FENDERING SYSTEM

Harcore Composites 618 Lambsons Lane New Castle DE 19720

## COMPOUNDS

Philadelphia Resins, P.O. Box 309, Montgomeryville, PA 18936

## COMPRESSORS

Hatlapa Uetersener Maschinenfabrik Tornescher WEG 5-7 D-25436 Uetersen, Germany

## COMPRESSOR PARTS

CMP Corporation, P.O. Box 15199, Oklahoma City, OK 73155

## COMPUTER / COMPUTER SOFTWARE

Autoshop Systems Corp., #403, 611 Alexander St., Vancouver, BC CANADA V6A1E  
Creative Systems, Inc., P.O. B. 1910, Port Townsend WA 98368  
Fleet Technology, 311 Leggett Dr., Karata, Ontario, Canada K2K 1Z8  
Lloyd's Register, 100 Leadenhall St., London, England EC3A 3BP  
MIL Systems, 200-1150 Morrison Drive, Ottawa, Ontario K2H 8S9  
Navigator PC, Plantation Technology Park, 6601 N.W. 14th St., Suite 4, Plantation, FL 33313  
Ship Motion Associates, 10 Danforth St., Portland, ME 04101

## COMMUNICATIONS

Beier Radio1990 Industrial Ave Harvey, LA 70058  
Japan Radio, 1011 SW Kicklatay Way, Big B, Suite 100, Seattle WA 98134  
Mackay Comm Inc 2721 Discovery Dr Raleigh NC 27616-18  
Rydex / An Inmarsat Ventures Co., 130-13111 Banier Place, Richmond, BC V6V2J1

## COMPUTER SOFTWARE SYSTEMS

Autoshop Systems Suite 312-611 Alexander St Vancouver BC V6A1E1

Spec Tec Professor Kolth's Vey 1366 Lysaker Norway

## CONSOLE - GMDSS

Furuno USA, Inc., 4400 NW Pacific Rim Blvd., Camas, WA 98607  
Japan Radio, 1011 SW Kicklatay Way, Big B, Suite 100, Seattle WA 98134  
Mackay Communications, 2721 Discovery Dr., Raleigh, N.C. 27616-1851

## CONSULTANTS

Caplain R.J. Underhill & Associates, P.O. Box 1030 Groves, TX 77619  
Elliot Bay Design Group 5301 Shishole Ave NW Ste 200 Seattle WA 98107  
Hornbower Marine PO Box 112476 Campbell CA 95001

## CONTAINER LIFT SPREADERS

Tandemoc Inc. 824 Highway 101, Havelock, NC 28532

## CONTROL SYSTEM - Monitoring/Steering

Beier Radio1990 Industrial Ave Harvey, LA 70058  
Electronic Marine Systems, 800 Ferndale Pl., Rahway, NJ 07065  
Governor Control Systems, 3190 S W 4th Ave., Ft. Lauderdale, FL 33315  
G.R. Bowler 2261 Lake Rd, Ontario, NY 14519  
Kobelt Manufacturing Co., Ltd., 8238-129 street, Surrey, B.C. V3W0A6  
Kockum Sonics, Inc., 819 Veterans Blvd., Suite 201, Kenner, LA 70068  
MMC International, 60 Imp Dr, Inwood NY 11096  
Motor Services Hugo Stamp, 3190 S W Lauderdale, FL 33315  
Prime Mover Controls 3600 Gilmore Way Burnaby CANADA V5G 4R8  
Scientific Manne Services, Inc., 101 State Pl., Suite N, Escondido, CA 92029  
Stork Kwant, P.O. Box 23, 8600 AA Snelke, Netherlands

## CORROSION CONTROL

Spectrum Trading 108-B Oak St Alpharetta GA 30004  
Gardner Denver Water Jetting Systems 8607 Emmert Rd Suite 100 Houston, TX 77040  
Ultra Strip 3515 SE Lionel Terrace Staurt, FL 34996

## COULERS - Tug & Barge

Intercontinental Engineering, P.O. Box 9055, Kansas City, MO 64168

## COUPLINGS

Acomarin International Corp., 4710 Habana Ave., Tampa FL 33614  
American Vulkan, 2525 Dundee Rd., Winter Haven, FL 33884  
American Vulkan, P.O. Drawer 673, Winter Haven, FL 33882  
Centa Corp., 815 Black Hawk Dr., Westmont, IL 60559  
Geisinger, Hallwanger Landestr. 3, 5300 Hallwang, Salzburg, Austria  
Mackay Corporation, 200 Geisinger Drive, Battle Creek, MI 49015  
Lo-Rez Vibration Control, Ltd., 186 West 8th Ave., Vancouver, B.C. V5Y1N2  
Mapeco Products, 91 Willenbrook Rd, Unit B, Oxford, CT 06478  
MMC Intl., 60 Imp Drive, Inwood, NY 11096

## CRANE -HOIST-DERRICK-WHIRLEYS

Bsso Marine Co. P.O. Box 4113, New Orleans, LA 70178  
E. Crane 241 Executive Dr #3 Manon OH 43302  
Edgewater Machine & Fabricators, P.O. Box 358, Edgewater, FL 32132-0358  
Holly Host Corp., P.O. Box 86, St. Clair Shores, MI 48080-0086  
Liebherr-Werk Nenzing GmbH PO Box 10 46710, Nenzing Austria  
Mi-Jack Products, 3111 West 167th Street, Hazel Crest, IL 60429  
Westmont Industries, 10805 Painter Ave, Santa Fe Springs, CA 90670

## CRANKSHAFT DEFLECTION ANALYZER

Pnsmat Teknik AB Sweden, www.pnsmateknik.com

## CRANKSHAFT GRINDING

Goltens - New York Corp., 160 Van Brunt St., Brooklyn, NY 11231

## CRANKSHAFT REPAIR

Goltens - New York Corp., 160 Van Brunt St., Brooklyn, NY 11231

In-Place Machining 1929 N. Buffum St Milwaukee WI 53212

Walz & Krenzer 91 Willenbrook Rd., Oxford, CT 06478

## CUTTING AND WELDING MACHINES

Bug O Systems, Inc., 3001 W. Carson St., Pittsburgh, PA 15204

## DAMPERS

Geisinger Corporation, 200 Geisinger Drive, Battle Creek, MI 49015

## DATA RECORDERS

L3 Communications, PO Box 3041 Sarasota FL 34230-3041

## DECKING & FLOORING

E H O'Neill, 1405 Chippendale Rd., Lutherville, MD 21093

## DECK MACHINERY — Spare Parts & Repair

Edgewater Machine & Fabricators, P.O. Box 358, Edgewater, FL 32132-0358  
Hatapa Uetersener Maschinenfabrik Tornescher WEG 5-7 D-25436 Uetersen, Germany  
Intercontinental Engineering, P.O. Box 9055, Kansas City, MO 64168  
Lanec, 5827 Production Way Langley, B.C. V3A 4N5 Canada  
Markey Machinery, P.O. Box 24788, Seattle WA 98124  
Rapp Hydema, 4433 27th Avenue West, Seattle WA 98199  
Seabulk Systems 3851 Shell Rd Ste 200 Richmond, BC Canada V6X 2W2  
Skookum, Inc., P.O. Box 280, Hubbard, OR 97032  
Smith Berger Marine Inc., 7915 10th Ave. S., Seattle, WA 98108  
Superior Lidgerwood-Mundy, 1101 John Ave., Superior, WI 54880  
Timberland Equipment Ltd & Almon Johnson, 458 Industrial Avenue, Woodstock, ON N4S7Z2 Canada  
W.W. Patterson 3 Riverside Rd Pittsburg PA 15233

