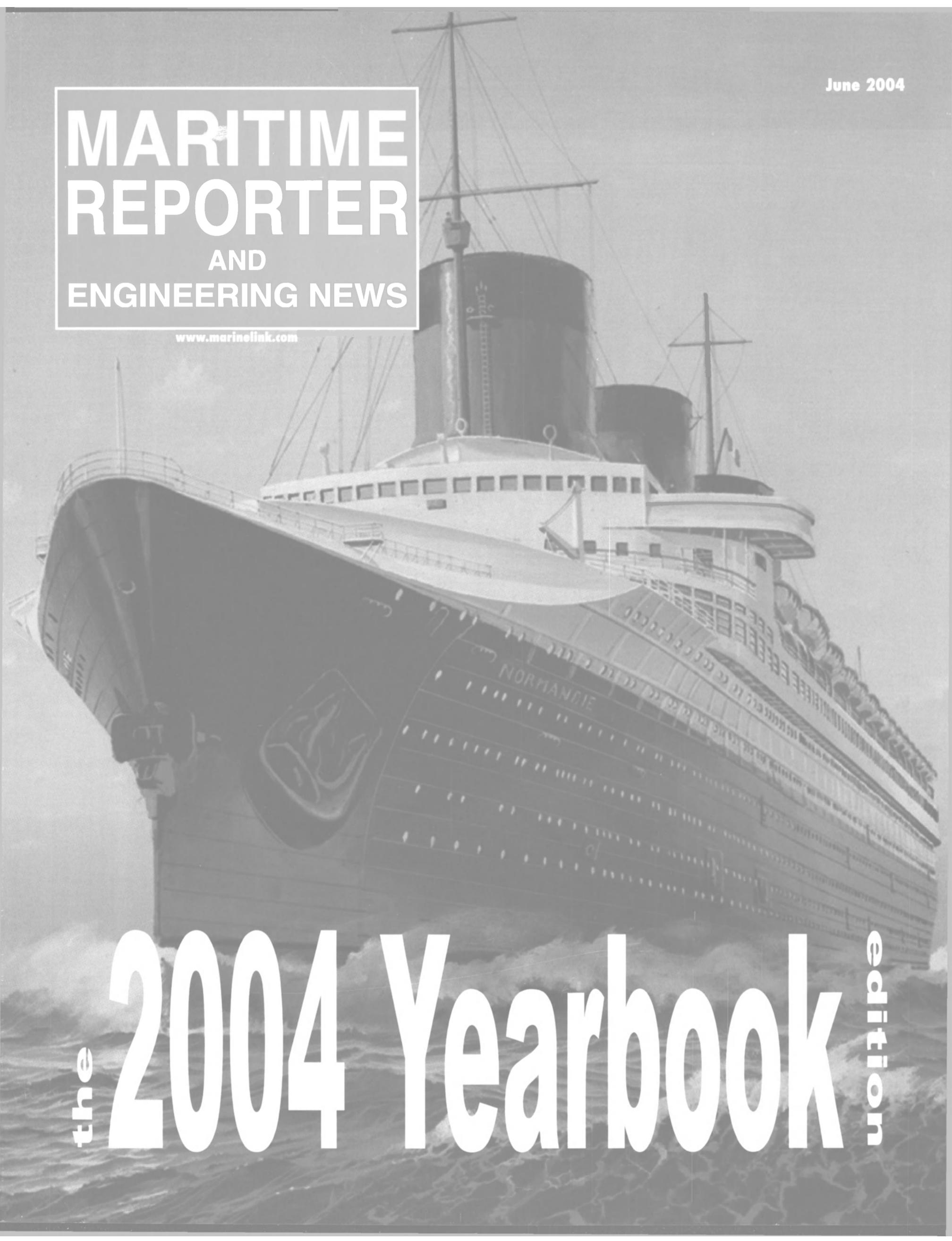


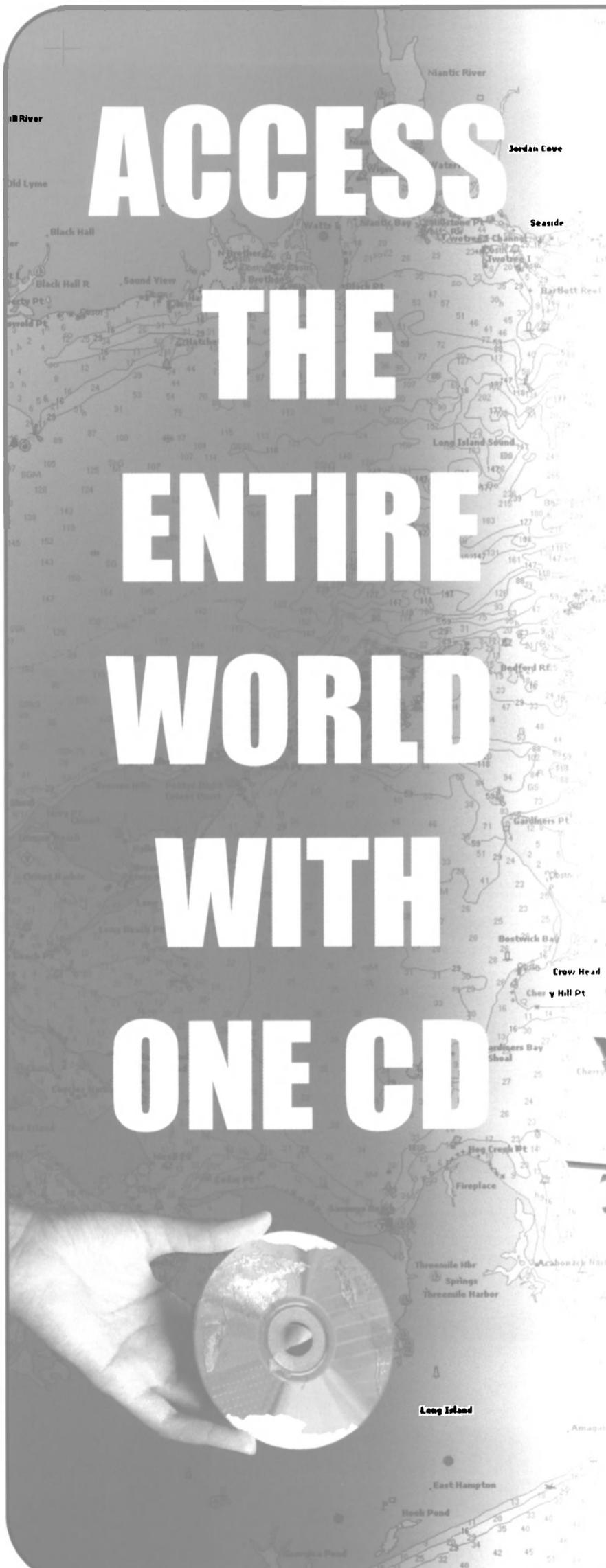
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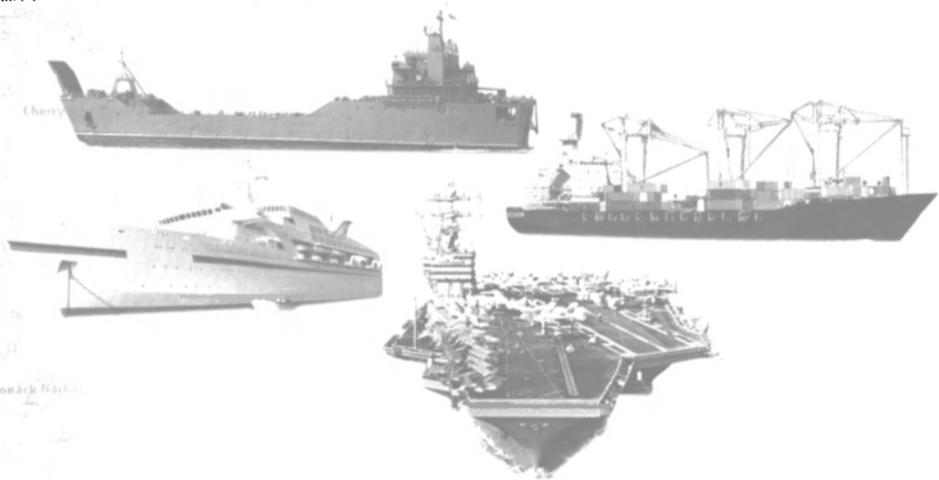
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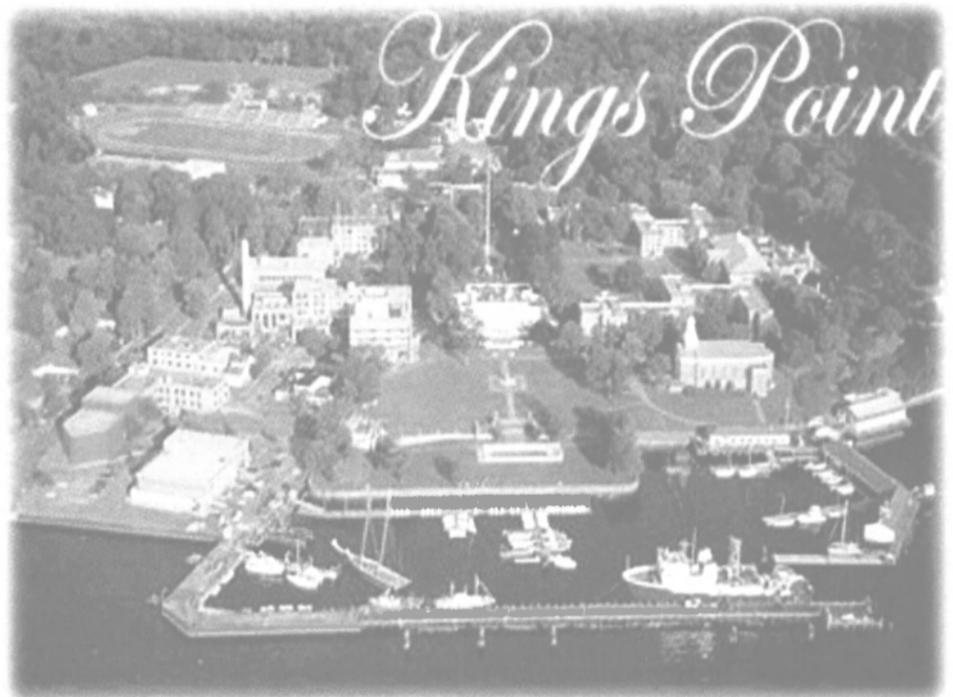


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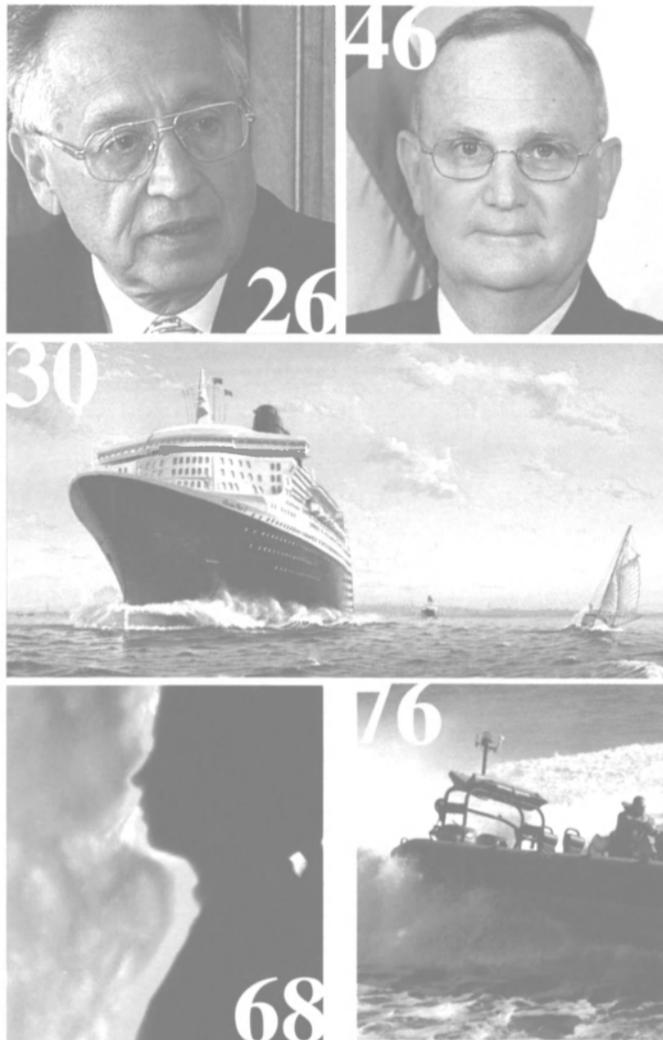
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## Maritime Meanings

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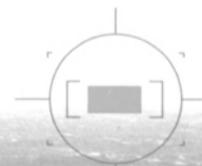
This is the well-known method of cooking food outdoors, popular particularly in Australia, America and New Zealand; in all these countries the word can refer to the informal social event that usually accompanies this kind of outdoor cooking. Essentially a barbecue is a metal frame or grill for cooking meat above an open fire of coals, wood or the like. The word is from the Spanish Barboka. The connection with maritime usage is that, in the early days of piracy in the Pacific and the Caribbean, these privateers became known as "buccaneers" from the French boucan, grill, or the cooking of dried meat over an open fire. Buccaneers (later known as pirates) became closely involved with the illegal trading in such meat throughout the Caribbean. Thus, the innocent and enjoyable pastime of having a barbecue in one's own backyard owes its origin to the bloody history of piracy on the Spanish Main.

**Source:** An Ocean of Words: A Dictionary of Nautical Words and Phrases, by Peter D. Jeans; Birch Lane Press, 1998



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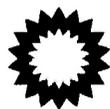
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## Editor's Note

**The big will get bigger;  
the small will get wiped out**

~ Meshulam Riklis\*  
(Source: www.cyber-nation.com)



While I do not entirely agree with the quote from Mr. Riklis, it is interesting to note the continuing trend of consolidation and corporate ownership in the maritime industry. Whether the discussion is on military or commercial ventures, the notion that fewer, larger entities are inherently more efficient and cost effective — a notion with as many detractors as supporters — has generally been embraced, as the globalization of business becomes the norm rather than the exception. There remain many strong and efficient medium- and small-sized companies that expertly fill their customer needs far and wide. Simply put, however, increasing levels of regulation are placing prohibitive financial barriers on all, and unfortunately smaller organizations unable to weather another financial storm could be the first to fall.

In this context, I of course speak of the looming deadlines for new security measures mandated under the IMO's ISPS and the U.S. MTSA. Both measures — their means, method and merit — have been debated exhaustively since the terrorist strikes of 2001. Now, however, it is time to accept their consequence, and to evaluate the impact these regulations will have on your business in the long term.

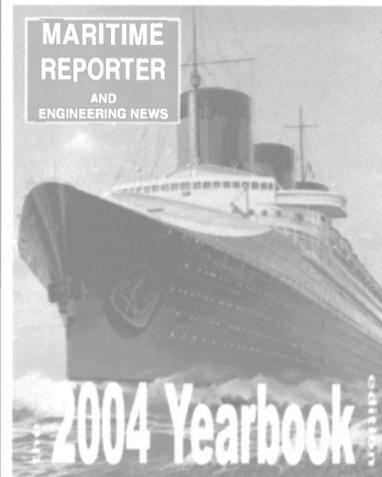
In this year's Yearbook edition I am particularly pleased to have received the cooperation of two luminaries that have a great deal of say in this regard. Starting on page 26, IMO Secretary General Efthimios E. Mitropoulos lays out the challenges facing the IMO and the maritime industry. On page 46, is an editorial from U.S. Coast Guard Admiral Thomas H. Collins, who delivers insights on how the needs of Security and Commerce must be considered in the creation and implementation of new security regulations. The U.S. Coast Guard has been a model of cooperation and effective communication in the run-up to July 1, 2004, making concerted efforts around the world to work together with industry to ensure that it is educated and provided the resources during this transitional time, to the mutual end of providing maximum protection while ensuring that commerce in the United States is not unduly disrupted.

\* To save anyone who's interested from a "Google" search, Riklis was an entrepreneur, one of the first to do a leveraged buyout; a person who predicted today's merger scene, and perhaps started it. His Riklis family company eventually would do over a billion dollars in annual sales, a major force with its Faberge and Elizabeth Arden products.

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## On the Cover



Pictured on this month's cover is SS *Normandie*, Bow View, as painted by James Flood. This painting depicts the SS *Normandie* in mid-ocean, 1935, her amply flared bow rising up dramatically from the waves. Fully illustrated is the striking whaleback and cutwater, which enabled this innovative ship to maintain speed in even the worst weather. A feature on Mr. Flood's career is found on page 30.

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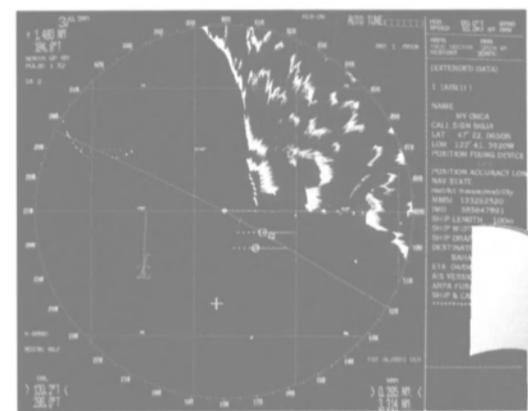
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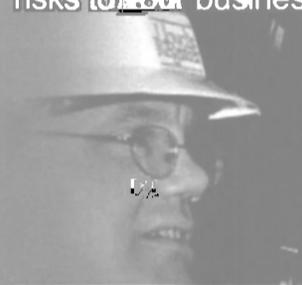


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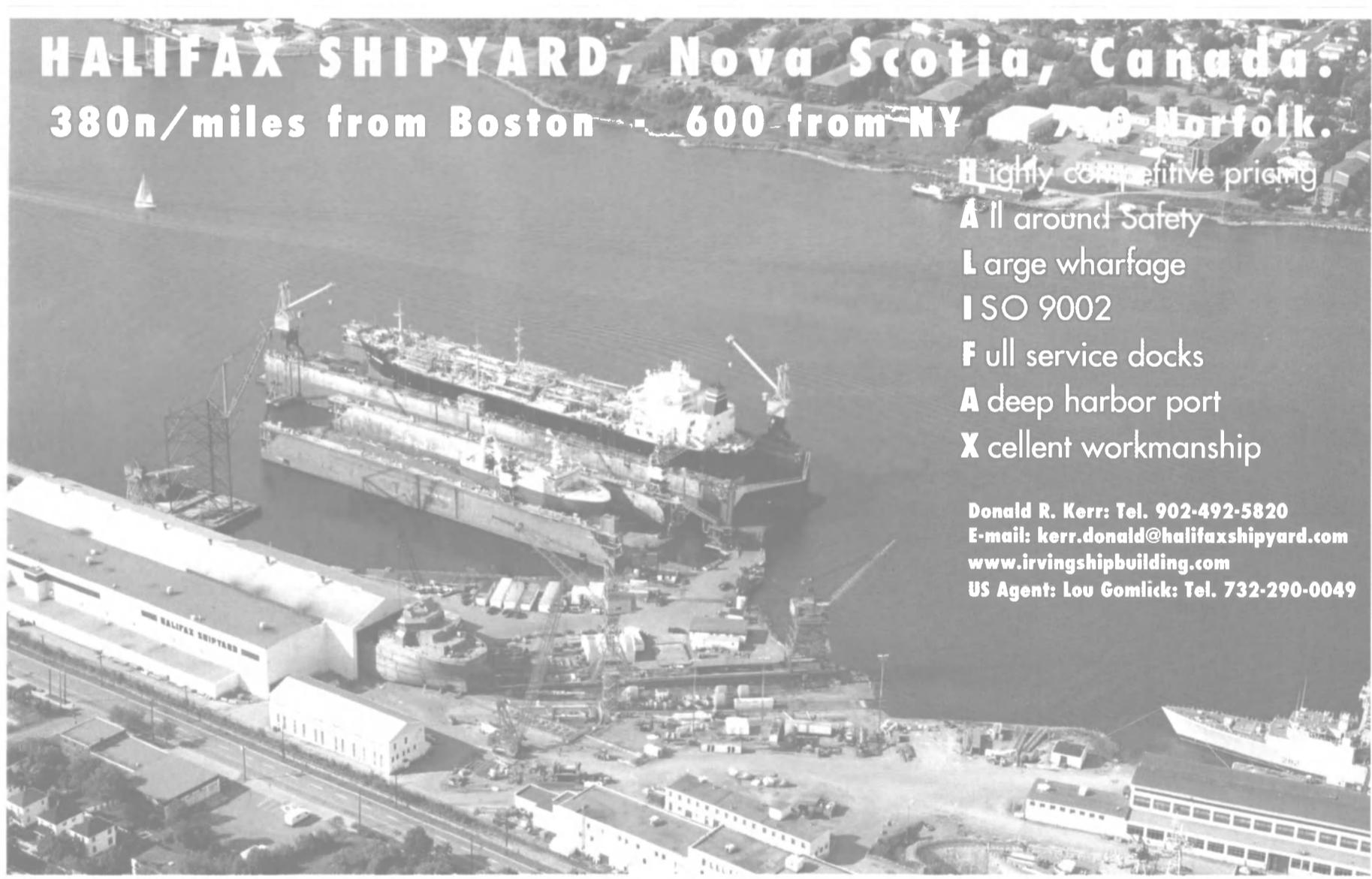


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## New Joint Venture Tanker Company Sets Sail

*\$430 Million Joint Venture to Eye Gas Ships Next?*

Gulf Energy Maritime PJSC, or GEM, is a new \$430 million joint venture shipping company, launched last month. Headquartered in Dubai, GEM is owned by Emirates National Oil Company (ENOC) (35%); Abu Dhabi-based International Petroleum Investment Company (IPIC) (30%); Oman Oil Company (30%); and Thales (5%).

The company is intent on capitalizing on the worldwide ban on single hull tankers, and will start with two Double Hull Panamax ships, with four more Panamax newbuilds under construction at Hyundai Heavy Industries for delivery by 2005. Initially, the company will only transport clean petroleum products and easy chemicals, including naphtha, kerosene, MTBE, methanol, jet fuel, MOGAS, and other hydrocarbons. "With the launch of this clean petroleum product tanker company, we are heralding a new era in environmentally friendly, high quality and commercially-driven shipping in the region," said ENOC Group Chief Executive and Board Member **Hussain Sultan**, and the first chairman of GEM. "This is a great window of opportunity for us to assume a leading role in the global shipping lanes." Its strategy will include the operation of vessels in a portfolio of long, medium term and spot charters.

"The GEM investment represents a double first for IPIC, marking IPIC's first participation in the shipping sector, and its first investment in a UAE-based joint venture," said **Mohamed N. Al Khaily**, Managing Director, IPIC.

GEM will be managed as a stand-alone entity independent of shareholders. "Shareholders however, have access to significant amounts of potential cargoes," said Sultan. "This, coupled with access to competitive finance and the fact that we will be operating from the tax free low cost environment of the UAE, are competitive edges that Gulf Energy Maritime has when benchmarked against other industry players."

**Xavier Thuriot**, Chairman & CEO of Thales International Middle East, said "The participation of Thales in this project is fully in line with our long-term commitment to the UAE. Through the country's offset program, we are proud to contribute to the creation of a UAE company able to provide competitive solutions at international standards."

**Hatem Fawzy**, Director, Offsets Ventures; **Ahmed Al Wahaibi**, Deputy CEO, Oman Oil Company; **Hussain M. Sultan**, Group Chief Executive and Board Member, ENOC; **Khadem Al Qubaisi**, Investment Division Manager, International Petroleum Investment Company of Abu Dhabi; **Xavier Thuriot**, Chairman & CEO, Thales International Middle East.



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### Crowley Refloats Stranded Passenger Ferry

Crowley Marine Services refloated the passenger ferry Le Conte, which had run aground about 30 miles north of Sitka, Alaska on Monday, May 10. Crowley, under contract with the Alaska Marine

Highway System, floated the Le Conte off Cozian Reef. The salvage team made internal and external surveys and the Le Conte was towed to the Ketchikan Ship Yard by the tug Chahunta with Crowley's salvage vessel, the American Salvor, escorting.

The 31-year-old ferry was transiting from Angoon to Sitka with more than 100 passengers and crewmembers onboard, when it struck the reef located in Peril Strait. All of the passengers were successfully evacuated by the Coast Guard and local private watercraft



Alaska State Ferry Le Conte, which went aground off Otstoia Island in Peril Strait about 30 miles north of Sitka.

(Photo credit: NOAA)

immediately following the grounding with only a few people sustaining minor injuries. The vessel has an approximate 50-foot gash down each side of the keel.

After conferring with Alaska Marine Highway System officials and the operators of the Le Conte, Crowley immediately dispatched an assessment team, including a project manager and senior naval architect, to the scene from San Diego where they had just completed the successful salvage of an F-14 fighter jet that went down off of Point Loma.

Crowley worked closely with Marine Response Alliance (MRA) partner Titan Maritime, LLC, which provided the salvage master and additional support equipment. Crowley dispatched the American Salvor, loaded with additional personnel and equipment, to the scene last week to provide the support base for the overall salvage effort. That vessel arrived Saturday morning. Crowley's Incident Management Team was mobilized and will remain on site at the command center in Juneau until the project is complete. Prior to extracting the Le Conte from the reef, all fuel, with the exception of a small reserve needed to run generators, was removed from the ferry, as were the automobiles on its car deck.

### A Tradition Carried On

On Friday, April 30, 2004, the SUNY Maritime College Alumni Association distributed the first scholarship awards of its second century. Founded in 1903, the Alumni Association, a privately funded, volunteer managed, charitable association of graduates of the Maritime College and its predecessor



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institutions, which is not affiliated with the State of New York and receives no government support, exists to advance the professional interests of the Maritime College, its alumni, faculty, and students. Funds for the scholarships were raised through various private donations to the Alumni Association's national board, as well as to its various local chapters, most notably, Long Island.

Twenty-eight scholarships were distributed to assist U.S. Maritime Service Cadets meet tuition and fee expenses associated with their participation in Summer Sea Term 2004 aboard Maritime College's Training Ship 'Empire State,' pictured in the adjacent photo, which departs the College's New York City Campus on May 15. Upon graduation, the Cadets will be licensed U.S. Merchant Marine Officers, will have accredited Bachelor's Degrees in disciplines related to the maritime industry, and will be eligible for commissions in our Nation's various sea services. More information on the programs of the SUNY Maritime College Alumni Association is available at [www.sunymaritimealumni.org](http://www.sunymaritimealumni.org)

### EC: Spanish Shipyards Owe €308.3M

The Spanish shipbuilding establishment received a financial blow when the European Commission ruled last month that aid provided was not in line with EC rules on State aid to shipbuilding. In a nutshell, Izar owes € 308.3 million, plus interest, a tall financial hurdle in the face of an already declining market in Spain.

In its ruling, the Commission established that State holding company — Sociedad Estatal de Participaciones Industriales (SEPI) — in 1999 and 2000, granted aid worth €500 million to the civil public shipyards that are today all owned by Izar. The aid took the form of a capital injection, loans and a purchase price above market value. As the loans amounting to €192.1 million to SEPI were paid back, the sum to be reimbursed will amount to the aforementioned € 308.3 million figure.

The object the decision are a number of transactions that took place between 1999 and 2000 involving SEPI and its subsidiaries Astilleros Espanoles (AESA), the former holding company of the public shipyards, and Bazán, the military shipbuilding group. Since the Commission suspected that these transactions might have contained state aid, it opened a formal investigation in July 2000, was extended in November 2001 and extended again in May 2003.

In its investigation, the commission

found that:

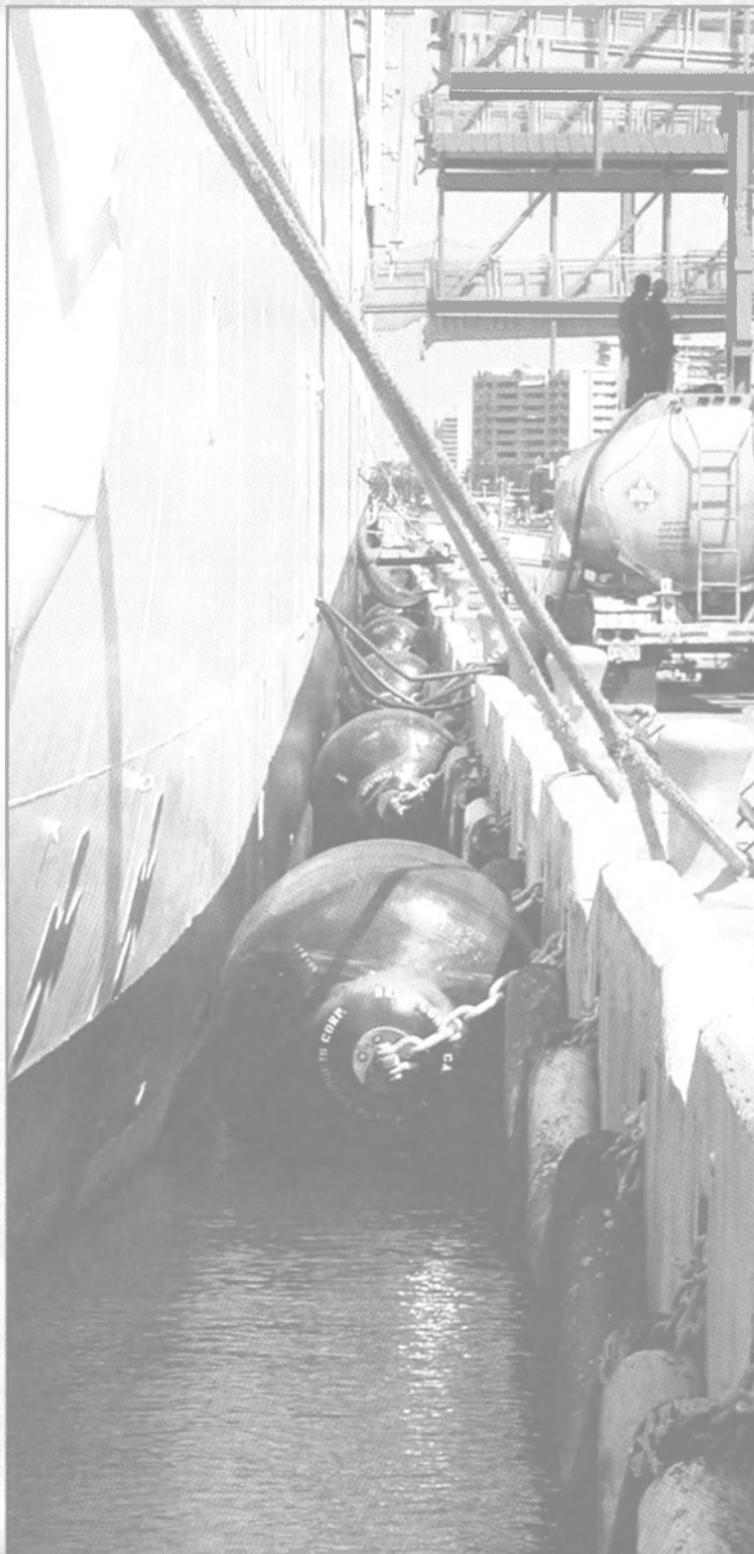
- An excess purchase price paid by SEPI when AESA sold three shipyards to SEPI in 1999. According to the Commission's calculation the purchase price paid by SEPI contained an aid element of € 55.9 million. The aid benefited the remainder of civil shipyards still owned by AESA;

- A 1999 SEPI loan amounting to €192.1 million to three shipyards;
- A capital injection by SEPI of €252.4 million to AESA in 2000, benefiting the remaining AESA's civil shipyards.

Striking a conciliatory, yet still hard-line note, the Commission further commented that it is aware that the consequences of this decision may be serious

for the Spanish public shipyards, and its employees.

However, there were a number of complaints from shipyards in other EU Member States and even from Spanish organizations, arguing that job losses have already occurred in their companies as a result of suspected illegal state aid.



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## News

### Uljanik Delivers for Grimaldi-Napoli

On May 15, Uljanik Shipyards in Pula delivered Grande Lagos, built on behalf of Grimaldi-Napoli. The ship was launched by Mrs. **Aldi C. Sekibo**, the consort of the Minister of Transport of

Nigeria. Grande Lagos is the seventh ship, following up a maxi-order of 11 ships, that was built by the Croatian shipyards Uljanik in Pula for the Grimaldi-Napoli group. In three years the Uljanik shipyard launched and delivered to the Grimaldi - Napoli group Grande Benelux, and Grande Italia in

2001; Grande Spagna and Grande Portogallo in 2002; Grande Roma and Grande Napoli in 2003.

The 44,500-ton Grande Lagos is 196.4 m long and is a car-truck carrier ship and transports 5,379 cars or otherwise 456 trucks and 2000 cars; the loading surface is 45,671 sq. m. and with its 11



decks, its height is comparable to a 33-m building consisting of 11 floors. The engine power is 11,060 kW delivering a 20-knot maximum speed and a 19.3-knot duty speed.

### Tech Agreement Signed

Northrop Grumman Corporation's Ship Systems sector and Kockums AB and its parent company, Howaldtswerke Deutsche Werft AG (HDW) signed a pact that is an expanded version of an earlier agreement and allows for the continued sharing of composite ship-building technologies. The modified contract and an accompanying technology license agreement extends the partnership to include cooperative work in the design and construction of a composite lead ship technology demonstrator of the Deepwater program's fast response cutter (FRC). Upon approval by the Coast Guard, this ship will be the first in a series of 150-ft. fast patrol vessels that will eventually replace the service's aging fleet of Island-class boats.