## DESALINATION - REVERSE OSMOSIS

G E T., Inc., 3135 Golden Avenue, Long Beach, CA 90806  
Pall Rochem, 5775 Rio Vista Drive, Clearwater, FL33760-3114  
Reverse Osmosis of South Florida 12301 SW 133 Court, Miami, FL 33186

## DESIGN CONSULTING

Fleet Technologies, 311 Leggett Dr., Karata, Ont, K2K 1Z8 Canada

## DIESEL CYLINDER INDICATORS

Kiene Diesel, 325 S. Fairbanks St., Addison, IL 60101

## DIESEL ENGINE ANALYZER

FCS, Inc., 22 Main Street, Centerbrook, CT 06409

## DIESEL ENGINE — Spare Parts & Repair

Caterpillar, Inc., Engine Div., P.O. Box 610, Mossville, IL 61552-0610  
Deutz Canada Inc., 4420 Garand St., Montreal, Que H4R 2A3  
GE Marine Engines 1 Neuman Way Cincinnati, OH 45215  
Giro Engineering Limited, Talsman, Duncan Road Park Gate, Southampton, Hants SO31 7GA England  
Goltens Marine, 322 Broad Ave., Wilmington, CA 90744  
H.P. International, Inc., 3812 W Lrnebaugh Ave., Tampa, FL 33624  
Industrial Estate, New Territories, HONG KONG  
MAN B&W Diesel AG, Seidlichstrasse 1, D-86153 Augsburg 1, GERMANY  
MAN B&W Diesel AG, Tegelholmsgade 41, DK-2450 Copenhagen SV, DENMARK  
MAN B&W Diesel, 17 State St., New York, NY 10004  
Marine Exhaust Systems of Alabama, PO Box 698, 757Nichols Ave., Fairhope, AL 36533  
Marine Turbo & Diesel Inc 1090 7th St Richmond CA 94801  
Mansco USA, Inc., 100 Davidson Ave., Somerset, NJ 08873  
Motor Services AB, Box 2115, S-144 04 Roninge, SWEDEN  
Motor Services Hugo Stamp, 3190 S.W. 4th Ave., Ft. Lauderdale, FL 33315  
NREC 1701 Engineers Rd Belle Chase LA 70037  
Reagan Equipment, 2550 BelleChase Hwy, Gretna, LA 70054  
Rolls Royce Commercial Marine Houston 10255 Richmond Ave  
Scardina Americas Bkg, 502 Empire St., Greefield Park, J4V1V7 Canada  
Wartsila Diesel, 201 Defense Highway, Annapolis, MD 21401

## DIESEL ENGINE OVERHAUL

Goltens - NY Corp., 160 Van Brunt St., Brooklyn, NY 11231  
Governor Control Systems 3190 W 4th Ave Ft Lauderdale FL 33315  
Marine Turbo & Diesel Inc 1090 7th St Richmond CA 94801

## DIESEL FUEL DECONTAMINATION (www.bunkerbuyer.com)

Algae X Intl PO Box 4011 Ft Myers Beach FL 33932  
PRI 3750 Hacienda Blvd., Suite A Davae, FL 33314

## DIGITAL TORQUE MEETER SYSTEMS

Instruments, Computers & Controls 78 Londonderry Tpke Hooksett NH 03106

## DISTRESS SIGNALS

Datrex Inc., P.O. Box 1150, Kinder, LA 70648

## DIVING & SALVAGE

Bisso Manne Co. P.O. Box 4113, New Orleans, LA 70178

H.J. Mearhue, P.O. Box 23123, New Orleans LA 70183

## DOCK FENDERING SYSTEMS

Plastic Plings Inc., 1485 South Willow Ave., Rialto, CA 92376

## DOORS - MARINE & INDUSTRIAL

Juniper Intl, 72-15 Metropolitan Ave., Middle Village, NY 11379

Manly Marine, PO Box 86788, N. Vancouver B.C. Canada V7L 4L3

Mapeco, Inc., 90 Forest Ave., Locust Valley, NY 11560

Waiz & Krenzer, 91 Willenbrook Rd., Unit B4, Oxford, CT 06478

## DRIVES

Allied Systems 2300 Oregon St Sherwood OR 97140

## DRUG TEST KITS

Sun State Specialty K-9s, Inc 1500 Beville Road, Daytona Beach, FL 32114

## DRY DOCKS-Design

Crandal Dry Dock Engineers Inc., P.O. Box 505804, Chelsea, MA 02150

Heger Dry Dock Engineers, Inc., 13 Water St., Holliston, MA 01746

## DYNAMIC POSITIONING & AUTOMATION

Alstom Power Conversion 3 Ave Des Trois Chenes 90018 Bellort Cedex France

## ELECTRICAL EQUIPMENT

Callenberg Equipment 2010 N Miami Ave, Miami, FL 33127

MMC International, 60 Imp Dr, Inwood NY 11096

## ELECTRONIC INFORMATION SUPPORT

Scandinavian Micro Systems, P.O. Box 155, N-1411, Kolboten, NORWAY

Scientific Marine Svcs., 101 State Pl., Ste. P, Escondido, CA 92029

## ELECTRICAL INSTRUMENTS

Seiko USA, 2508 Lake Brook Ct., Atlanta, GA 30360

## ELECTRONIC CHARTS

C-Map Commercial 133 Falmouth Rd., Mashpee, MA 02649  
Manne Electronics  
Edgewater Machine & Fabricators, P.O. Box 358, Edgewater, FL 32132-0358  
NOAA Office of Coast Survey, 1315 East-West Hwy, Silver Spring, MD 20910  
Solutions, 1522 Crabapple Cove, Jacksonville, FL 32225

## ELECTRONICS

C-MAP, P.O. Box 212, 4371 Egersund Norway  
Furuno USA, Inc., 4400 NW Pacific Rim Blvd., Camas, WA 98607  
Sure Seal Connections, 3951 South Plaza Dr, Suite 240, Santa Ana, CA 92704  
Standard Horizon, 10900 Walker St., Cypress, CA 90630

## MARINE CRANES

Liebherr-Werk Nenzing GMBH, P.O. Box A6710, Nenzing, Austria

## MARINE DECKING & FLOORING

E.H. O'Neill, 1405 Chippendale Rd., Lutherville, MD 21093  
Flexible Decking, 2708 N. Australian Ave. Ste. 9, West Palm Beach, FL 33407  
Hopeman Brothers, Inc., P.O. Box 820, Waynesboro, VA 22980  
Insulations, Inc., Rt. 5, 12360 Leisure Road, Baton Rouge, LA 70807  
Slipnot Safety Flooring WS Molnar Co. 2545 Beavfall St., Detroit, MI 48207

## MARINE ELECTRONICS

ACR Electronics, Inc., 5757 Ravenswood Rd., P.O. Box 5247, Ft. Lauderdale, FL 33310-5247  
Beier Radio, 1990 Industrial Ave Harvey, LA 70058  
Callenberg Engineering 2010 N. Miami Ave, Miami, FL 33127  
Furuno USA, Inc., 4400 NW Pacific Rim Blvd., Camas, WA 98607  
GMT Electronics, 171 Main Street, South River, NJ 08892  
JRC, 1011 SW Kickikilaway Bldg B, Suite 100, Seattle WA 98134  
Kockum Sonics, Inc., 933 Industry Rd., Ste105, Kenner, LA 70062  
Leica Navigation, 23868 Hawthorne Blvd., Torrance CA 90505-5908  
Marine Electronic Solutions, 1522 Crabapple Cove, Jacksonville, FL 32225  
Raytheon Marine GmbH, High Seas Products, Postfach 1166 D-24100 Kiel, Germany  
(Distributor for Raytheon) Klein Navigation, 11 Klein Drive, Salem NH 03079  
Saab Marine Electronics AB, Box 13045, 402 5Goleborg, SWEDEN  
Scandinavian Micro Systems, P.O. Box 155, N-1411, Kolboton, NORWAY  
Scientific Marine Services, Inc., 101 State Pl., Suite F, Escondido, CA 92029  
Standard Horizon, 10900 Walker St., Cypress, CA 90630

## MARINE ENGINEERING

Elliot Bay Design Group, 5301 Shilshole Ave. NW, Ste. 200, Seattle, WA 98107

## MARINE EQUIPMENT

Ballic Spare Services Ltd Astronodomow St., 80-299 Gdansk, Poland  
Byrne Rice & Turner 1172 Camp St New Orleans, LA 70130  
Commercial & Marine Products, 3924 Forest Dr., #11, Columbia, SC 29204  
Plastic Plings Inc., 1485 South Willow Ave., Riatio, CA 92376  
Scardana Americas Bkg., 502 Empire St., Montreal, Greenfield Park, J4V1V7  
Superior Lidgenwood-Mundy, 1101 John Ave., Superior, WI 54880  
Waterman Supply, P.O.Box 596, Wilmington, CA 90748

## MARINE HARDWARE

HMS Marine Hardware, 333 W.Merrick Road, Valley Stream, NY 11580-5219

## MARINE MANAGEMENT

Hornblower Marine, PO Box 112476, Campbell, CA 95001

## MARINE RADIOS

Standard Horizon, 10900 Walker St., Cypress, CA 90630

## MARINE SERVICES

Conam Inspector, 192 International Blvd., Glendale Heights, IL 60139

## MARINE SHAFING

Kahlenberg Bros, P.O. Box 358, Two Rivers, WI 54241

## MARINE THERMAL IMAGER

Arion International 720 Glen Eagle Drive #100 Winter Springs, FL 32708

## MARITIME TRAINING & SCHOOLS

Marine Safety Intl., Marine Terminal Laguardia Airport, NY 11371

## METAL ALLOY DISTRIBUTORS

Diversified Metals 49 Main St Monson, MA 01057

## METERS

Selco USA, 2508 Lakebrook Ct., Atlanta, GA 30360

## MONITORING SYSTEMS

GR Bowler 2261 Lake Rd Ontario, NY 14519  
Mackay Communications 2721 Discovery Dr., Raleigh, N.C. 27616-1851

## MOORING LINES

Bayar Faser Building F18 DV Marktg Monfort 41538 Dormagen, Germany  
Samson Rope Technologies 2050 Thonon St Ferndale, WA 98248

## MOORAGE FACILITY

Sea Ark Marine, PO Box 210, Monticello AR 71655-0210  
Washington North Tongue Point 1300 Dexter Ave., N. Ste 205 Seattle, WA 9810

## MOTOR PROTECTION

Marine Safe Electronics, 261 Millway Ave. #12, Concord Ontario L4K 4K9

## MOUNTING SYSTEMS

Lo-Rez Vibration Control, Ltd., 186 W 8th Ave., Vancouver B.C. Canada V5Y 1N2  
Machine Support 1932 Mill Pond Dr Chesapeake, VA 23320

## NAVAL ARCHITECTS, MARINE ENGINEERS

A.K. Suda, Inc., 3004 19th St., Metairie, LA 70002-4989  
Advanced Marine Enterprises, 1725 Jefferson Davis Hwy, Arlington, VA 22202  
Alan C. McCure Associates, Inc., 2600 South Gessner, Houston, TX 77063  
Band, Lavis, & Associates, 900 Ritchie Hwy, Suite 203, Severna Park, MD 21146  
Bay Engineering, 253 N. First Ave., Sturgeon Bay, WI 54235  
C. Baxler & Associates, P.O. Box 9006, Mobile, AL 36609  
CDI Marine Co., 9550 Regency Square Blvd, Ste. 400, Jacksonville, FL 3222  
CT Marine, 56 Crooked Trail, Rowayton, CT 06893

## Cunningham & Walker, 1762 Providence Hollow Lane, Jacksonville, FL 32223

DeJong & Lebet, Inc., 1734 Emerson Street, Jacksonville, FL 32207  
Designers & Planners, 2120 Washington Blvd, Ste.200, Arlington, VA 22204  
Elliot Bay Design Group 5301 Shilshole Ave NW Ste 200 Seattle WA 98107

## Fleet Technology, 311 Leggett Dr., Karata, Ontario Canada K2K 1Z8

George G. Sharp, Inc., 100 Church St., New York, NY 10007  
Gibbs & Cox, Inc., 50 West 23rd St., New York, NY 10010

## Guido Perla & Assoc., 720 3rd Ave., Ste. 1200, Seattle, WA 98104

James S. Krogen, 799 Brickell Plaza Ste. 701, Miami, FL 33131  
Jamestown Marine Service, Marine Science & Tech Center 1084 Shennecossett Rd  
Groton, CT 06340

## John J. McMullen Associates, Inc., 4300 King St., Suite 400, Alexander, VA 22302

John W. Gilbert & Assoc., Inc., 199 State St., Boston, MA 02109  
Kvaerner Masa Marine Inc., 201 Defense Highway, Suite 202, Annapolis, MD 21401

## M. Rosenblatt & Son, Inc., 2341 Jefferson Davis Hwy, Arlington, VA 22202

Marine Design & Operations, Inc., 225 E. 1st Ave., Roselle, NJ 07203  
Maritech, Scauditt, Day Row, Newmarket, NH 03857

## Maritime Design, 13000 Sawgrass Village Circle, Pomie Vedra Beach, FL 32082

MCA Engineers, Inc., 2960 Airway Ave., #A-103, Costa Mesa, CA 92626  
McEroy Machine & Mfg Co., Inc., P.O. Box 4454, Bixby, MS 39535-4454

## MH Systems 10951 Sorrento Valley R042FSan Diego CA 92121

MIL Systems, 200-1150 Morrison Drive, Ottawa, Ontario K2H 8S9  
Nautical Designs, Inc. 2101 S. Andrews Ave, Suite 202, Fort Lauderdale FL 33316

## R.D. Jacobs & Associates, 11405 Main St., Roscoe, IL 61073

R.J. Mellusi & Co., 71 Hudson St., New York, NY 10013  
Sargent & Herkes, 225 Baronne St., Suite 1405, New Orleans LA 70112