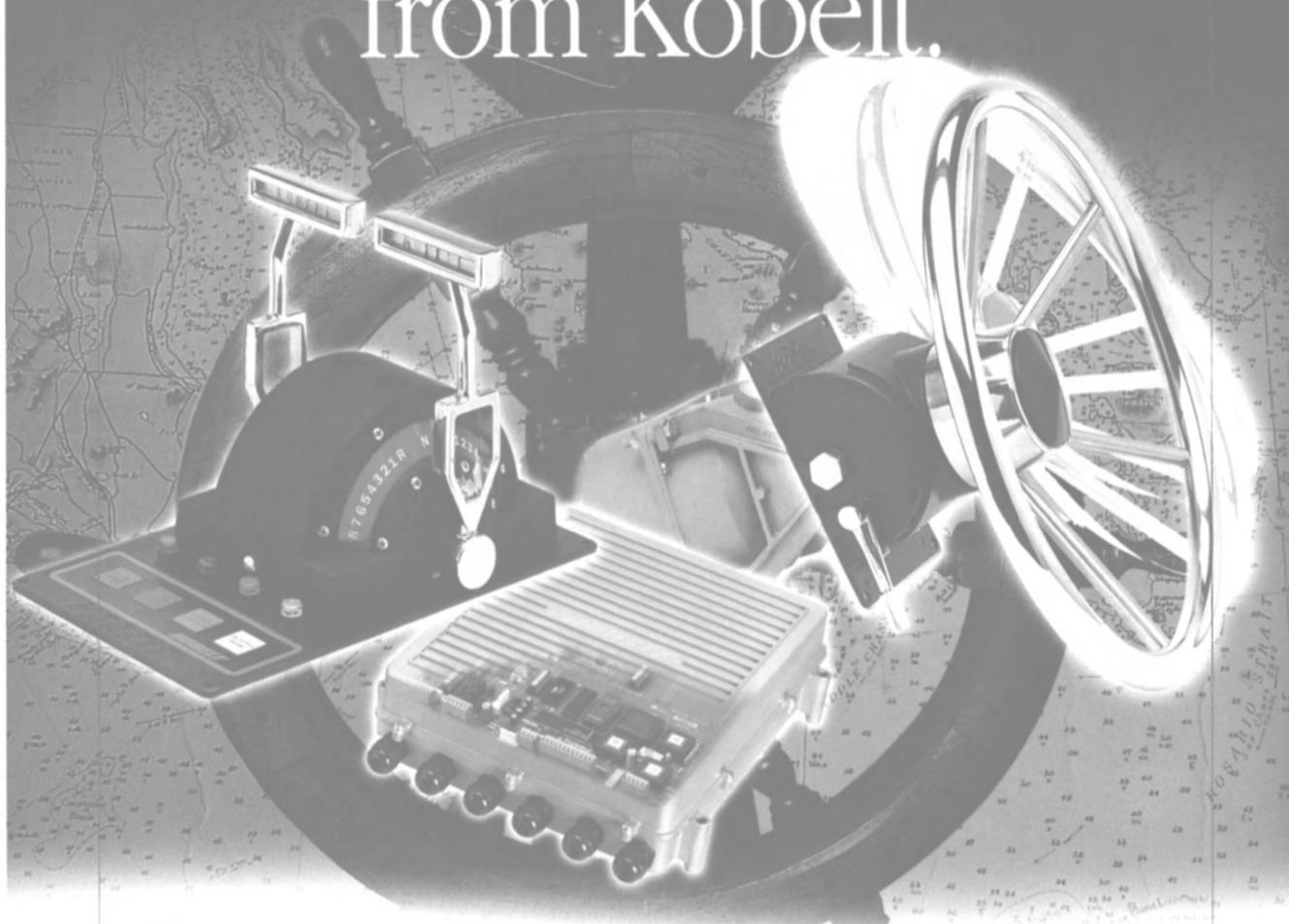
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### Smit Orders Damen Stan Tug

Smit International awarded a contract to Damen Shipyards Gorinchem for the construction of a new terminal tug, a Damen Stan Tug 3509. Built as an enlarged Damen Stan Tug 2909 under standard rules of BV, the vessel will measure 35.3 x 8.9 x 4.3 m with a displacement of 420 tons with empty tanks. The twin screw tug will be powered by two Caterpillar 3516B TA/A main engines driving, via Reintjes WAF 872/7.087:1 gearbox, bronze Promarin fixed pitch propellers within 2,500 mm v.d. Giessen Kort nozzles.

The total output will be 2,950 kW (3,959 bhp) at 1,600 rpm. A bollard pull in excess of 52.8 tons is anticipated, with a free running speed of approximately 12.7 knots. The tug will have basic functions for Mooring assistance, Supply, Anchor Handling and Ocean Towing. The bridge will feature: two Furuno FR-1501 MKII and FR-7062 radars; Plath Navigat X MKI mod 10 Gyro compass; Plath Naviplot V HSC/GM Autopilot; Furuno GP-90 GPS; Furuno LS6100 Echosounder; two

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Sailor RT4822 with DSC VHF radio's Furuno FS-1570 with DSC SSB; two Furuno Felcom 15 Inmarsat C; Furuno NX-500 Navtex; and a Furuno FA100 AIS.

## New Contract for NAT

Nordic American Tanker Shipping Ltd. concluded an agreement to charter to Gulf Navigation Company LLC of Dubai, U.A.E. the first of its modern double-hull Suezmax tankers as of the expiration of the original BP charter in Q4 2004. The five-year bareboat charter agreement, with two optional one-year extensions, provides for a bareboat charter rate of \$17,325 per day for the vessel, equivalent to a timecharter rate of approximately \$25,000 per day.

## Washburn & Doughty delivers Independent



Washburn & Doughty Associates, Inc. delivered the 5,000 hp Z-Drive Tug Independent to Marine Towing of Tampa. The 92 x 32 x 13.7-ft. tug is designed for ship handling and built to ABS Class Maltese Cross A1, Maltese Cross AMS, with notation: Towing Service and Fire Fighting Capability. Independent admeasures 148 gt and has a Load Line based on USA flag registry and USCG rules. Bollard pull is estimated at 135,000 lbs ahead and 130,000 lbs astern.

Independent is powered by High Displacement Caterpillar 3516 B main engines — rated at 2,500 bhp @ 1,600 rpm — with electronic injection. The propulsion units are Rolls-Royce 1650H Z drives equipped with 2,400 mm stainless steel propellers and Kort nozzles with stainless steel liners. The vessel is equipped with two Caterpillar 3304 DIT marine package unit generators that provide 99KW @ 1,800 rpm, 208V 3 phase. One generator is normally on line while the other is on standby. In event that the on line generator fails, the switchboard and generator automatically start the standby generator, put it on line, and shut down the other generator. Fernstrum grid coolers are used to cool the main engines and fire pump engine. The Z Drives are keel cooled by a weld-

ed channel cooler and the generators are cooled by circulating jacket water in the skeg void.

Independent is outfitted with Schuyler 16-in. laminated "soft loop" bow fender and a 12-in. black rubber "D" fender on the sides and stern. The vessel is equipped with two 1,500 gpm SKUM Fire Monitors, with water and AFFF

nozzles with local pick up, and an Aurora model 411 centrifugal fire pump. Power is provided by a Caterpillar 3406TA pump engine. Deck machinery consists of a Markey electric hawser winch and an Almon Johnson electric capstan aft. It is outfitted with a Siemens machinery alarm system, and all components are completely modular

and plug into a single dedicated backbone. Navigation and communications equipment include a Furuno GP-37 DGPS; a Simrad/Robertson AP9MK3 autopilot; a Simrad HS50 satellite compass; a Standard LH5 loud hailer; a Simrad RA53-4 radar; a Furuno 1953 C/NT radar; a Furuno depth sounder; and three Icom M127 VHF radios.



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## Bollinger Repowers, Modifies 40-Year-Old Tug

Bollinger recently gave new life to an old boat, the 150-ft. Guardian, originally named Gale B., which was built by Southern Shipyard in 1963. It was owned by Midland Enterprises and was part of a tug/barge unit with the hopper barge Martha B. Midland sold the barge to Moran about three years ago and the tug was on the market when it was acquired by Velvet Maritime, LLC. "It was in good shape with a good purchase price," said Andre Ledoux, president of Velvet Maritime. "It had marketable power that we wanted to upgrade to meet new regulatory requirements, practically new Lufkin gears, a good Detroit Diesel auxiliary engine package, good Markey deck equipment, a raised pilot-house and was not undersized or over-

sized for blue water operations." In choosing the yard, a long-term relationship helped seal the deal. "My dad, Raymond Ledoux is a 33-year veteran of the marine business. He has had many vessels serviced at several of Bollinger's repair yards and has an excellent, long-term business relationship with Bollinger's Dave Marmillion. That, and Quick Repair's location on the Harvey Canal ... was very advantageous to us."

Bollinger Quick Repair dry docked the tug and began the task of repowering. The engine foundations were modified to accommodate two new owner-supplied Caterpillar 3606 diesels developing a total of 4640 hp that were mated to the boat's Lufkin gears with a ratio of 5.818:1.

The port & starboard tailshafts were reconditioned and ABS inspected. While other work was under way, Bollinger's propeller shop reconditioned the port and starboard propellers by fairing up all blades, welding nicks and cracks, checking and correcting pitch, grinding, balancing and polishing all blades.

Steering rudders, bulwarks and rub rails were cropped and sections of the port and starboard ballasts were renewed as necessary.

Sea valves were removed, inspected and replaced and the sea chest screens were replaced after cleaning and painting.

The engines cooling water system was upgraded with two new Fernstrum coolers with Bollinger built cooler guards.



M/V "Guardian" Specifications

Length/Beam/Draft	150 ft./35 ft./17 ft.
Height of Eye	41 ft.
Highest Fixed Point	66 ft.
Main Engines	(2) CAT 3606
BHP	4,640 hp @ 900 rpm
Gears	Lufkin RS 4200S / 5.818:1
Generators	(2) 100 KW Delco
Generator Engines	(2) 8V71 Detroit Diesel
Winch	Markey
Wire	2,400 x 2.25
Flag	U.S.
Home Port	New Orleans
Official Number	292748
Year Built	1963
Year Re-powered	2004
Builder	Southern Ship
GRT/NRT	289/119
Classification	ABS + A-1 Towing Service

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## Donjon, Smit Americas form Joint Venture

Marine salvage and response companies Donjon Marine Co., Inc. and SMIT Americas announced a new joint venture known as Donjon-SMIT, An OPA-90 Alliance. This new response organization has been created specifically for compliance and response services as required by the Oil Pollution Act of 1990 (OPA-90).

"This new strategic venture between Donjon and SMIT will utilize our individual long-term support of the overall needs of the marine community and provide joint services for compliance and response related to OPA-90 requirements, a very critical component of operating in today's marine environment," said **John Witte**, Executive Vice President of Donjon.

"The individual expertise of Donjon and SMIT provides the platform for Donjon-SMIT, An OPA-90 Alliance. By joining forces, we can now offer the most time-proven team in the marine business today," said **Roger Elliott**, President, for SMIT Americas.

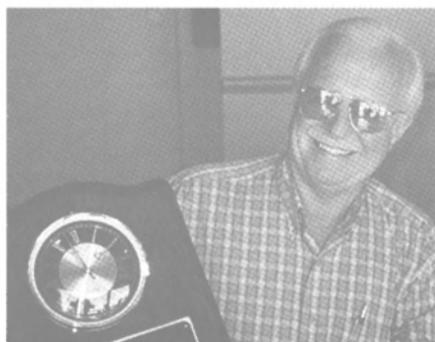
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## CP Ships Appoints New Chairman, CEO

CP Ships Limited's Board of Directors appointed **Ray Miles** as Chairman and **Frank Halliwell** as CEO. Former Chairman **Lord Weir** has been appointed lead independent director. **Ian Webber** continues as CFO.

## Graddon Celebrates 40 Years at Ross

**Dean Graddon** recently celebrated his 40th anniversary of continuous employment at Ross Laboratories, Inc. at Seattle. Joining **Wayne Ross** shortly after leaving the U.S. Army, he worked his way up the ranks from a jack-of-all trades position to General Manager and a member of the corporate board. Skilled in metal work, machinist, and drafting, Graddon witnessed the growth of the company from a handful of employees to over 60 at the height of the small boat sounder era to the retooling of the company into the manufacture of the high precision hydrographic sounders made today.



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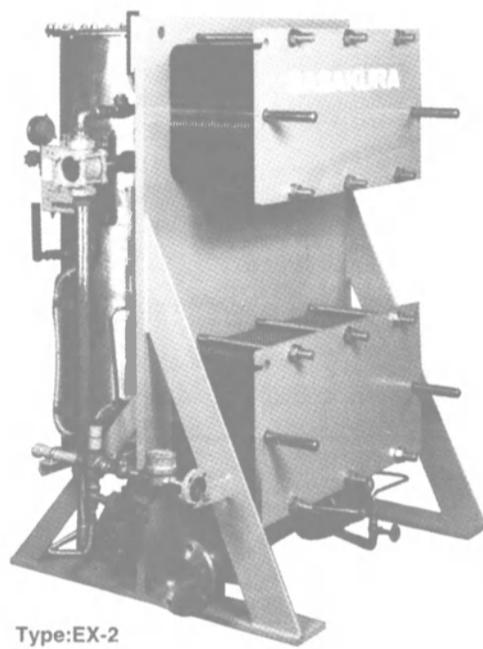
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## ACBL Announces Sweeping Changes

Norb Whitlock, President and COO of American Commercial Barge Line LLC, said, "Today, we took another step to better position ACBL to emerge from Chapter 11 when we implemented a broad-based organizational restructuring

that resulted in the release of 20 employees and the elimination of 12 open positions." To that end, the following appointments were announced.

**Paul Brotzge** has been named Vice President, Finance, Treasurer and Controller; **Ben Huber** has been named Vice President, Business Development;

**David Jahnke** has been named Vice President, Dry Cargo Sales; **Del Wilkins** has been named Vice President, Vessel Operations; **Paul Book** has been named Director of Barge Maintenance; **Lisa Clendenen** has joined ACL as Director, Benefits Administration; **Mark Dougherty** has been named Director,

Vendor Vetting; **Brooke Egan** has joined ACL as Corporate Counsel; **David Miller** has been named Director, Marketing Services; **Mario Munoz** has been named Director, Fleets; **John Fox** has been named Liquid Unit Tow Planner; **Gary Ruff** has been named Gulf Tow Planner; **Michael O'Neil** has been named West Canal/Lower Mississippi System Planner; **Joe Browning** has been named Barge Maintenance Coordinator; **Ken Davidson** has been named Manager, Vendor Vetting; **Brant Jones** has been named Logistics Analyst; **Mary Haley** has been named a Benefits Specialist. Haley was previously a Cost Control Associate.



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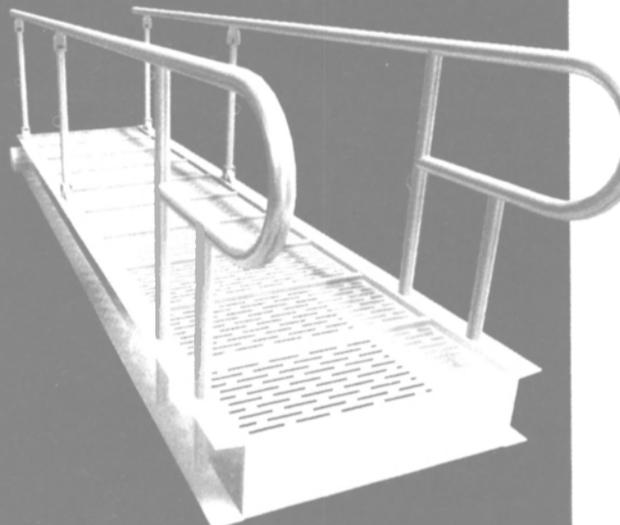
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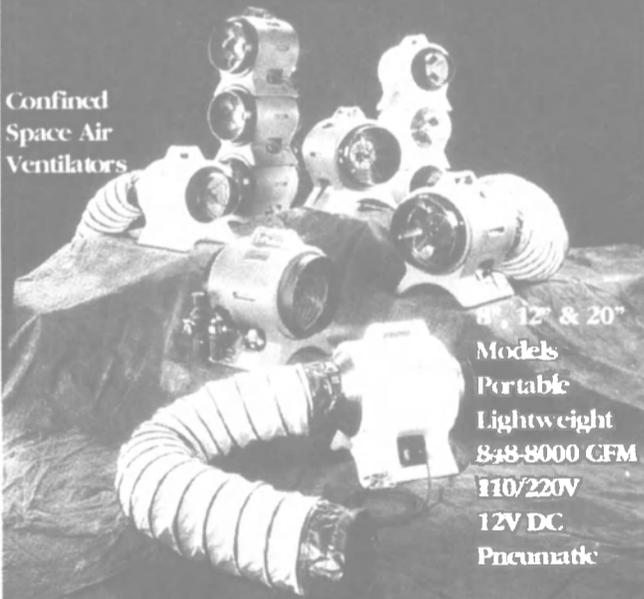
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## VT Halter Marine, Northrop Grumman Team

VT Halter Marine Inc. has teamed with Northrop Grumman Corporation's Electronic Systems sector to bid for the U.S. Army Tank-automotive and Armaments Command's (TACOM) Theater Support Vessel (TSV) project. The TSV will support the Army's transformation goal of deploying a combat-ready brigade anywhere in the world within 96 hours and will reduce support requirements for large-scale, onshore arrivals. Prime contractor VT Halter Marine will lead the TSV proposal development and perform hull, electrical and mechanical design and fabrication of the ships, while Northrop Grumman will serve as lead systems integrator. **Boyd King**, VT Halter Marine's CEO said, "Our goal is to design and build a Theatre Support Vessel specifically tailored to the U.S. Army's mission requirements by integrating commercial and military technologies, combining our experience, and leveraging our resources in a way that effectively supports the Army's transformation strategy."

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## Signal Intl. Wins Award

Signal Intl. received the Award for Excellence in Safety for 2003 from the Shipbuilders Council of America (SCA). Signal was recognized for its commitment to the safety and well-being of its employees. In March 2003, Signal began a comprehensive safety-award and bonus program. Since that time, Signal's U.S. Occupational Health and Safety Administration recordable accident rate has decreased from 5.9 in March 2003 to 1.2 during April 2004, a reduction of more than 400 percent. Signal International, LLC is a marine and fabrication company in the Gulf of Mexico with two facilities in Mississippi and four locations in Texas.

Maritime Reporter & Engineering News



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### Crowley Back in Oakland

Crowley Marine Services tugs, once a fixture in San Francisco Bay from the early 1900s to 1996, have returned. Crowley re-launched its ship assist and escort service in the Port of Oakland with two high horsepower tugs, the 4,400 hp. Z-Drive Tioga and the 5,000 hp twin screw Sea Robin. It's Oakland operation is located at the 9th Avenue

terminal. Crowley is no stranger to the San Francisco Bay area. The company was founded there in 1892 and provided ship assist services from the early 1900's until 1996 with its red stack fleet of tugs.

### Panama Canal to Build Barges

The Panama Canal Authority's (ACP) Industrial Shipyard Division will build a

new barge on-site in Panama. This investment is part of the Canal's Permanent Modernization Program, the ACP's long-term strategic business plan. The barge will support four drilling rigs, and equipment that will be used to carry out work and maintenance in different locations of the Canal.

### Cross Maritime Completes Barge Project

Cross Maritime of Houma, La. completed a contract for its multi-purpose barge to set two jumpers in the Garden Banks area in water depths of 3000 ft. Mobilization took place at the Cross Group dockside facilities located in Houma. They were placed onboard the Cross Mar 14, sea fastened, and transported to the Garden Banks locations. Cross Mar 14 is a 250 x 72 x 16-ft. multi-purpose barge with accommodations for 60 people, 300 ton crane, and a specialized mooring system which allows the vessel to maneuver within tight operating tolerances.

### Port Everglades Names New Chief Harbormaster

Conrad Strong, an 18-year veteran at Broward County's Port Everglades, has been named Chief Harbormaster beginning May 23. Starting his Port Everglades career in 1986 as a Linehandler, Strong became a Duty Harbormaster in 1996 and was promoted to Assistant Harbormaster in 2001.



### Columbia Coastal Security Plan Approved

Columbia Coastal Transport, an East Coast container barge operator, said that its Vessel Security Plan was approved by the US Coast Guard. This approval remains valid for five years, and insures the company's compliance with the final Maritime security requirements mandated by the Maritime Transportation Security Act (MTSA) of 2002.

### SOCP to Meet in Puerto Rico

The Ship Operations Cooperative Program (SOCP), sponsored by the Maritime Administration, will meet in San Juan, Puerto Rico on June 22-24. Topics on the agenda include shipboard and port security plans; bridge technologies; mariner credentialing; and ballast water technology. For more information visit <http://www.socp.org/main.shtml>

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# Ocean Policy Study: Shortchanging Water Transport?

In August 2000, Congress directed the President to appoint a group of experts to study the policy of the United States with respect to the oceans and make recommendations for changes. The legislative mandate was broad - covering protection of life and property; responsible stewardship; protection of the marine environment; enhancement of commerce and transportation; expansion of human knowledge; improvement of capabilities and technologies; close cooperation among stakeholders; and U.S. leadership in marine activities. The Commission members were (and are) recognized leaders in a wide variety of marine endeavors. The Preliminary Report of the U.S. Commission on Ocean Policy, at 514 pages, is daunting. Sadly, it is also incomplete.

The report devotes the vast majority of its length to stewardship of marine resources and protection of the marine environment. These are important issues, and the report makes a number of well-considered recommendations in these respects.

Where the report fails us is with regard to other - more traditional - uses of the sea. The chapter on supporting marine commerce and transportation is a mere ten pages in length. This despite the fact that approximately 90 percent of U.S. imports and exports travel by ship and that this international commerce is a major contributor to our economic well-being. Federal agencies involved with maritime commerce receive largely cursory treatment. While the U.S. Coast Guard is mentioned various times, the Maritime Administration (MarAd) is referred to only three times, and then more in passing than anything else. The

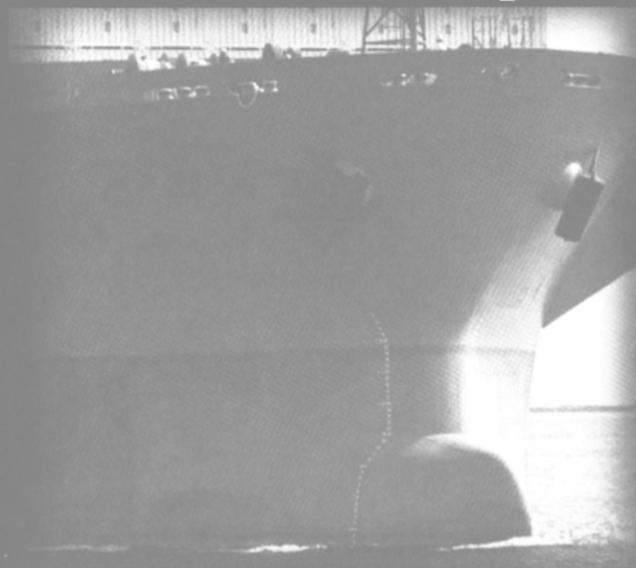
Federal Maritime Commission (FMC) is never discussed in the report, even though it is charged with regulating the

international liner trade to and from the United States.

While the report contains a compre-

hensive discussion of such things as offshore wind energy projects, it totally fails to mention issues related to con-

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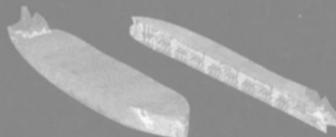
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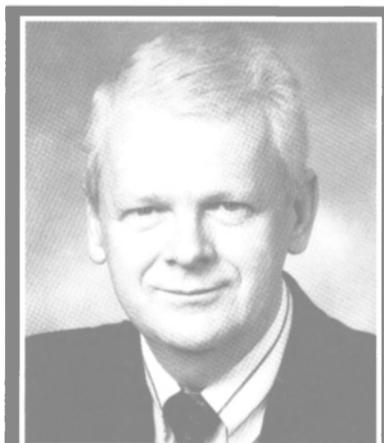
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Dennis L. Bryant, Senior Maritime Counsel at the law firm of Holland & Knight, Washington, D.C., is a contributing editor of MR/EN.

## Government Update

struction of onshore and offshore liquefied natural gas (LNG) terminals for the import of this important fuel. Alan Greenspan, Chairman of the Federal Reserve, has cited construction of these terminals as in the vital interest of the nation. Such construction involves large financial commitments, impacts other marine uses, and has a variety of envi-

ronmental and safety considerations. Yet, the report ignores LNG completely.

Even though the federal government faces immense difficulties in scrapping or recycling its numerous excess and obsolete ships, the issue is totally ignored in the report. The United States Government is involved in litigation on this issue in this country and awaits offi-

cial action in the United Kingdom on four obsolete ships exported there last year. The several hundred mothballed ships, some of which may present environmental threats, await a policy decision and monies to implement the policy, yet the report stands silent.

Submarine cables are barely mentioned in the report, but modern commu-

nications depend heavily on their use. New cables need to be laid on the ocean floor and come ashore at appropriate locations. Competing users, primarily fishermen, generally oppose laying of new submarine cables. There is a need for a coordinated federal policy on submarine cables, yet the report neglects to address the issue.

Minimal discussion is devoted to the pressing need for major improvements in port infrastructure in the United States. Our current port facilities are generally outdated and stretched to capacity. All indications are that maritime commerce will double in less than 20 years. We desperately need upgraded terminals to handle all the ships and their vital cargoes. We also need vastly improved access routes in order to move cargoes to and from the ports. The Alameda Corridor in Los Angeles/Long Beach has proven immensely successful in this regard, but no similar projects are currently planned for other ports.

The report includes a good summary of the need for places of refuge and a process for responding to requests for access by ships in distress. It discusses the problems encountered by the oil tanker *Castor* in the Mediterranean Sea in 2001 when it was turned away by numerous littoral states, as well as the recent guidelines issued by the International Maritime Organization (IMO) to address future cases. The report, though, fails to mention that the issue is heavily impacted by the International Convention relating to Intervention on the High Seas in Cases of Oil Pollution Casualties, 1969 (Intervention Convention) and the U.S. implementing legislation. Until the Convention and statute are amended, little progress is likely with regard to places of refuge.

The report devotes great length to ship-source pollution and that problem deserves continued attention. But, the report fails to acknowledge that the majority of pollution entering the oceans originates ashore. The discussion addresses shore-based pollution, but the number of pages devoted to this issue gives the uninitiated the impression that the problem is relatively minor. Better balance is desperately needed here so that resources can be assigned to the real problem areas, not just to politically easy targets.

In order to boost the visibility of ocean policy within the federal government, the report proposes a complex structure of advisors, councils, committees, and panels. Personally, I find the proposed structure off-putting and counterproductive. Strengthening and fully funding

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the agencies charged with important missions relating to the oceans will go much further toward actually achieving the goals than establishing yet another bureaucracy. The report includes important recommendations for enhancing the role of the National Oceanic and Atmospheric Administration (NOAA). These enhancements (and the funds necessary to bring them to reality) are vital. The other agencies involved in ocean matters (such as the Coast Guard, the Environmental Protection Agency, the U.S. Army Corps of Engineers, Customs and Border Protection, MARAD, and the FMC) also deserve better treatment than they usually receive from the Administration and Congress. These agencies are filled with dedicated and hard-working employees and members who generally know their roles very well, but lack the resources needed to reach their goals. Overall, the Preliminary Report of the U.S. Commission on Ocean Policy is an impressive document and contains many excellent recommendations. It deserves careful consideration by all stakeholders, including the President, Congress, the various federal agencies, state and local officials, the maritime community, environmental advocacy groups, and citizens at large. It is not, though, a full picture of ocean issues. It is one, albeit important, building block for use in establishment of a comprehensive national ocean program.

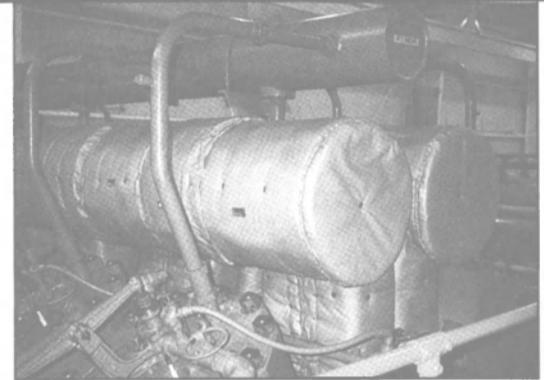
### Mariner Sentenced for False Application

Joseph A. Boevink (51) of Panama City, Fla., was sentenced by a U.S. District Judge to two months in custody, followed by up to 60 days in a halfway house, and two years of supervised release, for falsely claiming that he had never been convicted of a criminal offense on an application for Merchant Mariner license submitted to the U.S. Coast Guard in Seattle in January 2001. The case marks the first time a merchant mariner, identified through the nationwide U.S. Coast Guard initiative known as Operation Drydock, has been convicted of a criminal offense at trial.

### No Maritime Lien on Unfinished Yacht Hull

The U.S. Court of Appeals for the Eleventh Circuit ruled that a maritime lien cannot attach to an unfinished yacht hull. In the instant case, plaintiff yacht builder commenced an in rem action seeking to recover unpaid wharfage and storage costs related to a yacht hull that was previously under construction at the facility. The yacht hull was never more than 70% complete while at the facility. Even though the hull was afloat and was towed from its original construction facility to plaintiff's facility, it was never used for the transport of persons or cargo by water. Thus, during the period with which this litigation is concerned, the hull was never a vessel. Maritime liens can only attach to vessels in being. *Broward Yachts, Inc. v. Destiny Hull No. 104*, No. 03-13669 (11th Cir., May 3, 2004). (Source: HK Law)

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## GS-Hydro Names Sauder President

Gary Sauder was named President of GS-Hydro, North America. GS-Hydro supplies industrial hydraulic piping that does not require welding. Sauder's responsibilities will be to implement a strategic plan to move the U.S. facilities

in Connecticut, to Houston, Texas. The expansion plan is designed to position the operation closer to the company's growing offshore market base in the Gulf. The Houston location proves to be more centralized in serving other key customer segments as well.

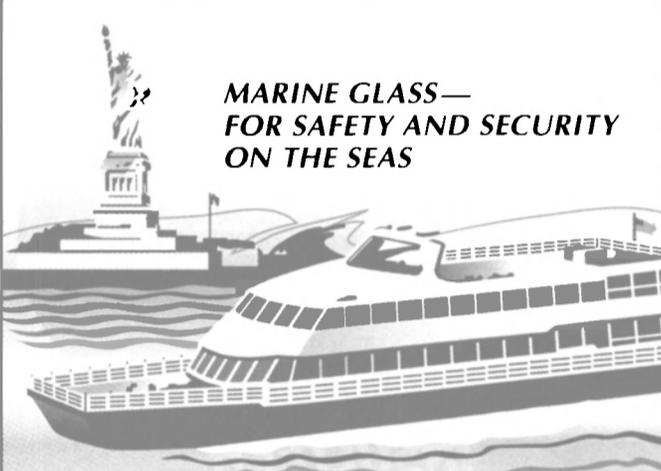
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## Alfa Laval Touts Virtual Showroom

Alfa Laval launched a 'virtual showroom' which displays the last six months of product innovations. Alfa Laval's annual investment in R&D results in about 25-30 new products a year.

To encourage customers and partners

across a wide range of industries to start talking about innovation, last year Alfa Laval created a virtual showroom in 3-D. Accessible both via the Web at [www.alfalaval.com/expo](http://www.alfalaval.com/expo) and on CD, the virtual showroom provides an interactive guide to the most recent and innovative products introduced over a six-month period.



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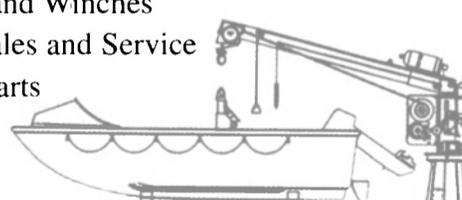
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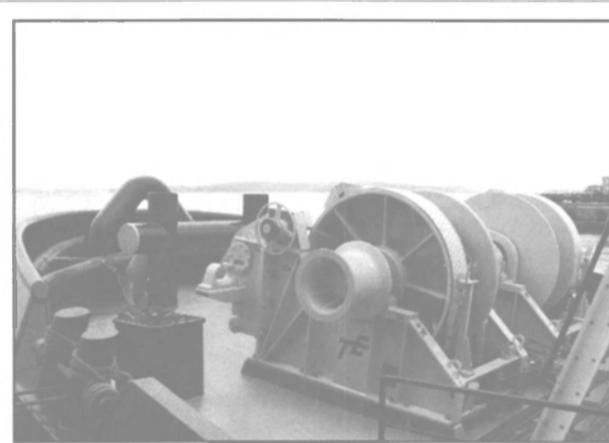
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## CACI Wins Navy Deal

CACI Technologies, Inc., is being awarded a potential \$88,168,131 cost-plus-fixed-fee, indefinite-delivery/indefinite-quantity contract for systems engineering services in support of integrated ship self-defense. The Naval Surface Warfare Center, Port Hueneme, Calif., is the contracting activity.

## AMSEC Wins Contract

AMSEC LLC is being awarded a \$62,633,357 indefinite-delivery/indefinite-quantity, cost-plus-fixed-fee contract modification for mission essential engineering and technical services for carrier engineering maintenance assist team. The Fleet and Industrial Supply Center Norfolk is the contracting activity.