## Scientific Marine Services, Inc., 101 State Pl., Suite F, Escondido, CA 92029

Sea School, 10812 Gandy Blvd., St. Petersburg, FL 33702  
Seaworthy Systems Inc., P.O. Box 985, Essex, CT 06426;

## The Glosten Assoc. Inc., 600 Mutual Life Bldg., 605 First Ave., Seattle, WA 98104

TMSCO, P. O. Box 91360, Mobile AL 36691  
Washburn Doughty P.O. Box 296, E. Boothbay, ME 04544

## NAV/COMM EQUIPMENT

C-Mac/Commercial, 133 Falmouth Rd., Mashpee, MA 02649  
C-Mac, P.O. Box 212 4371 Egersund Norway

## St. Johns, Newfoundland, Canada A1A 2G8

Electronic Marine Systems, 800 Ferndale Pl., Rahway, N.J. 07065  
Furuno USA, Inc., 4400 NW Pacific Rim Blvd., Camas, WA 98607

## Mackay Communications, 3651 Trust Dr., Raleigh, NC 27616

Scandinavian Micro Systems P.O. Box 155, N-1411, Kolboton, NORWAY  
Standard Communications P.O. Box 92151, Los Angeles, CA 90009

## Transas Marine USA, 19105 36th Ave. W. St. 101, Lynwood, WA8036

## NAVCOMM EQUIPMENT

Beier Radio 1990 Industrial Ave, Harvey LA 70058

## NAVIGATION

Comnav Marine Ltd, #15-13511 Crestwood Pl., Richmond, BC V6V2G1  
D&B Technologies, 1400 S.Orland Ave., Winter Park, FL 32789

## Kongsberg Maritime Ship Systems AS, PO Box 1009 3194, Horten, Norway

Transas Marine USA 19105 36th Ave West Ste 101 Lynwood, WA 98038

## NOISE & VIBRATION

Soundcoat 1 Burt Dr., Deer Park, NY 11729

## NOZZLES/NOZZLE SYSTEMS

Harrington Marine, 6720 124th Ave., Fenville, MI 49408  
NautiCAN Research and Develop., P.O. Box 428-115 Kelvin Grove Way, Lions Bay, BC  
V0N 2E0

## OFFSHORE MARINE CONSTRUCTION

Amfels 5177 Richmond Ave Ste 1065 Houston TX 77056

## OFFSHORE TOWING

Tidewater, 601 Poydras Street, New Orleans, LA 70130

## OIL—MARINE—ADDITIVES—TESTING

Exxon Mobil Oil Corporation, 3225 Gallows Road, Fairfax, VA 22037-0001

## OIL/WATER SEPARATORS

Alfa-Laval Separation, Inc., 955 Mearns Rd., Warminster, PA 18974-0556  
MMC International, 60 Inip Dr, Inwood NY 11096

## Sasakura Engineering, 7-32 Takeshima, 4-chomNishiyodogawa, KY, Osaka555, Japan

## PAINTS/ANTI-FOULANTS

Jotun Paints Inc, 1401 Severn St., Baltimore, MD 21230  
Wasser High Tech Coatings, 8041 South 228th St., Kent, WA 98032

## PAINT REMOVAL

Ultra Strip Systems 3515 SE Lirrel Terrace Stuart, FL 34996

## PARTS LOCATOR SERVICE

Inventory Locator Service 3965 Mendenhall Rd, Memphis, TN 38115

## PFD's (Personal Flotation Devices)

Stearn's Mfg Co. PO Box 1498 St Cloud, MN 56302-1498

## PHOTOLUMINESCENT PRODUCTS

Datex, P.O. Box 1150, Kinder, LA 1064

## PIPE FITTINGS/CUTTINGS/CONNECTING/ SYSTEMS

GS-Hydro U.S., 1395 Bluehills Ave.,Blomfield CT 06002  
Jesse Engineering, 5225 7th St. East., Tacoma, WA 98424

Neptune Research, 1685 Latham Rd., West Palm Beach, FL 33409  
Norma Products (U.S.) Inc. 31132  
Century Drive, Wixom, MI 48393

## PIPE LEAK REPAIR

Indumar Products Inc 2500 Tanglewilde Suite 260 Houston TX 77063  
CSD North America 88c Canada Rd, Manchester, NH 03109

## POLLUTION CONTROL PRODUCTS

Enecon Corporation, 125 Baylis Rd., Melville, NY 11747-3900

## PORTABLE FOAM APPLICATORS

IMSSCO Corporation, 2040 Harbor Island Drive, Suite 201 A, San Diego,CA 92101

## PORTABLE VENTILATORS

Americ Corp 1910 E. Davon Ave Elk Grove Village, IL 60007

## PORT DEVELOPMENT

RTM Star Center, 2 W.Dixie Hwy, Dania, FL 33004  
Saskura Engineering, 7-32 Takeshima, 4-chomeNishiyodogawa, KY, Osaka555, Japan

## PRECISION FLAME CUTTING/SAWING

Ronson Technical, 2146 B Flintstone Dr., Tucker, GA 30085

## PRESSURE INDICATORS

Lehman & Michaels GmbH & Co. kg  
Marlow Ring 4, D-22525 Hamburg Germany

## PREVENTATIVE MAINTENANCE

Marine Safe Electronics 37 Staffern Dr Concord Ontario L4K 242

## PROPELLERS—Repairs

Kahlenberg Bros, P.O. Box 358, Two Rivers, WI 54241  
Rice Propeller, Av Rice Espinoza No. 88, Col. Benito Juarez, Mazatlan, Sinaloa, Mexico  
82180

## PROPULSION EQUIPMENT

ABB Drives Inc., P.O. Box 372, Milwaukee, WI 53201-0372  
ABB Industry Oyj, P.O. Box 185, 00381 Helsinki, FINLAND

ABB TURBOCHARGER, INC., 1460 Livingston Avenue, North Brunswick, NJ 08902  
Avtron Mfg 7900 E Pleasant Valley Rd Independencia OH 44131

Brunvoll A/S, P.O. Box 370, N-6401, Molde, Norway  
Caterpillar, 100 NE Adams Street, Peoria, IL 61629-2320

Centa Corp., 8185 Cass Ave., Darien, IL 60561  
Fincantieri, Diesel Engines Div—GMT, Bagnoli della Rosandra 3334, Trieste, ITALY

Geislinger Corporation, 200 Geislinger Drive, Battle Creek, MI 49015  
Goltens Wortwide, 160 VanBrunt St., Brooklyn, NY 11231

Harbormaster Marine Inc., 31777 Industrial Rd., Livonia, MI 48150  
Harrington Marine, 6720 124th Ave., Fenville, MI 49408

Jan Verhaar Omega Thrusters 2340 AC Oegstgeest Holland  
Jan Verhaar Omega Thrusters, P.O. Box 119, 2340 AC Oegstgeest, NETHERLANDS

Kahlenberg Bros Co., P.O. Box 358, Two Rivers, WI 54241  
Kaplan and Association, 30908 Crest Forest, Farmington MI 48331

Karl Senner inc., 25 W Third, Kenner LA 70062  
Konrad 1421 Hanley Rd Hudson WI 54016-9376

LA.ME srl, Marine Division Via Della Fornace 4, Opera (Pi) Italy  
Lo-Rez Vibration Control, 186 West 8th Ave., Vancouver, BC CANADA, V5Y 1N2