## MarAd Approves Six Transfers

The Maritime Administration approved six applications under section 9 of the Shipping Act, 1916, as amended.

GlobalSantaFe Drilling Company has received approval to transfer four mobile offshore drilling units to Vanuatu registry and flag without change in the ownership of said Vessels.

The vessels are:

- The 4,976-gt Glomar Main Pass I was built in 1982 in Pascagoula, Miss.
- The 4,976-gt Glomar Main Pass IV was built in 1982 in Pascagoula, Miss.
- The 4,473-gt Glomar Main Pass IV was built in 1980 in Quebec, Canada.
- The 4,473-gt Glomar Main Pass VIII was built in 1981 in Quebec, Canada.

General Metals of Tacoma, Inc., Tacoma, Wash., received approval to sell the 4,562-gt barge Twin Harbor II to B. J. Marine Holdings Ltd., a Canadian corporation and transfer the vessel to Canadian registry and flag for scrapping in China. The vessel was built in 1943 in Baltimore, MD.

Tri-Millennium Shipping, L.L.C., New Orleans, La., received approval to sell the 2,576-gt barge Tidlands 016 to McKeil Work Boats Limited, a Canadian corporation and transfer the vessel to Canadian registry and flag. The vessel was built in 1977 in Gretna, LA.

## Damen Delivers the Patrol Boat Valiant



Damen Shipyards Gorinchem delivered the Damen Stan Patrol 4207 Valiant to H.M. Customs and Excise. Following the earlier delivered Seeker, Searcher and Vigilant, Valiant is the fourth Damen Stan Patrol 4207 for H.M. Customs and Excise. The Damen Stan Patrol 4207 is one of the bigger types in the Damen standard range of patrol boats, starting from 12 m in length and reaching up to 52 m.

The steel hull and aluminium superstructure were subcontracted to Scheepswerf Made in The Netherlands and the outfitting was carried out at Damen Shipyards Gorinchem.

The twin screw propulsion system consists of the following components: Caterpillar main engines; Reintjes gearboxes; and Kamewa CPP propellers.

Although the ship will sail at patrol speeds between 12 to 17 knots most of the time, the maximum speed is 26.5 knots. For slow speed maneuvering in harbors a bow tunnel thruster is fitted.

During design and construction of the ship much attention has been given to minimise vibration and noise levels. For this purpose the engines are fitted on flexible mounts. Floating floors are used throughout the ship and walls are of the "box in box" principle. As a result, the noise levels are remarkably low for such a light and high-powered ship:

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Messroom	.....57 dBa
Cabins	.....54-59 dBa
Galley	.....65 dBa

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## IZAR Christens LNG Ship

Izar's Puerto Real Shipyard christened the LNG carrier Cadiz Knutsen, with representatives of the owners Knutsen OAS and Marpetrol and the final client, Unión Fenosa Gas. This ship will transport up to 138,000 cu. m. of gas at -163°C, and is the fourth LNG carrier built at IZAR, and the second one of those built at Puerto Real facilities. There is a third unit under construction at this shipyard for the shipowner Fernandez Tapias. The vessel will transport gas from the Damietta port liquefaction plant in Egypt to the gasification terminals in Ferrol and Sagunto.

Izar has three similar LNG carriers, two from the Sestao Shipyard and one

more at the Puerto Real yard

Cadiz Knutsen has a time charter contract signed in the year 2000 between Unión Fenosa Gas and the owners Marpetrol from Spain. Knutsen will operate the LNG carrier by bareboat charter.

The LNGs built by Izar conform to all existing regulations, including double hull, double bottom in the cargo area,

and the four cryogenic cargo tanks with GTT Membrane Type No. 96 E2, where the natural gas is transported at atmospheric pressure and at a temperature of -163° C. These membranes, directly attached to the ship's double hull/double deck, etc., have two missions: To reduce the transfer of heat to the atmosphere and the cargo tanks to minimize the evaporation of liquefied natural gas and

thermally insulating the structural steel and transmitting the cargo's weight to the steel structure. Each of the 0.7 mm thick and 500 mm large membranes, made of Invar sheets (metal alloy with a 36% content of nickel), counts with an insulating barrier of two layers of perlite (aluminium oxide of granular shape with silicon)-filled plywood casings to prevent water and humidity.



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# Challenges facing IMO

By IMO Secretary-General, Mr. Efthimios E. Mitropoulos

**T**he first months of my tenure as Secretary-General of the international Maritime Organization have seen an extremely busy and productive period at the International Maritime Organization (IMO), and in this yearbook I am grateful for the opportunity to reflect on the past six months in general and also to look forward to some of the challenges that lie ahead.

During the first half of 2004, three senior technical bodies have held meetings: the Maritime Safety Committee (MSC), the Marine Environment Protection Committee (MEPC) and the Legal Committee. IMO has also hosted five sub-committee meetings, a meeting of the Working Group on the Voluntary IMO Member State Audit Scheme and a diplomatic conference which succeeded in adopting a major new piece of international legislation, the International Convention for the Control and Management of Ships' Ballast Water and Sediments.

Much of the work that goes on at IMO is highly technical, thorough, inevitably time-consuming and, by its very solid character, unlikely to capture the attention of the headline writers. Since the beginning of the year, for example, definitions and functional requirements have been agreed for "safe havens" with respect to fire aboard large passenger vessels; competency, training and certification requirements for ship security officers have been approved; guidance to Governments and to shipmasters relating to the treatment of persons rescued at sea has been developed and approved; and substantial revisions to the regulations on additional safe-



ty measures for bulk carriers and tankers have been agreed. These and countless other significant and substantial items form a body of always important but frequently unsung work, of which all those connected with the Organization can feel justly proud.

One recent and innovative development is the concept that IMO should develop "goal-based" standards for ships' construction and equipment which was examined in detail by the MSC in May. There is, of course, no intention that IMO would take over the detailed work of the classification societies, but rather that IMO would state what has to be achieved, leaving classification societies, ship designers and naval architects, marine engineers and ship builders the freedom to decide on how best to employ their professional skills to meet the required standards. At present there is no legislation to control or guide these matters so the introduction of a mechanism to ensure harmonised, internationally agreed standards, under the umbrella of IMO, will be a positive step in the right direction.

At any given moment, the immediate and particular challenges facing IMO are subject to change. But the over-riding challenges always remain the same:

- how do we improve global maritime safety still further?
- how do we continue to reduce any negative impact shipping has, or may have, on the environment?

And since September the 11th:

- how do we ensure that shipping is as secure from the threat of terrorist intervention as it can possibly be,

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without compromising, at the same time, the smooth flow of international maritime traffic?

Focusing first on the latter, interest and activity surrounding maritime secu-

rity have naturally become particularly intense in the first half of 2004, leading up to the 1 July 2004 implementation deadline for the measures adopted by IMO at the end of 2002, including the

new International Ship and Port Facility (ISPS) Code which is made mandatory under amendments to the International Convention for the Safety of Life at Sea (SOLAS). The terrorist atrocities on

trains in Spain in March and the attacks on a port installation off Iraq in April served as a grim reminder of the vulnerability of all modes of transport to acts of terrorism.

But putting the regulatory framework in place is just part of the overall picture. Governments and the industry were under no illusions from the outset that proper implementation of the new security measures was key. The Organization adopted a multi-faceted approach with a strong emphasis on practical work in the field, through regional and national seminars and workshops, which began in 2002, even before the security measures were formally adopted. Advisory and assessment missions have been organized, a Maritime Security Trust Fund established and model training courses developed for the Port Facility Security Officer, the Company Security Officer and the Ship Security Officer.

The implementation process was well under way during 2003 and into 2004. In the IMO Secretariat, we have done all we can to urge and assist Members to move ahead and ensure compliance with the deadline set by the SOLAS Contracting Governments. The defences must be raised as high as possible and as early as possible. Terrorism is not a matter of concern to one country or a group of countries - it is a global issue and must be addressed as such. Prevention is so much better than cure, and the comforting yet complacent argument that some of us may hope never to become victims of a terrorist act is of no value here. With the interdependence of the world's economies today, the chain reaction that such an act may trigger will have a major negative impact on trade and the global economy — we will all be victims. In the marine environment field, February 2004 saw the adoption of an important new convention to address the issue of the management of ships' ballast water and sediments to combat the insidious problem of transporting marine micro-organisms across the world and depositing them in alien environments where they may upset the natural equilibrium and cause havoc with the local ecosystem. This is a major milestone in our quest to protect the maritime environment and we must now turn our attention to ensuring that the Ballast Water and Sediments Management Convention is both ratified and implemented. Only then can we be confident that the problem has been properly addressed.

(Continued on page 79)

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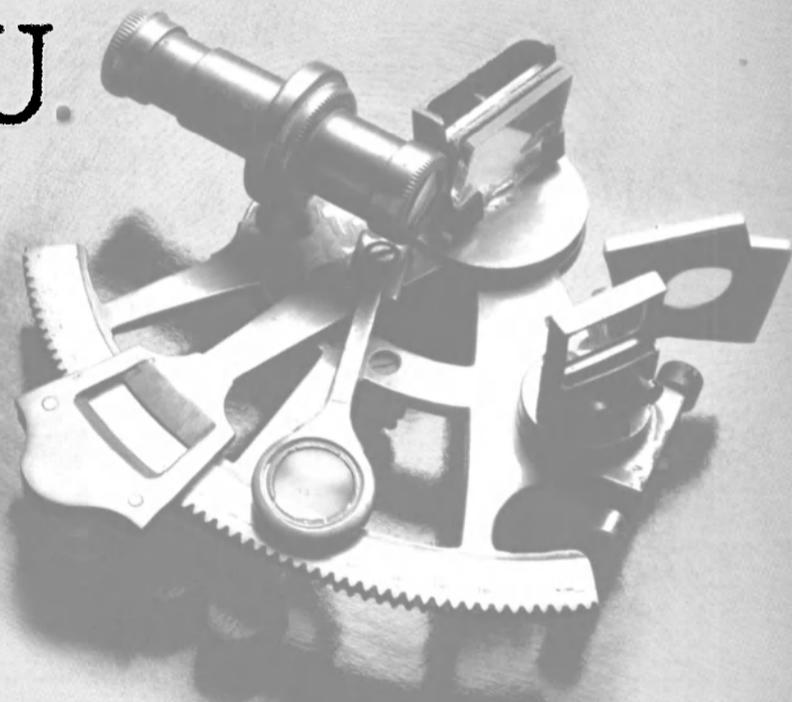
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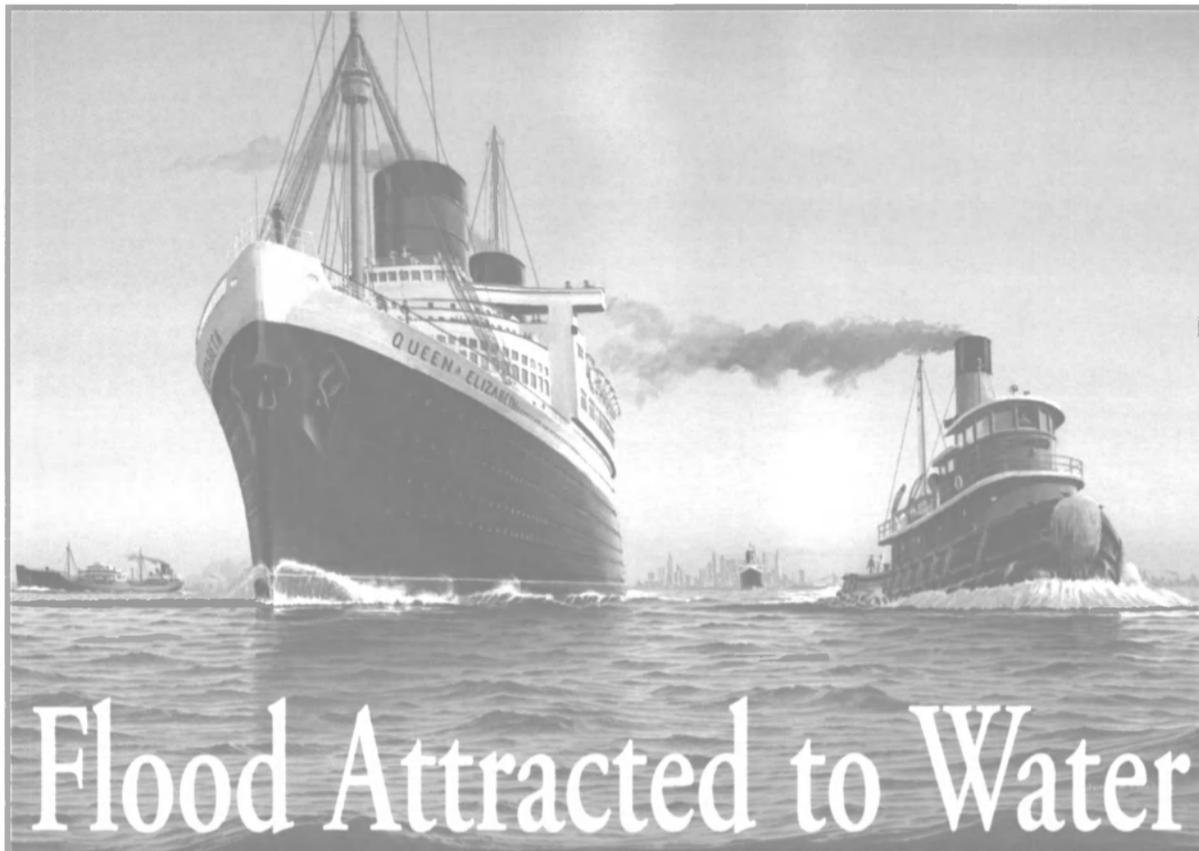
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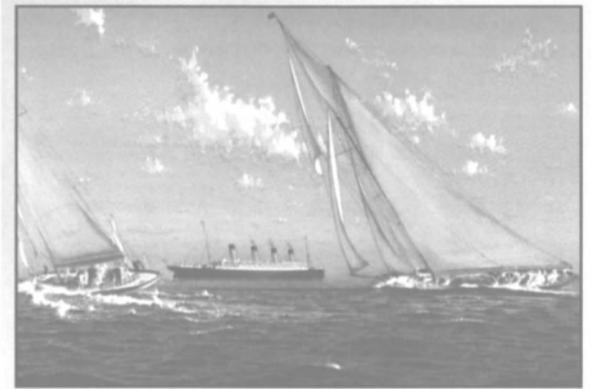
The image shows a late spring morning in 1952 at the Port of New York. The Queen Elizabeth, having set sail earlier that morning, has now progressed down to the lower bay, abeam of Staten Island and Arthur Kill. A traditional oil tanker, cruising on the Queen Elizabeth's starboard side, has just made its turn out into the open bay from Arthur Kill fairway, a tributary that gives access to Newark bay and many oil refineries. On her port side steams one of the colourful old tugboats from the thirties. These tugboats were steam powered and relatively quiet in operation. Their handsome build and tall funnels were part of New York Harbor's charm from the turn of the century until the late fifties. In the distance, the brand new S.S. United States, which has just captured the Blue Ribbon, steams against the backdrop of downtown Manhattan and Governor's Island.

Appropriate, isn't it, that a man name Flood made his mark on the world painting nautical scenes. Born on the fourth of July in Philadelphia, **James Flood** has been sketching and painting from the time he was four. His early years embody the stereotypical mold of the artist type — restless and distracted at school, doggedly pursuing his craft and developing his talent, often to the dismay of family. His dedication to the subject was instilled in him at a young age, and was a passion that had outlets beyond the paintbrush and canvas. Flood recalls with joy memories of a young boy who would meticulously create and "sail" his very own fleet of motorized ship models. "I've had a lifelong fascination and attraction to water," he said. As a young man he served in the military, joining the Navy in 1967. Flood first served on Laffey, then aboard Wright, and then as quartermaster on the U.S.S. New Jersey. The latter, he admits, was his dream come true. "I felt as though I had been let loose on one of my model ships," he said.

Captured on film from a recent visit to the U.S.S. New Jersey, a reminiscent Jim slouches against the wall of the fifth deck room where he had formerly spent much of his free time painting and playing the piano. Apparently, not even a war could deter Jim from his passions, and the image from one of his works painted during this passage was used as the end covers for the U.S.S. New Jersey history book. The painting itself remains at the naval Historical Museum in Washington, D.C. Following the Navy, Flood enrolled in college on the GI Bill to study art, but ironically, it was this experience that drove him away from art for some time. "They told me I was trite because I painted

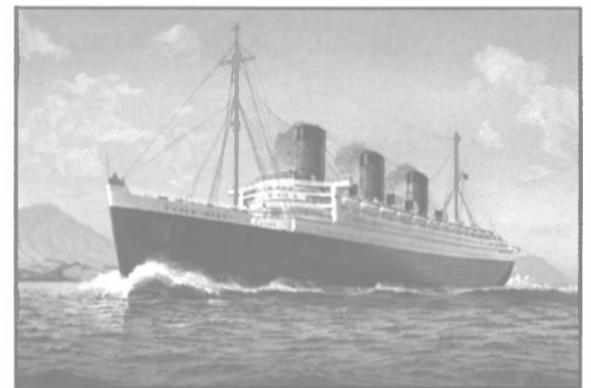
ships," he said, noting that the political and hippie movements of the time inspired an abstract brand of art that simply was not to his liking.