MAN B&W Diesel, 17 State St., New York, NY 10004  
MAN B&W Diesel A/S, Ostervej 2, DK-4960 Høiby, DENMARK

MAN B&W Diesel A/S, Alpha Diesel, Niels Juels Vej 15, DK 9900 Frederikshavn, DENMARK

MAN B&W Diesel GmbH, Stadtbachstrasse 1, D 86155 Augsburg 1 GERMANY  
Mapeco, Inc., 91 Willenbrook Rd., Unit B4, Oxford CT 06478

Markisches Werk, P.O. Box 1442, D-5884 Halver GERMANY  
Omnihruster Inc., 30555 Solon Ind. Pkwy., Cleveland, OH, 44139

Orion Corp., 1111 Cedar Creek Rd., Grafton, WI 53024  
Propulsion Systems Inc 601 NE 26th Court, Pompano Beach, FL 33064

Rolls-Royce Commercial Marine Houston 10255 Richmond Ave  
Ste 101 Houston TX 77042

Schottel Inc., 675 Industrial Blvd., Sugar Land, TX 77478  
Schottel GmbH & Co. KG, Mainzer Strasse 99-D-58322-Spay GERMANY

Schottel-Werft, Manizer Strasse 99, D-58322 Spay/Rhein, GERMANY  
Siemens Electric Ltd, 1180 Courtney Park Rd, Mississauga, Ontario Canada

The Falk Corp., PO Box 482, Milwaukee, WI 53201-0482  
Vorh Schneider America Inc., 121 Susquehanna Ave., Great Neck, NY 11021

ZF Marine Group 3131 SW 42nd St., Ft. Lauderdale, FL 33312

## PUMP—Repair—Drives

Advanced Environmental Systems, 2 Sutton Rd., Webster, MA 01570  
Byrne Rice & Turner 1172 Camp St, New Orleans, LA 70130

Fybroc-Div of Mat-Pro, PO Box 144, Hartselyville, PA 19438  
Reagan Equipment, 2550 BelleChase Hwy, Gretna LA 70054

Scardana Americas Bkg., 502 Empire St., Greefield Park, J4V1V7 Canada

## DETECTION

Thermo Electric, 6801 Cochran Rd., Solon, OH 44139

## RADARS —ARPAS

Ampco Pumps Co., 4424 West Mitchell St., Milwaukee WI 53214  
Beier Radio 1990 Industrial Ave., Harvey, LA 70058

Furuno USA, Inc., 4400 NW Pacific Rim Blvd., Camas, WA 98607  
Kelvin Hughes Ltd New North Rd Hainault, Ilford Essex IG8 2UR

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## RFT Manufacturing 799 Route 66 Hudson, NY 12534

REMODEL OPERATED VEHICLES

VideoRay LLC, 415 Engleview Blvd., Exton, PA 19341

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## REPLACEMENT TRENDS

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GET Inc 3135 Golden Ave LongBeachCA

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Goltens, 160 Van Brunt St., Brooklyn, NY 11231

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Willard Marine, Inc., 1250 N. Grove St., Anaheim, CA 92806

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Cortland Cable Co., 44 River St (PSR), Cortland, NY 13045-0330  
Marlow Ropes, South Road, Halesham, E. Sussex, BN27335

Peilcon Rope Works, 4001 W.Canage Way, Santa Ana, CA 92704  
Pugel Sound Rope, 1012 Second St., Anacortes, WA 98221

Samson RopeTech, 2090 Thordon St Ferndale, WA 98248

## ROTATING EQUIPMENT

FCS, Inc., 22 Main Street, Centerbrook, CT 06409

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Duramax Marine, 16025 Johnson St., PO Box 67,  
Middlefield, OH 44062-006

Orkot Composites, 2535 Prairie Rd., Unit D, Eugene, OR 97402  
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D&B Technologies, 1400 S.Orland Ave., Winter Park, FL 32789

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Tasmania, Australia 7009

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L3 Communications PO Box 3041 Sarasota FL 34320-3041

N.Vancouver, Bc Canada V7P 3n4  
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Slipnot Safety Flooring WS Molnar Co. 2545 Beavfall St Detroit, MI 48207  
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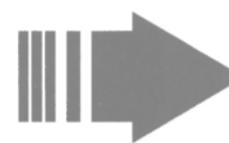
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Page	Advertiser	Product	R/S#	Page	Advertiser	Product	R/S#
57	2002 Global Marine Directory	CD-Rom	246	5	IPC Door and Wall	door and wall protection	238
C4	ABB Turbocharger	turbochargers	200	36	Island Boats	boat builders	239
4	ABB Turbosystems AG	turbochargers	201	6	Jamestown Metal Marine	interior design	240
43	ABS	classification society	202	11	Jeamar Winches	winches	241
53	ACB's	aluminum chambered boats	266	21	Jeffboat	shipyard	242
46	Airchime Manufacturing	horns/whistles	203	41	Kobelt Manufacturing	control systems	243
26	Alabama Shipyards	shipyard	204	8	Kongsberg Maritime Ship Systems	ship systems/simulators	244
52	Allied Systems	deck machinery	205	30	KVH Industries Inc.	satellite communications	245
38	Americ Corporation	portable ventilators	206	12	Lantec	deck machinery	270
36	Anchor Lamina Inc.	portable hydraulic drilling equipment	282	17	MAN B&W Diesel A/S	diesel engines	247
8	Anchor Marine	marine equipment	207	39	Marine Exhaust Systems of Alabama	water cooled manifolds	248
13	Arion International	marine thermal imaging	208	20	Marine Safety International	simulation training	249
38	Atlas Metal Sales	shipbuilding materials	209	10	Marisco	ship repair	297
23	Austal USA	shipyard	210	7	Maritime International	marine fenders	250
16	C.M. Hammar AB	life saving equipment	288	40	Markey Machinery	winches	293
22	Clean Seal	extruded rubber products	211	34	Mascoat Products	coatings/paint	251
48	Climax Portable Machine	portable machine tools	212	51	MITAGS	training and education	292
55	C-Map Commercial	electronic charts	283	15	Motor-Service Hugo Stamp	diesel engine repairs	252
14	Comnav Marine Ltd.	navigation	213	25	Navy Recruitment	recruitment	253
C3	Cooper Bearing	bearings	214	14	Neptune Research	pipe repair	254
C2	Craft Bearing	bearings	215	1	Newport News	shipbuilding	255
59	CSD North America	sealing systems	295	45	NOAA Office of Coast Survey	navigation charts	256
49	CWF Hamilton & Co. Ltd.	water jets	216	11	Offshore Communications 2002	exhibition	284
44	D&B Technologies	thermal imaging systems	285	54	Orkot Marine Bearings	bearings	265
3	Damen Shipyards	shipyard	289	52	Pipe Painter	products & services	257
12	Deansteel Manufacturing	joiner products	217	34	Rasmussen Equipment	marine equipment	258
38	DeFelsko Corporation	coating thickness gauges	218	13	Reid Tool & Supply	tools & supplies	259
44	The Delamar Company	slade fluid sealing	274	28	RTM Star Center	training	260
39	Desmond Stephan	swirl off scarifier	219	18	Schottel Inc.	propulsion	261
9	Detyens Shipyard	shipbuilding repair & conversion	220	29	SeaArk Marine	boatbuilders	290
47	Eagle Insurance	insurance	221	19	Seaward International	fenders	262
59	Edgewater Machine	deck machinery	296	44	Selco USA Inc.	generator controls	263
27	Electronic Marine Systems	tank level indicators	222	46	Skookum	rigging products	264
29	Electronic Marine Systems	tank level indicators	223	36	Spurs Marine	line and net cutters	267
31	Electronic Marine Systems	tank level indicators	224	18	Stork Bronswerk	air conditioning/refrigeration	268
33	Electronic Marine Systems	tank level indicators	225	13	Sun State Specialty K-9s Inc.	K-9 detection	286
2	Envirovac	sanitation systems	226	34	Sundial Marine	marine construction & repair	269
40	EuroCom Industries A/S	satellite systems	291	8	Superior Energies	insulation	271
46	FabEnCo Inc.	safety products	227	59	Superior Lidgerwood Mundy	deck machinery	272
13	Ferro Corp.	coatings	228	22	Technical Marine Systems	tank level indicating system	273
47	Flagship Marine	marine air conditioners	229	38	Thermo Electron	radiation detection	231
35	G.J. Wortelboer	chains	230	59	Timberland Equipment Ltd. & Almon Johnson	deck machinery	275
28	GMT Electronics	marine electronics	287	64	VideoRay LLC	world's Smallest ROV	298
10	Goltens Marine	diesel engine repair	232	35	Walz & Krenzer	watertight sliding doors	276
12	Hepworth Marine	windscreen/window wipers	233	37	Wartsila Corporation	propulsion	277
52	HMS Marine Hardware	marine hardware	234	14	Washington Aluminum	gangways	294
34	Industria Naval de California	ship repair	235	14	Washington Chain	chains	278
47	In-Place Machining	crankshaft repair	236	46	Water Weights	load management solutions	279
54	Intercontinental Engineering	winches	237	12	Waterman Supply	marine equipment	280
				39	Western Machine Works	deck machinery	281

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(Prices are in U.S. Dollars) (NOTE: Contracts are for July 2002)

OWNER OPERATOR	COUNTRY SO	SHIPYARD	COUNTRY SB	TYPE	No	TEU	DWT	DELIV	PRICE M \$
SBS MARINE	—	KARMSUND MARITIME	NORWAY	AHTS	1			03	
EDISON CHQUEST OFFSHORE	US	NORTH AMERICAN SB	US	AHTS	1			03	
UNKNOWN	UNKNOWN	PAN-UNITED SHIPYARD	SINGAPORE	AHTS	1			03	
UNKNOWN	UNKNOWN	STX (DAEDON)	KOREA	AHTS	1			03	
CARRAS	GREECE	SASEBO	JAPAN	BULK CARRIER	4		176,000	03	136
ZELA SHIPPING	GREECE	HYUNDAI HEAVY INDUSTRIES (HHI)	KOREA	BULK CARRIER	1		172,000	04	37
TRANSMED SHIPPING	GREECE	HYUNDAI HEAVY INDUSTRIES (HHI)	KOREA	BULK CARRIER	1		172,000	04	36
GOLDEN UNION	GREECE	HYUNDAI HEAVY INDUSTRIES (HHI)	KOREA	BULK CARRIER	1		172,000	04	36
CERES HELLENIC (G P LIVANOS)	GREECE	SASEBO	JAPAN	BULK CARRIER	2		170,000	04	71
TAI CHONG CHEANG STEAMSHIP (TCC)		HONG KONG	SHANGHAI WAIGAOQIAO	CHINA BULK CARRIER			1		170,000
04	24								
SANKO KISEN	JAPAN	HITACHI ZOSEN	JAPAN	BULK CARRIER	2		75,300	03	
SANKO KISEN	JAPAN	mitsui	JAPAN	BULK CARRIER	3		55,000	04	
WAH KWONG SHIPPING	HONG KONG	OSHIMA SHIPBUILDING	JAPAN	BULK CARRIER	2		55,000	05	37
SANKO KISEN	JAPAN	TSUNEISHI	JAPAN	BULK CARRIER	3		55,000	04	
COSCO	CHINA	ONOMICHI	JAPAN	BULK CARRIER	4		53,000	04	72
TAIWAN NAVIGATION	TAIWAN	OSHIMA SHIPBUILDING	JAPAN	BULK CARRIER	1		52,500	04	19
COSCO	CHINA	OSHIMA SHIPBUILDING	JAPAN	BULK CARRIER	2		52,500	04	36
A. M. NOMIKOS	GREECE	ISHIKAWAJIMA HARIMA H.I. (IHI)	JAPAN	BULK CARRIER	3		48,600	04	
SANKO KISEN	JAPAN	OSHIMA SHIPBUILDING	JAPAN	BULK CARRIER	3		46,000	04	
JAPANESE INTERESTS	JAPAN	SHIN KURUSHIMA	JAPAN	BULK CARRIER	1		34,700	03	
SHIH WEI NAVIGATION	TAIWAN	OSHIMA SHIPBUILDING	JAPAN	BULK CARRIER	2		32,000	04	29
mitsui WAREHOUSE	JAPAN	SHIKOKU DOCKYARD	JAPAN	BULK CARRIER	3		28,800	04	
mitsui WAREHOUSE	JAPAN	SHIN KOCHI JUKO	JAPAN	BULK CARRIER	3		28,800	04	
IINO KAIUN	JAPAN	IMABARI SHIPBUILDING	JAPAN	BULK CARRIER	1		28,300	03	
TA HO MARITIME	TAIWAN	CHINA SHIPBUILDING CORP.	TAIWAN	BULK CARRIER/CEMENT CARRIER	1		12,600	04	
CMA CGM	FRANCE	SAMSUNG	KOREA	CONTAINER	2	5,670		04	96
YANG MING MARINE CORP	TAIWAN	CHINA SHIPBUILDING CORP.	TAIWAN	CONTAINER	1	5,500		04	
CHINA SHIPBUILDING	CHINA	YANGMING	CHINA	CONTAINER	2	5,500		04	
NORDEUTSCHE VERMOGENSANLAGE	—	HANJIN	KOREA	CONTAINER	2	4,900		04	88
BUILDER'S ACCOUNT	US	KVAERNER PHILADELPHIA	US	CONTAINER	2	2,890		04	
THIEN & HEYENGA	GERMANY	DAMEN OKEAN	UKRAINE	CONTAINER	2	1,100		04	31
IINO KAIUN	JAPAN	SHIN KURUSHIMA	JAPAN	CHEMICAL TANKER	1		45,100	04	
KOYO KAIUN KK	JAPAN	NAIKAI	JAPAN	CHEMICAL TANKER	1		45,000	04	
NIPPON YUSEN KAISA (NYK)	JAPAN	IMABARI SHIPBUILDING	JAPAN	CHEMICAL TANKER	1		44,950	03	
STENERSEN	NORWAY	JIANGNAN	CHINA	CHEMICAL TANKER	1		16,000	03	23
UNKNOWN	UNKNOWN	HIGAKI ZOSEN	JAPAN	CHEMICAL TANKER	1		6,000	02	
G SOMERS	BELGIUM	DE WAAL	NETHERLANDS	CHEMICAL TANKER	1		5,500	03	
ATLANTIS CTEX VOF	NETHERLANDS	DE WAAL	NETHERLANDS	CHEMICAL TANKER	1		5,500	03	
KINKI YUSO SOKO	JAPAN	HITACHI MUKAI	JAPAN	CHEMICAL TANKER	1		3,960	02	
FATOGLU GIDA	TURKEY	GISAN	TURKEY	CHEMICAL TANKER	1		3,500	03	
VLKTRADERS	SINGAPORE	HIGAKI ZOSEN	JAPAN	CHEMICAL TANKER	1		3,500	03	
DREDGING INTERNATIONAL	CHINA	IHC HOLLAND	NETHERLANDS	DREDGER SUCTION HOPPER	1		21,968	02	
UNKNOWN	UNKNOWN	COCHIN SHIPYARD	INDIA	GENERAL CARGO	1		29,000	03	
UNKNOWN	UNKNOWN	HIGAKI ZOSEN	JAPAN	GENERAL CARGO	1		12,500	03	
UNKNOWN	UNKNOWN	HIGAKI ZOSEN	JAPAN	GENERAL CARGO	1		10,100	03	
HAKUO KAIUN	JAPAN	MURAKAMI HIDE	JAPAN	GENERAL CARGO	1		1,526	02	
BELUGA SHIPPING	GERMANY	VOLHARDING	NETHERLANDS	HEAVY-LIFT CARGO	2	860		04	33
SOLVANG	NORWAY	KAWASAKI H.I.	JAPAN	LPG	1		48,000	04	57
US INTERESTS	US	BLOUNT SHIPYARD	US	PASS/FERRY	1			03	
RAPSKA PLOVIDBA	CROATIA	VIKTOR LENAC	CROATIA	PASSENGER / VEHICLE/FERRY	1			03	
JAYA HOLDINGS	SINGAPORE	JAYA SHIPBUILDING	SINGAPORE	PLATFORM SUPPLY VESSEL	1			03	
EDISON CHQUEST OFFSHORE	US	NORTH AMERICAN SB	US	PLATFORM SUPPLY VESSEL	1			03	
VANGUARD ENTERPRISES	JAPAN	ONOMICHI	JAPAN	PRODUCTS TANKER	2		47,000	04	54
RESTIS	GREECE	STX (DAEDON)	KOREA	PRODUCTS TANKER	2		46,000	04	
AMORETTI ARMATORI GROUP	ITALY	JIANGSU YANGZUJIANG	CHINA	PRODUCTS TANKER	1		19,000	04	
FURETANK	SWEDEN	SHANGHAI EDWARD	CHINA	PRODUCTS TANKER	3		16,000	04	66
SAMHO SHIPPING	KOREA	SAMHO NEW SHIPYARD	KOREA	PRODUCTS TANKER	1		3,500	03	
HOLDING DE LEEUW	—	BREKO	NETHERLANDS	PRODUCTS TANKER	1		2,541	02	
JAPANESE INTERESTS	JAPAN	KYOKUYO ZOSEN	JAPAN	REEFER	1		5,035	03	
UNKNOWN	UNKNOWN	HIGAKI ZOSEN	JAPAN	RO-RO	1		2,650	03	
OSTENSJO REDERI	—	KLEVEN	NORWAY	SUPPORT VESSEL	1			03	
NAVIERA F. TAPIAS	SPAIN	DAEWOO	KOREA	TANKER	1		160,000	05	45
ALPHA TANKERS	GREECE	HYUNDAI HEAVY INDUSTRIES (HHI)	KOREA	TANKER	2		159,000	04	92
CSDC	CHINA	DALIAN NEW	CHINA	TANKER	2		110,000	04	70
TSAKOS GROUP	GREECE	IMABARI SHIPBUILDING	JAPAN	TANKER	1		107,000	03	
SINGAPORE LIGHTWELL	SINGAPORE	SAMSUNG	KOREA	TANKER	2		73,000	03	64
DOUPHIN TANKERS	ITALY	HUDONG SHIPYARD	CHINA	TANKER	4		72,000	03	128
YAMANE KAIUN	JAPAN	MUKAISHIMA	JAPAN	TANKER	1		3,497	03	
SUN ENTERPRISES	GREECE	HYUNDAI HEAVY INDUSTRIES (HHI)	KOREA	TUG	2		200	03	
ARABIAN GULF MECHANICAL	KUWAIT	CHEOY LEE	HONG KONG	TUG	1			02	
PSA MARINE	—	PRESIDENT MARINE	SINGAPORE	TUG	1			03	
mitsui O.S.K. LINES (MOL)	JAPAN	SHIN KURUSHIMA	JAPAN	VEHICLE CARRIER	1		15,000	04	