Flood finds inspiration among his colleagues, and specifically notes the works of Carl G. Evers, Bill Muller, Van de Velde and Stephen Card. "Carl Evers is my 'sea daddy' ... I've always been fascinated with how he handled the sea; there was nobody like him." He counts Van de Veld's "HMS Resolution in a Gale" as one of his favorite paintings of all time. His work is on display at the Naval Institute in Annapolis, the Wiley Post Museum in Oklahoma City, the Olympia Memorial in Philadelphia, the battleship Alabama in Mobile, the Biscayne Bay Harbor Pilots Association in Miami, the Washington Historical Museum, the Queen Mary, the Mystic Seaport, The U.S.S. Texas, the U.S.S. New Jersey, and the Historical Museum of South Florida, as well as on the bridges of many cruise liners. His art has appeared in the Naval Institute's Naval History Magazine, Steam Boat Bill, the Journal for the Steamship Historical Society of America, Pictorial Histories, Sea Classics Magazine, Preston's, and Military History Magazine. Flood's clients include the former governor of New Jersey, Christie Todd Whitman, as well as actor Sylvester Stallone and tennis champion Gardner Mulloy. Singer Rod Stewart has collected most of Flood's works in either giclee or lithographic format. His paintings have been used in the sets of a 20th Century Fox film, Speed Two and at a Memphis Exhibition on the Titanic in 1997, as well as on the set of Frasier. **For more information, e-mail him at [jamaesaflood@jamesaflood.com](mailto:jamaesaflood@jamesaflood.com)**



#### **Britannia and Other Yachts Off Cowes 1912**

This view shows his majesty's yacht Britannia, owned by **King George V**, racing with other yachts off Cowes around 1912. In the background steams the RMS Olympic, while further in the distance looms the royal yacht Victoria and Albert. Designed by G.L. Watson, the Britannia was built in 1893 at Henderson's yard on the Clyde. She immediately proved herself a success, becoming a champion yacht in her first year. King Edward VII and his son George V regularly enjoyed sailing the Britannia. King George V requested that, after his death, the Britannia be scuttled rather than scrapped. Commissioned to be displayed in the Commodore Lounge on the Queen Mary II



#### **Queen Mary 1936 Speed Trials, Arran Mile**

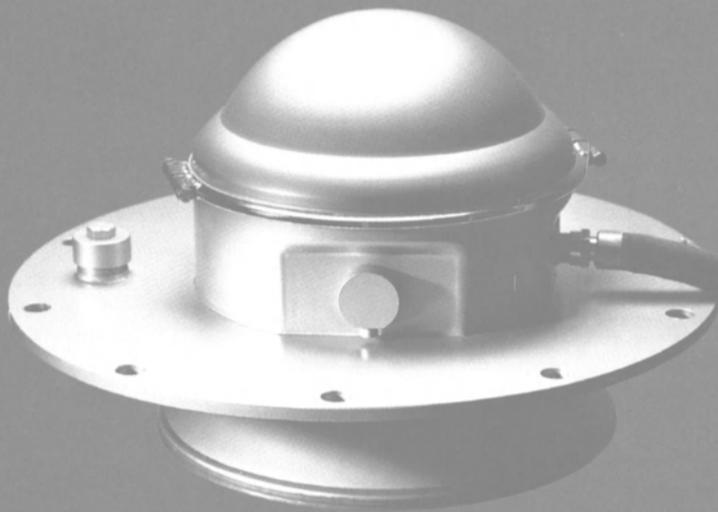
Displayed in QM2's Onboard Gallery

Queen Mary 1936 Speed Trials, Arran Mile This painting shows the brand new RMS Queen Mary shortly after her release from the King George V Graving Dock, running her speed trials off the coast of the Island of Arran. Her hull is freshly coated with anti-fouling paint, crews having removed the accumulation of growth and barnacles that had developed during the time between her launch and final completion date. She has proceeded up the Irish Sea to the coast of Scotland, to the measured mile just off the coast of the Island of Arran. Here the Queen Mary is conducting her speed trials, as well as other tests, to determine her efficiency before being turned over to Cunard. The Queen Mary will pass her tests effortlessly, and continue on to a magnificent career both in war and peace. Today she is permanently berthed in the Port of Long Beach, California, open to visitors



Titanic deck scene painting

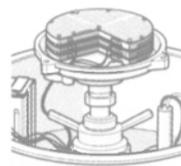
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# Count & Scratch

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# The Containership Market: Full Steam Ahead?

By David Tinsley, Technical Editor

Liner shipping is traditionally a cyclical business, subject to dramatic peaks and troughs and sudden changes in fortune in individual trade lanes. Today's ebullience among all sectors of container shipping, including its various intermediaries, compares starkly with the situation in the latter part of 2001, when the market had hit a low point and the prophets of doom were out in force. Yet, only a year before that, market analysts had been talking of inexorable growth in seaborne containerized transport. Right now, the industry exudes confidence that the bull market for deepsea carriers will continue through 2004, after what proved generally to be a boom time for the liner shipping world last year, on the back of a rebounding world economy.

The container liner business has two strong cards. One is that it is based on the exchange of multifarious finished goods and semi-finished products between a multitude of buyers and sellers in both mature and emerging markets, with a gravitation to consumer-led trade. The other is that container shipping was conceived from the outset as an intermodal system, facilitating the efficient intermeshing of each element in the transport chain from cargo source to point of delivery.

A record volume of new tonnage was ordered in 2003, against surging trade demand, not least for cargo out of China, and strengthening rates and liner shipping company profitability gave a boost to the industry after the slump of 2001-2002. The shipper community felt the affects of the buoyancy in shipping, by way of contracts concluded at higher levels and shorter durations. Although vessel capacity is set to grow by 8% this year, it is anticipated that cargo demand will ensure that the new volume is taken up. China's economic growth in 2003 has been quantified as 9%, and the country's emergence as an export-orientated industrial powerhouse can be expected to continue to have a signal, positive bearing on the liner shipping market in the foreseeable future.

Paris-based broker Barry Rogliano Salles reported that the global cellular fleet reached 3,185 ships of 6.63-million TEU at the outset of 2004, signifying an 8.9-percent increase in capacity over the year, albeit less than the average annual

growth of 10.7-percent for the past 10 years. BRS calculated that 177 vessels totalling 575,000-TEU were delivered in 2003, compared to 201 of 646,000-TEU completed in 2002. However, last year's newbuild contract intake reached record levels, totaling 520 vessels of 2.123-million TEU. The massive influx of new construction drove the order book to 2.7-million TEU by the start of 2004, corresponding to 41-percent of the existing fleet. To give added perspective to the newbuild boom, the value of cellular tonnage booked in 2003 amounted to nearly \$22-billion, whereas the 82 ships of 363,000-TEU booked in the preceding year represented an overall contract worth of \$3.7-billion. The broking house anticipates that the world cellular containership fleet will grow by 11.3-percent per annum to reach 9.15-million TEU in January 2007. Significantly, due to the predominant capability among the large ships for a speed over 24-knots, the transport potential will have risen at a faster rate than the advance in capacity. "Given the schedule of deliveries, the size of the fleet may enter the 'danger zone' in the second half of 2005, and 2006 could be a year of low charter rates," warns BRS. Some 80-percent of the capacity ordered in 2003 was made up of ships in excess of 4,000-TEU, including 109 newbuilds over 7,500-TEU. In the latter category, the order book was accordingly boosted to 126 vessels at the beginning of January this year, compared with only 30 ships of more than 7,500-TEU in service. "Very large container ships (VLCS) of 8,000-10,000 TEU will be the workhorses of the Asia/US and Asia/Europe routes during the second half of the decade," forecasts BRS. "At the beginning of 2007, 140 ships of more than 7,500-TEU will ply the high seas," adds the company, observing that this will be enough to run 12 Asia/Europe loops and 12 Asia/US loops, offering a weekly capacity of 100,000-TEU on each of the trades. By 2010, there could be as many as 300 such vessels in operation.

In a presentation to the Liner Shipping

Conference held in London during April this year, Howe Robinson Shipbrokers' head of research and consultancy, Paul Dowell, put the boxship orderbook to that point at 650 vessels of some 2.9-million TEU, of an average size of 4,350-TEU and equating to 39-percent of the global fleet. Deliveries spanned the next three and half years, including scheduled completions of 173 ships of 688,500-TEU in 2004, 212 vessels of 789,000-TEU in 2005, and 216 ships of 1,067,000-TEU in 2006, with around half a million TEU of new capacity contracted so far for handover in 2007. From an average size in the region of 3,700-4,000 TEU for this year and next, the average for the 216 ships to date due out of yards during 2006 swells to 4,875-TEU. Notwithstanding the huge tonnage expansion implemented in recent years, Mr Dowell suggested that the under-4,000 TEU sector had been "under-built" since 2000, as would be

**The global cellular fleet reached 3,185 ships of 6.63-million TEU at the outset of 2004, signifying an 8.9-percent increase in capacity over the year**

the case until 2006 at least, and that the supply of Panamax ships could be expected to be tight for the next three years. While observing that shipyards have limited capacity available until 2007 and that newbuild costs are increasing, he ventured that there could be an undersupply of charter ships for 30 months or more.

The liner shipping industry's quest for greater economies of scale and enhanced unit cost efficiency has seen the largest vessels more than double in carrying capacity since the first generation of 4,300-TEU post-Panamax ships made its debut little more than a decade and a half ago. The growth in cargo volume has been attended by a requirement for speeds of 25/26 knots to meet scheduling needs and service expectations. The current advance to vessels in the 9,000/10,000-TEU category may be viewed as an interim step until the realization of long-mooted plans for behemoths of 12,000-TEU and perhaps larger, for which the industry is prepared. Port and terminal operators in major trading and transshipment areas continue to invest in the capability to accommodate and efficiently work future genera-

tions of mega-containerships.

Broker sources attributed a price of around \$94-million per ship to a pair of 8,600-TEU newbuilds placed in South Korea during March this year, underlining the steep climb in costs from 12 months previously, when tonnage in the 8,000-TEU category from Korea commanded in the region of \$75-million to \$80-million. At the time of writing, with pressure on berths and surging steel plate costs, there was every likelihood that boxship negotiations in hand would result in prices breaking the \$100-million barrier. The latest phase of Hapag fleet investment calls for deliveries of two 8,600-TEU vessels from Hyundai Heavy Industries in spring and fall 2007. The huge capacity will be attended by a 25-knot speed, to meet scheduling requirements in the trade between Europe and eastern Asia, and the design to be employed will have a length of 335-metres, breadth of 43-metres, and draught of 14.50-metres.

Explaining the rationale behind the contract, the company's executive board chairman Michael Behrendt said "Our fleet expansion program shows that we intend to take advantage of the market opportunities resulting from the expected growth in world container transport. In view of the current market conditions, we have decided to purchase the ships, as this is less expensive than chartering." With the April 2004 commissioning of the last in a series of four 6,750-TEU newbuilds, the Hamburg operator is set to add two vessels in the 8,400/8,600-TEU range to its liner framework next year, to be followed by a further 8,600-TEU newbuild during 2006, before the planned handover of the most recently contracted pair.

Developments in two-stroke diesel engine design have had a fundamental bearing on the realization of plans for single-engined, direct-drive containerships offering capacities in excess of 8,000-TEU at speeds to 26-knots. It is considered that the largest low-speed diesels already in production can provide adequate power for linehaul ships up to around 9,000-TEU at the requisite speeds, while as yet untried 14-cylinder versions of existing MAN B&W and Wartsila Sulzer designs, plus the wider-bore K108 type developed by MAN B&W, push the bounds further.

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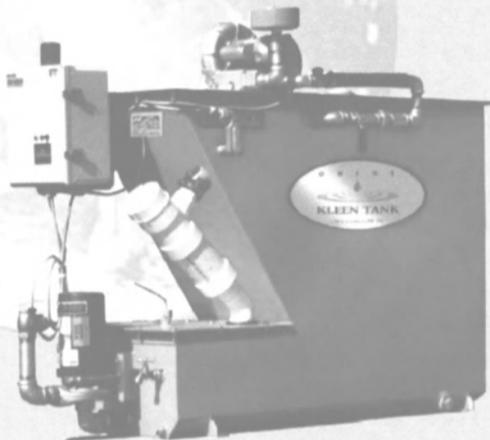
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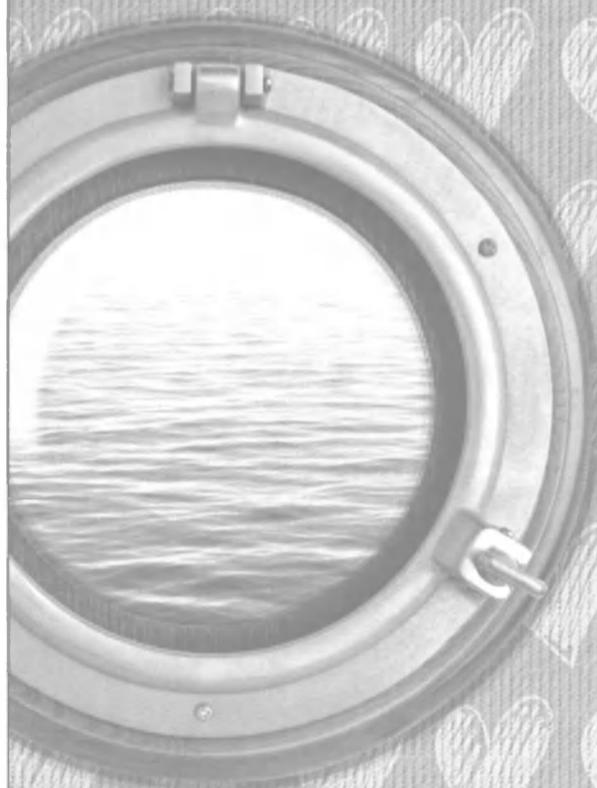


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# Will Oil Continue Heading Up?

"Due to increasing demand and reducing reserves, oil prices currently at \$40 are likely to soon enter a period of sustained rises resulting in a need to massively develop natural gas and renewable energy resources" according to **John Westwood** of energy analysts Douglas-Westwood.

"Oil reserves are depleting and demand growing. Recent increases in oil demand from China, for example, are likely to accelerate. The average American consumes 25 times as much oil as the average Chinese yet China has five times the population and is industrializing rapidly. Vehicle growth in China is rising rapidly and this will cause global demand for oil to continue its increase.

Quoting from a number of new studies on oil, gas and renewable energy published by his firm, Westwood said, "Any growth in global economic activity increases oil demand such that at 1% demand growth a production peak occurs in 2016, at 2% it occurs in 2012, and at 3% it occurs in 2008. "The world's known and estimated yet-to-find reserves and resources cannot satisfy even the present level of production of some 76 million barrels per day beyond 2020."

## Oil Production to Decline

Oil & gas supplies studies author Dr **Michael R. Smith** of Energyfiles said "although 99 countries have produced or can produce significant oil, 52 are already well past their production peak, including the U.S., and this is now happening in several more, including the UK. Another 16 are at peak or will reach it soon. As graphically displayed in the Energyfiles Online Database, once a country is past peak production, there is a negligible chance that it will be able to reverse its long-term decline. Of course

when this happens to total global oil supply then growth in demand will be impossible."

"Large capital investments within OPEC countries are already required to rapidly increase production after 2008 by at least an additional 1 to 2 million barrels per day every year to offset declines elsewhere. It is by no means certain that such growth in output will be achieved as fast as is required. It is likely that the world will then begin to see sustained growth in oil prices.

## Oil Prices to Double?

"Once oil supplies begin to approach peak so oil prices will, like during the oil shocks of the 1970s, double within 3 or 4 years as the world changes from oil abundance to oil scarcity. Then prices will continue to rise until sufficient falls in oil demand are achieved.

"Under such a scenario a new stable energy mix might ultimately be achieved with substitute fuels but how long this will take is uncertain.

"Price rises will depend on the real global response to impending and actual shortfalls - a response that needs to be implemented immediately. Drastic conservation will make prices fluctuate as they did in the oil shocks, always settling at a higher level.

"Meanwhile producers will face steadily increasing government, environmental and conservation regulations. Windfall profits arising from energy price surges, which traditionally have funded new oil and gas investment, will have to be, at least partly, employed in bringing other forms of energy to profitability. "Without early remedial action the discussion is not if oil prices will massively increase, but when they will."