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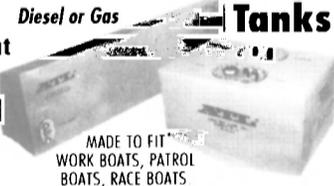
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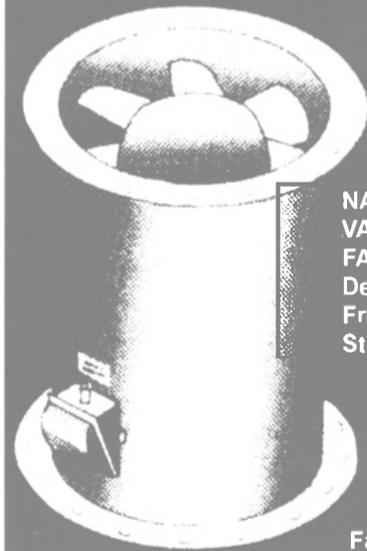
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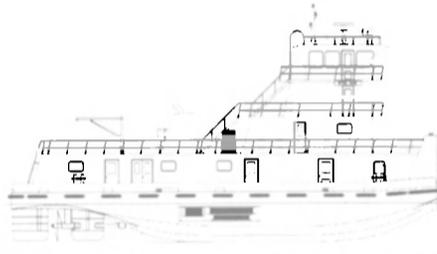
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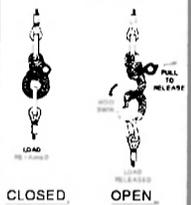
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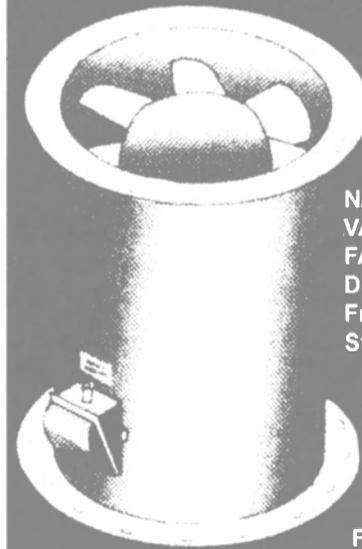
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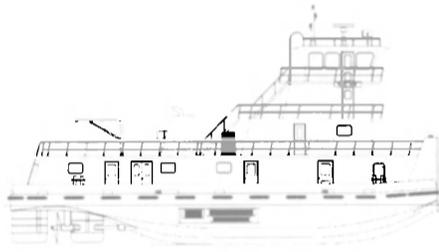
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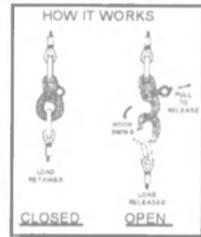