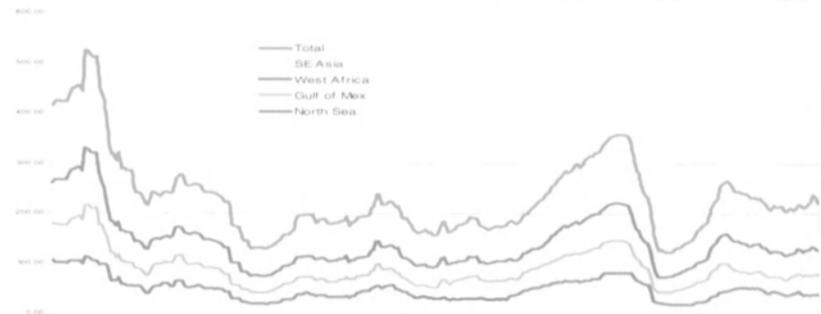
## Importance of Natural Gas

"Natural gas is the only viable fuel

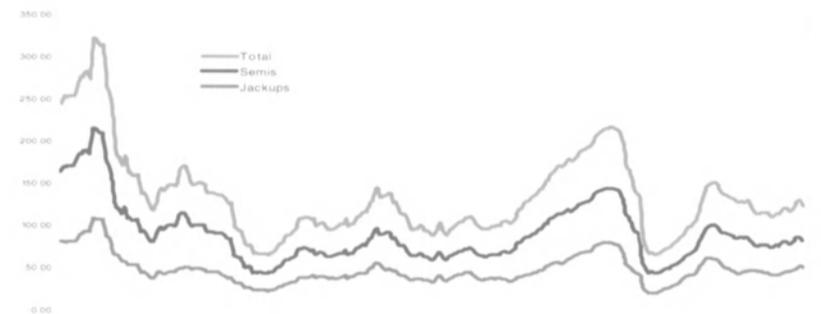
## Offshore SCORE Continues Decline

GlobalSantaFe Corporation reported that the company's worldwide SCORE, or Summary of Current Offshore Rig Economics, for April 2004 was down 4.5% from the previous month's SCORE. GlobalSantaFe's SCORE compares the profitability of current mobile offshore drilling rig dayrates to the profitability of dayrates at the 1980-1981 peak of the offshore drilling cycle. In the 1980-1981 period, when SCORE averaged 100 percent, new contract dayrates equaled the sum of daily cash operating costs plus approximately \$700 per day per million dollars invested. In addition to a worldwide SCORE covering key types of competitive offshore drilling rigs in key drilling markets, a separate SCORE is calculated for certain types of rigs and certain regions to indicate the relative condition of rig markets. The release, which is made available for publication on the third Monday of each month, includes separate SCORE calculations for the U.S. Gulf of Mexico, the North Sea, West Africa and Southeast Asia.

## SCORE History by Geography • 1981-2004



## SCORE History by Type • 1981-2004



that can link the carbon-based global energy supply used today to a renewables-based energy supply that will have to be used in the future," said Smith. "It is the only relatively clean alternative to oil and coal, fully supported by com-

mercially effective production and distribution technologies - there is little doubt that natural gas will be the key fuel of the future.

"Total remaining gas reserves and resources are huge, estimated at 275

## Spending on Floating Production Systems: 1999-2008

\$ mn	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
FPSOs	3,320	986	1,893	1,392	2,017	3,231	3,294	3,790	6,020	5,495
FPSSs	390	1,350	1,307	30	600	600	555	600	1,205	975
Spars	600	0	380	125	440	640	605	1,050	550	700
TLPs	945	0	810	0	1,238	300	772	410	570	590
<b>Total</b>	<b>5,255</b>	<b>2,336</b>	<b>4,390</b>	<b>1,547</b>	<b>4,295</b>	<b>4,771</b>	<b>5,226</b>	<b>5,850</b>	<b>8,345</b>	<b>7,760</b>

(Source: The World Floating Production Report, Douglas Westwood)

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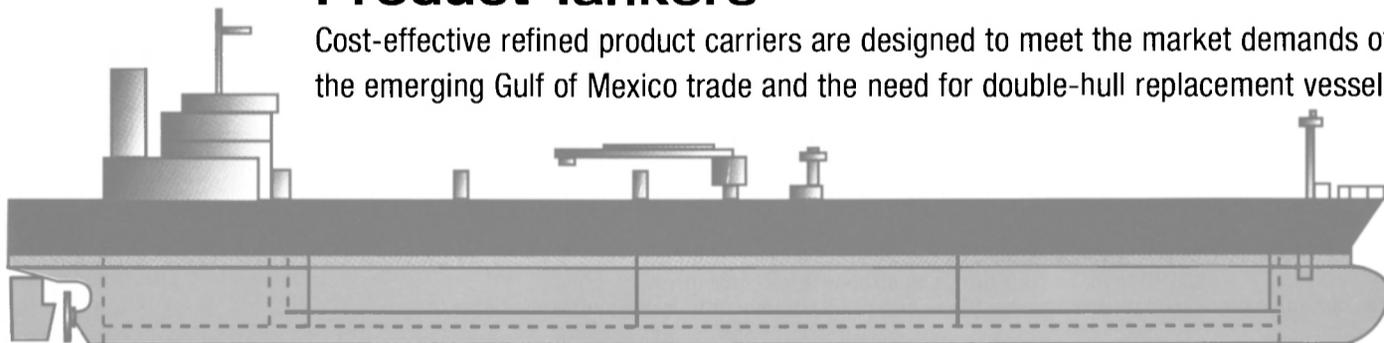
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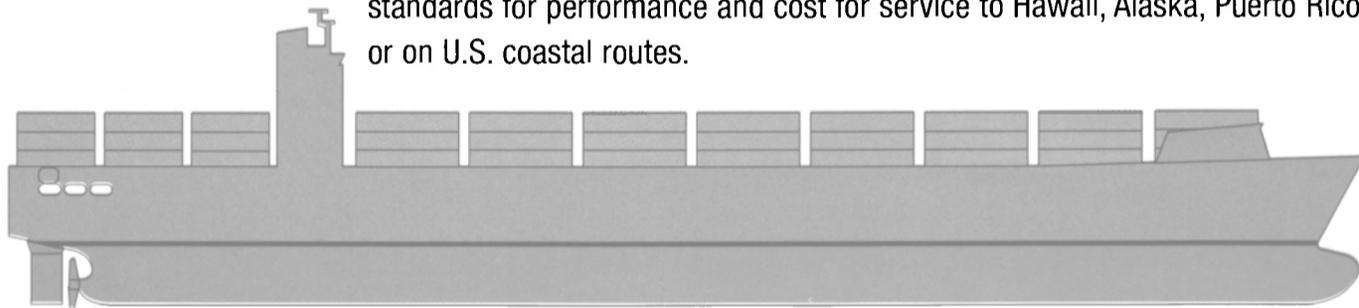
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Tem, almost double oil resources in oil equivalent terms. Russia holds the largest share but a significant portion is also located in the Middle East. "Global production of natural gas, currently

some 2,600 Bcm, is expected to grow to 4,755 Bcm per year by 2025 an average increase of 2.75% per annum.

Estimates of capital required for its exploitation range between \$25bn to

\$40bn per year. Considering LNG alone, we expect over \$39 billion to be spent over the next five-year period on LNG plants, carriers and import terminals."

For additional details on this report as

well as other reports from Douglas-Westwood

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### Floating Production: The \$8 Billion Market

One hundred and twenty floating production systems are forecast to be installed over the next five years involving capital expenditure estimated to be \$32 billion, according to the study The World Floating Production Report from Douglas-Westwood. (see chart previous page) "Annual capital expenditure on floating production systems is set to exceed \$8 billion, with a predicted 84 FPSOs accounting for some 68% of investment over the next five years," said Steve Robertson, the study's main author. "The overall picture is one of strong market growth from 2004 onwards, with annual global expenditure in the FPS sector rising from an estimated \$4.8 billion in 2004 to reach \$7.8 billion in 2008. An expenditure peak is expected in 2007, when the annual spend is expected to reach \$8.3 billion.

"In terms of the total market, and counting floaters of all types, we expect West African expenditure to lead at some \$10 billion over the next five years. Although Brazil will see a strong surge in investment, North America will also see good growth and is likely to be in second place with a forecast spend of over \$7 billion.

"The other main characteristic of the market will be the continuing shift to deepwater" said Robertson. "We forecast that 70% of the global spend will be on floaters moored in water depths of 500 metres or greater."

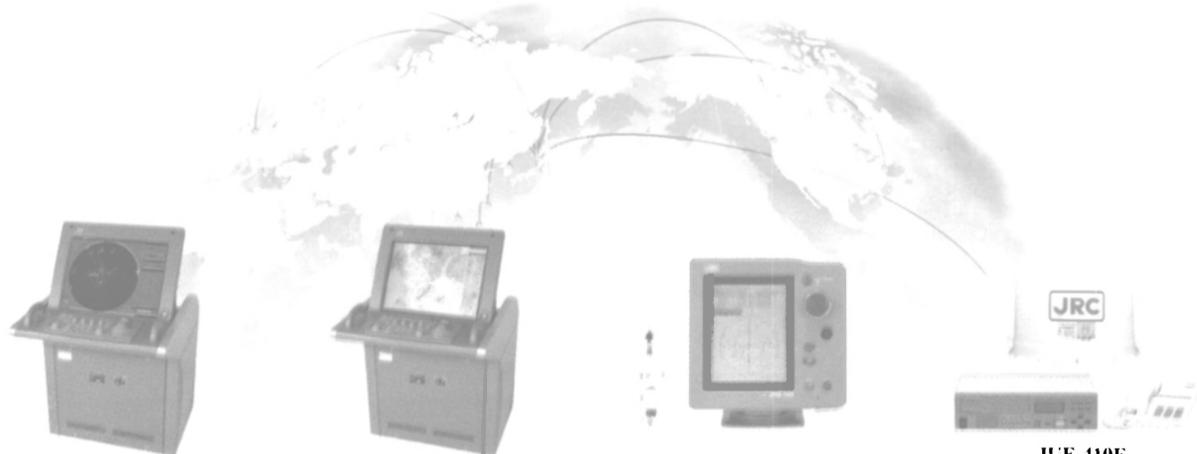
"Over the past five years the deepwater market was dominated by the US Gulf of Mexico and Brazil which together accounted for over 75% of the total spend.

"The market distribution for the 2004-2008 period is markedly different, the main change being the high growth in the value of deepwater activity off the west coast of Africa. We forecast Capex of \$8.5 billion associated with deepwater FPS installations here, making the region the world's leading deepwater FPS theatre. All the other regions will also see increases in deepwater FPS activity, with North America's spend rising to \$7.0 billion (31% of the global deepwater total), and Latin America's to \$4.9 billion. Australia looks set to see its first deepwater deployment, with Woodside's Enfield FPSO installation forecast for 2006. Off Asia a total of



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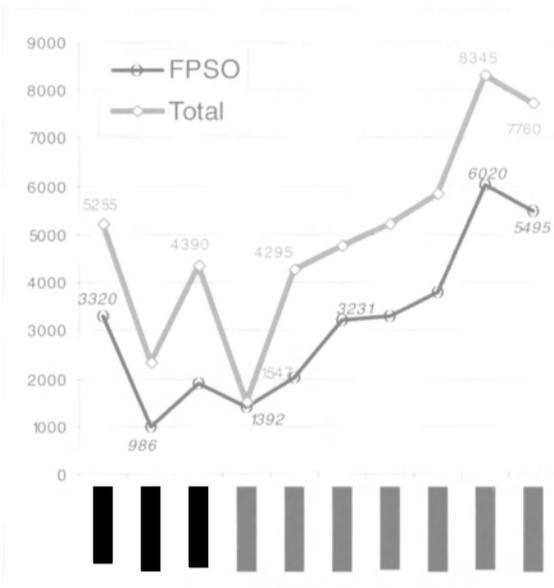
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## FPSO Spending: 1999-2008



(Source: The World Floating Production Report, Douglas Westwood)

nine installations — five TLPs, two spars, a barge and a FPSO — are forecast with a total capex of \$1.7 billion."

The World Floating Production Report uses information from The World Floating Production Database, a new information system from Douglas-Westwood. According to database editor, Georgie MacFarlan, "over the next five years we expect just 12 operators to account for 60% of the installations and almost 80% of the capex forecast worldwide for the 2004-2008 period. "Petrobras, with 13 installations forecast, is expected to be the biggest spender, followed closely by ExxonMobil, then ChevronTexaco, BP and Shell."

## PPL Shipyard Wins \$117.6M Rig Contract

PPL Shipyard, a subsidiary of SembCorp Marine won a \$117.6 million contract from Mosbarron Ltd., a subsidiary of Awilco AS of Norway, for the construction of a Baker Pacific Class 375 Jack Up Rig.

The contract includes an option for another three units of jack-up with price adjustment for increase in drilling package. The design of the 120-person jack-up rig is a proprietary design of Baker Marine Pte. Ltd, a wholly owned subsidiary of PPL Shipyard. It is designed to operate in 375 ft. of water and in-ground drilling depth of 30,000 ft. Work on the new rig is expected to commence in June 2004 with delivery scheduled in the second quarter of 2006.

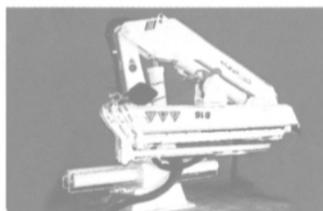
To-date, PPL Shipyard has built 25 jack-ups and four semi-submersibles. It has in 2003 delivered the first deepwater jack-up drilling rig to GlobalSanteFe International with the second jack-up drilling rig recently delivered in March 2004.



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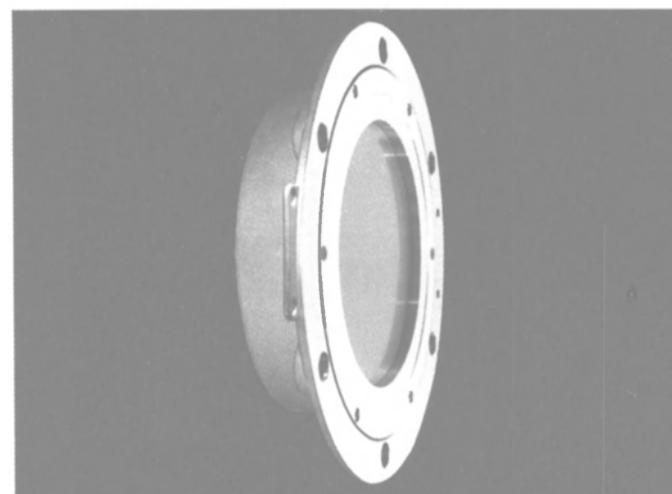
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# LNG Fleet Needs to Triple by 2020

World LNG demand is forecast to rise from 158 billion cubic meter (bcm) to 269 bcm by 2010 and to 428.5 bcm by 2020. This growth represents an average annual trade growth of 7.6% over the near-term, with a slowing to 5.4% through to 2015 and 4.9% up to 2020.

Such trade growth will necessitate an increased vessel building program. Currently there are 59 vessels on order, but to match the expected development of trade volumes an additional 33 vessels are required through to 2010, 76 vessels in the period 2010-15 and 83 vessels up to 2020. These are some of the findings of the new report on the LNG sector, published by Ocean Shipping Consultants Ltd. The 163-page World LNG to 2020: Prospects for Trade & Shipping report forecasts that an extra \$5 billion of additional newbuilding vessel investment is required before 2010 and an additional \$24.1 billion through to 2020. Trading patterns are set to change significantly over the next decade as new markets and suppliers emerge, vessel capacities are increased and the spot market grows in prominence. A summary of some of the findings of this major new study, which analyses in detail the expected development in all aspects of the world LNG industry, follows.