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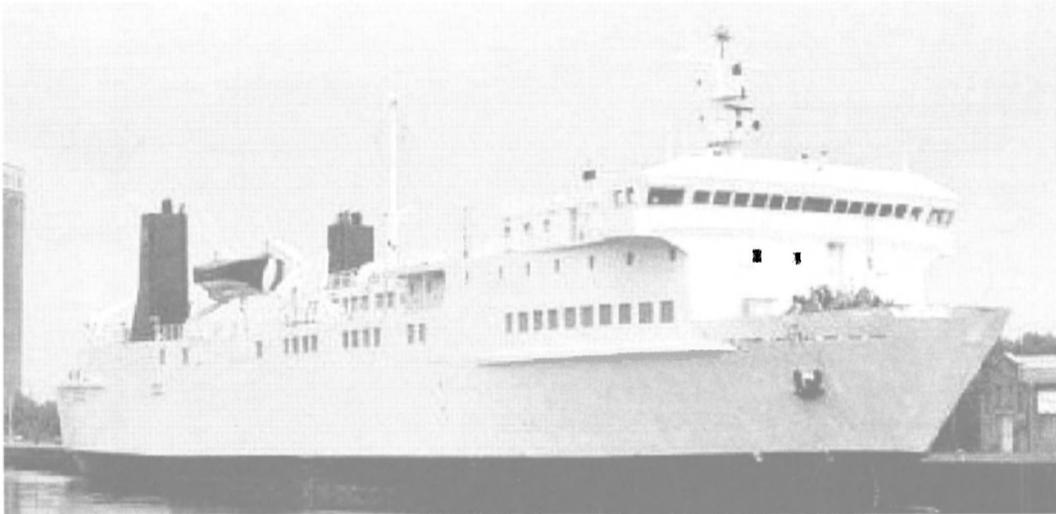
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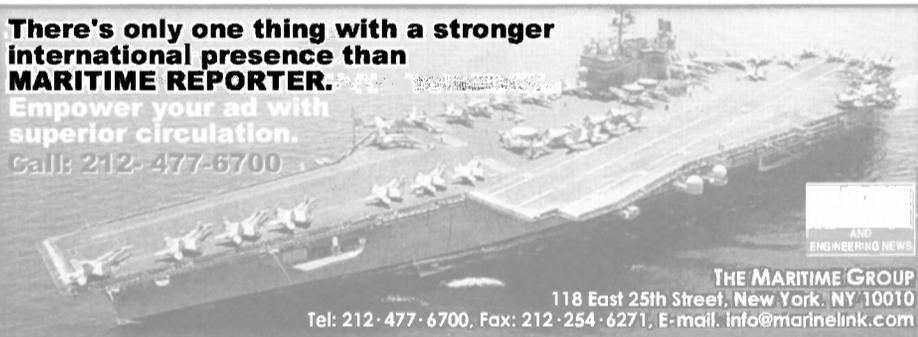
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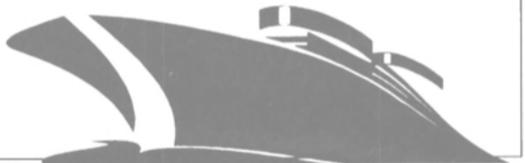
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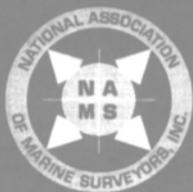
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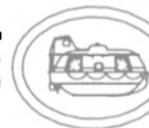
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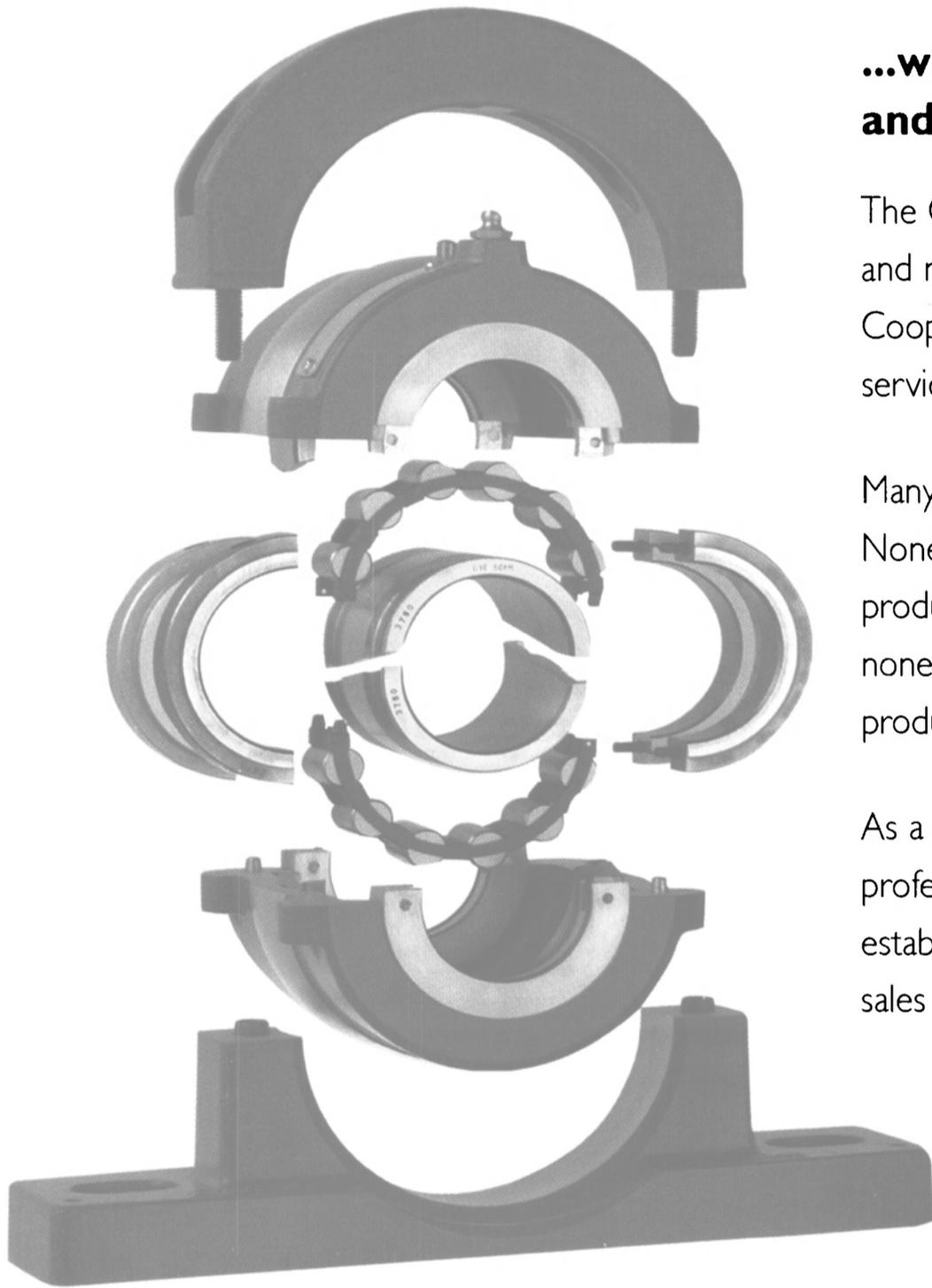
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