## LNG Trade & Imports to 2020

- Global LNG trade is set to increase by an average approximating 7.6% over the near-term, with a slowing to 5.4% in the second half of the decade. In the final part of the study period, average annual growth is forecast at around 4.9%.
- Annual trade is expected to increase from 158 bcm in 2003 to over 269 bcm in 2010, 346 bcm in 2015 and 429 bcm in 2020, this equates to a rise of 70% by 2010 and 172% by 2020.
- Of the world trade, East Asian import markets accounted for almost 109 bcm of the 2003 total of 158 bcm. Imports are set to increase to over 139 bcm by 2010 and 181 bcm by 2020.
- In early 2004, India became an importer of LNG, however there are currently no other Asian LNG markets. Large-scale imports are set to follow the start up of terminals in Thailand, the Philippines, Singapore, Myanmar and New Zealand. By 2010 the annual import total for these markets is forecast at almost 21 bcm, rising to 38 bcm by 2020.
- Western European markets imported just over 41 bcm in 2003 and are set to increase volumes to 139 bcm by 2010



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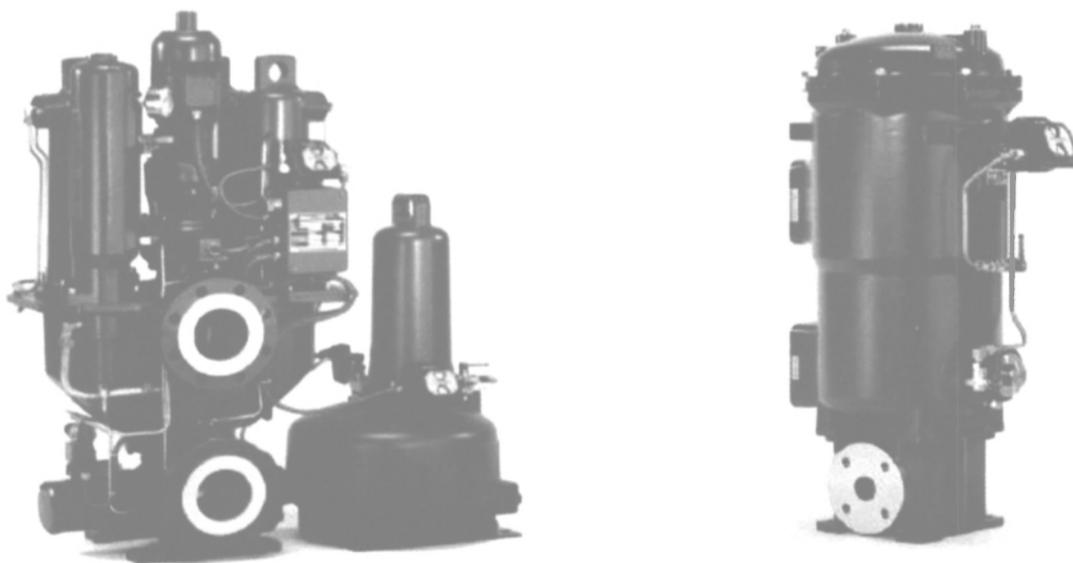
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and 181 bcm by 2020.

- LNG imports to the USA reached 6.8 bcm in 2003 and are expected to reach 15 bcm in 2010 and 46 bcm in 2020. In Latin America there are prospects for import developments in the new markets of Mexico, Jamaica and Brazil within the study period, with the regional total amounting to 11.6 bcm, rising to 31.8 bcm by 2020.

#### LNG Export Suppliers to 2020

- SE Asian exporters are set to continue to dominate world LNG trade movements - accounting for approximately 84 bcm in 2010, rising to over 97 bcm by 2020 (from a 2003 level of 67 bcm). This expansion is based primarily on increased liquefaction throughput at Indonesian and Malaysian plants, with overall growth approximating 45%.
- LNG exports from the Middle East totaled 36 bcm in 2003 and are forecast to increase to 72 bcm in 2010 and 84 bcm in 2020, an expansion of over 48 bcm (133%). The region will increase in prominence as new local exporters such as Iran and Yemen enter the LNG market.
- Shipments from Australia are set to increase from the 10.5 bcm of 2003 to over 19 bcm by 2010 and to almost 38 bcm in 2020 as several new projects come on stream.
- Exports from West Africa are set to increase - primarily from Nigeria, but also including volumes from Angola and Equatorial Guinea in the latter part of the study period. 3 of 5
- Export levels of approximately 19 bcm by 2010 and 46 bcm by 2020, are projected for C/S

America, where current export volumes approximate 5.6 bcm, but are due to increase markedly through the ongoing expansion of the Trinidad project, and the commencement of LNG exports from Venezuela later this decade.

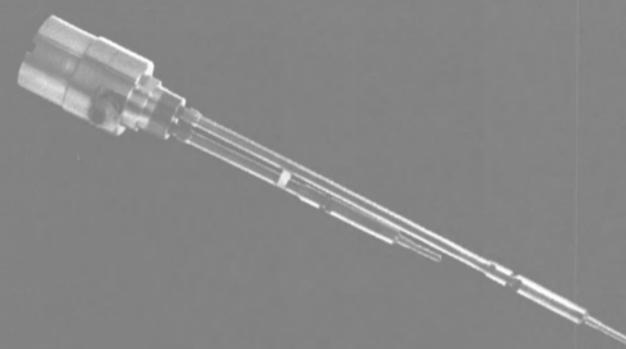
- Total North African LNG exports are expected to show a smaller increase than other exporting regions - mainly reflecting the likely development of extra trans-Mediterranean pipeline capacity.

- Elsewhere, the Sakhalin project in eastern Russia is set to witness extensive LNG export volumes towards the end of the study period as will the Norwegian LNG project.

#### LNG Fleet & Shipping Requirements to 2020

- Currently there are 59 vessels on order, which represents a total cargo capacity of 8.2 million cubic meters (mcm). This represents an additional 46% of LNG capacity due to commence trading over the next 2-3 years.
- Given the age profile of the current fleet, the volume of vessel scrapping over the near-term is likely to continue to be low, although there will inevitably be higher levels of vessel demolition later in the study period.
- From the current level of 17.7 mcm, the required LNG fleet is forecast at over 30.4 mcm by 2010, rising to over 52.4 mcm by 2020. In order to handle anticipated trade volumes and patterns therefore, the LNG fleet will need to expand by over 12.7 mcm (72%) in the period to 2010 and by 34.7 mcm (196%) in the overall period to 2020.

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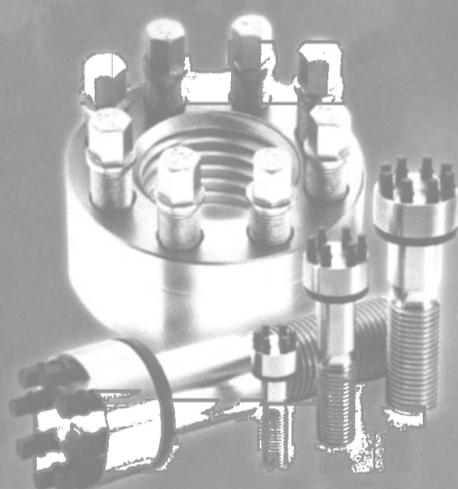


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(Photo Credit: Kvaerner Masa-Yards)

- A total of 4.6 mcm of new tonnage (in addition to that currently on order) will need to be ordered and delivered in the second half of the current decade to match the expected development of trade volumes and patterns over the interim period. For the 2010-15 period, a total of 10.5 mcm of new fleet capacity will be required, with 11.5 mcm needed for the 2015-20 period. For the future study period as a whole, a total of 26.5 mcm of new LNG capacity will be required, in addition to the 8.2 mcm of new capacity currently on order at Asian and European yards.

- There will be a requirement for the equivalent of a total of 92 large vessels (of around 138,000 cu.m capacity) to be delivered in the period to 2010, with an extra 76 vessels in the subsequent half-decade and an additional 83 through to the end of the study period. With 59 vessels already on order, this implies a need for 33 new orders to be delivered in the remainder of the current decade, and 159 vessels between 2010 and 2020. -

- At current newbuilding prices, the forecast vessel requirements translate to \$5.1 billion of extra new orders to be placed up to 2010, and a further \$24.1 billion in the following decade.

- The current orderbook will be sufficient for the anticipated trade expansion over the near-term, with an inevitable time-lag between vessel completion and full active employment resulting in vessel supply exceeding demand by 2-3 mcm over 2005-07. However, a shortage of 1.8 mcm vessel capacity is anticipated by 2009 and a massive 4.3 mcm by 2010

- If LNG supplies were cut off - due for example to terrorist actions - from a leading exporter, the effect could be a massive boost in vessel requirements, due to the required re-routing of supplies from other sources. In the case of Algeria, this could be the equivalent of 28 extra vessels at the present time, rising to 33 vessels by 2010. However, a more likely scenario will see the European pipeline network increase capacity in the near-term and thus reduce the extra number of vessels required to transport LNG to the European markets.

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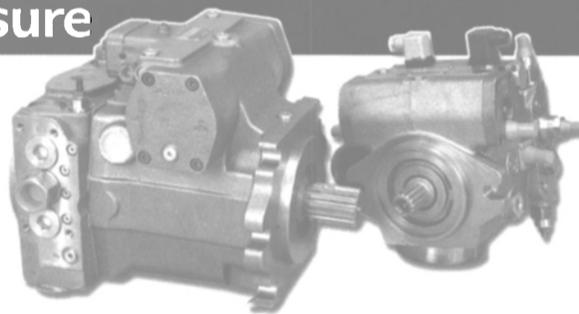
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For more information on the report, e-mail [info@OSClimited.com](mailto:info@OSClimited.com)

Maritime Reporter & Engineering News

## New Free Fall Lifeboat Carries More People



The new SC59FF free fall lifeboat from Survival Craft Inspectorate is touted as a cost-effective safety system for cargo vessels, tankers and offshore platforms. By optimizing the interior layout of the new 5.9 m lifeboat, designers have achieved 25-passenger carrying capacity. Constructed throughout from corrosion resistant materials, the hull and canopy of the new 5.9 m (19-ft.) lifeboat are molded from GRP. The SC59FF is launched and recovered using a hydraulic ramp and is capable of providing its occupants with a rapid escape from heights up to 13 m. The fire-protected version of the SC59FF is equipped with an external water spray and an internal compressed air supply that enable it to provide the highest levels of protection for tanker and oil platform crews. The new lifeboat also incorporates integral buoyancy that ensures it is fully self-righting even if significantly damaged.

Circle 3 on Reader Service Card

## Wartsila to Power New DE Tanker

Wartsila Corporation received a contract to supply main diesel generating sets for a 19,500 dwt product/chemical tanker being built at Shanghai Edward Shipbuilding in the People's Republic of China. Delivery of the ship is scheduled in August 2005. Ordered by Sweden's Rederi AB Donsotank, the newbuilding is a double-acting tanker (DAT) which is optimized for efficient ice-breaking when going astern and for efficient sailing in open water when going ahead. Propulsion is by a single electrically-driven azimuthing propeller drive. The 9.3 MWe diesel-electric plant is powered by four generating sets; three sets with Wartsila 6L32 diesel engines, each

with a maximum continuous output of 2,880 kWe at 750 rpm, and the fourth set with a Wartsila 4L20 diesel engine of 685 kWe output at 1,000 rpm. The engines are scheduled for delivery from

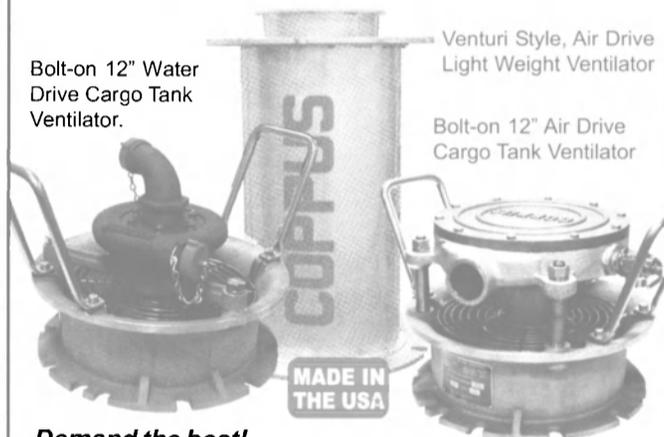
the Wartsila Vaasa factory in November 2004. The three Wartsila 6L32 engines will be equipped with common-rail fuel injection. The shipowner has adopted common-rail injection because of it

enables the engines not to emit visible smoke under any operating conditions. This will be Donsotank's fifth vessel equipped with Wartsila main engines

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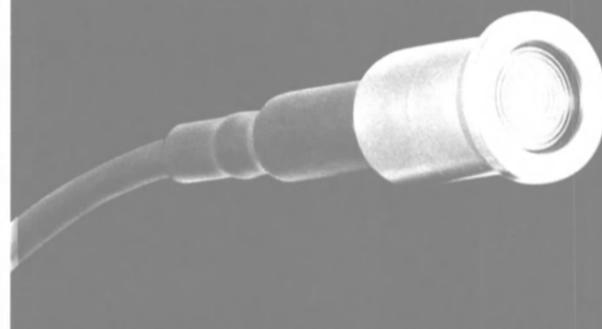
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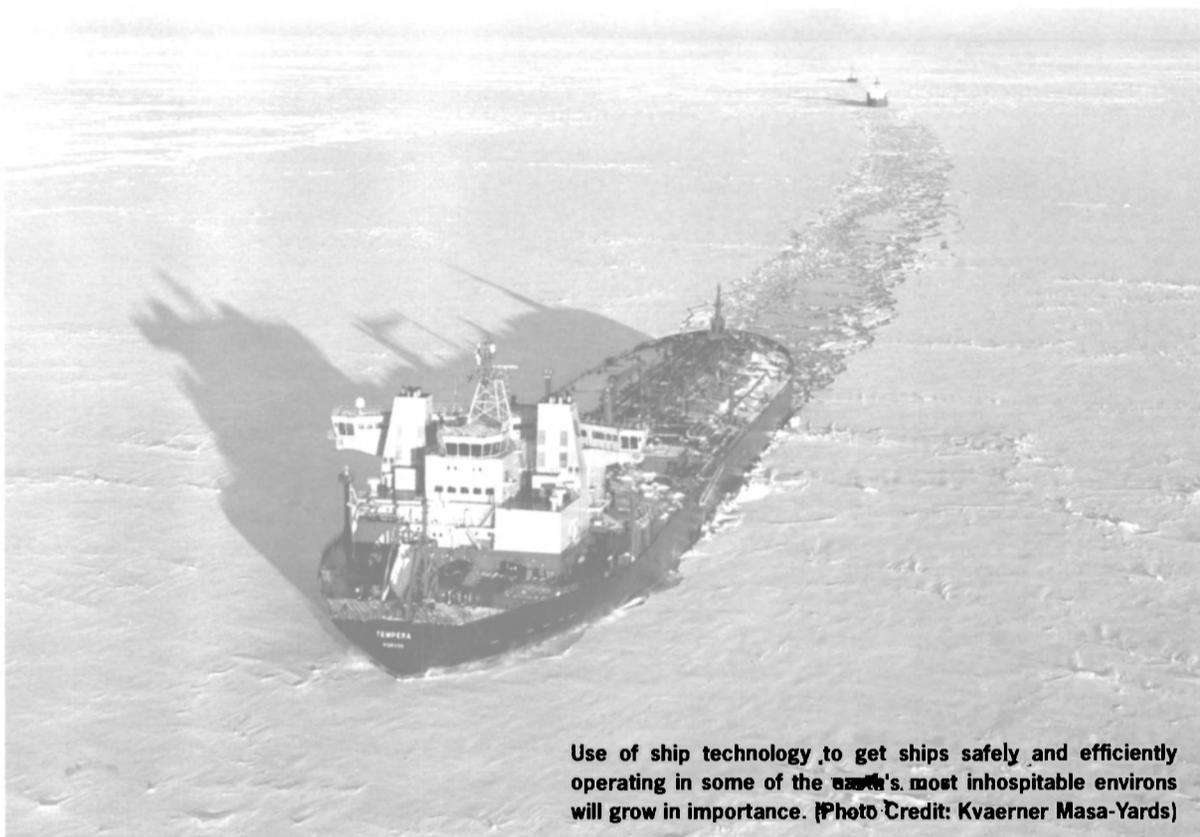


# Ice Tech: The Northern Promise

By David Tinsley, technical editor

Increased interest in ice-classed tankers has been fostered to a great extent by the emergence of former Soviet Union (FSU) states as important players in the oil market. The FSU collectively, but with particular reference to Russia, Azerbaijan, Kazakhstan and Turkmenistan, has emerged as the engine of global oil supply growth. Since 1996, FSU output has grown by around 50-percent, approaching the highs achieved during the Soviet regime. The fact that a substantial part of the production has been made available for export has key implications for sea borne transportation logistics and opportunities. Special challenges are presented for tanker design and operations because of the harshness of the environments in which the trade has to be conducted.

According to Lloyd's Register, shipments from the northern Baltic are set to double over the next five years, with the accent on routings via the port of Primorsk. The western Russian port was the outlet for 12-million tons of oil in 2002. "This could become 90-million tons in five years' time, maybe up to 135-million tons if local plans are successful," reported LR, which has considerably raised its profile in the ice-strengthened tanker category in recent years. Access to and from Primorsk means overcoming winter ice infestation, typically from November or December through March, and optimum vessel size is around 110,000-dwt, due to draft limitations in the port and in the Danish Straits. Considerable reserves exist in Siberia, and anticipated large-scale exploitation could have a pronounced effect on Arctic shipping activity. Industry sources believe that the port of Murmansk, blessed with freedom from ice throughout the year, despite its location within the Arctic Circle, on the Barents Sea, will come to play a pivotal role in the export of northern Russian crude. It is foreseen that oil will be worked into Murmansk from the ice-bound regions to the east using tankers from about 20,000-dwt potentially up to Aframax size. The demand for such tonnage would be influenced in future years by the anticipated development of the pipeline infrastructure. Onward movements from Murmansk could be handled by vessels as large as 300,000-dwt VLCCs, assuming the requisite



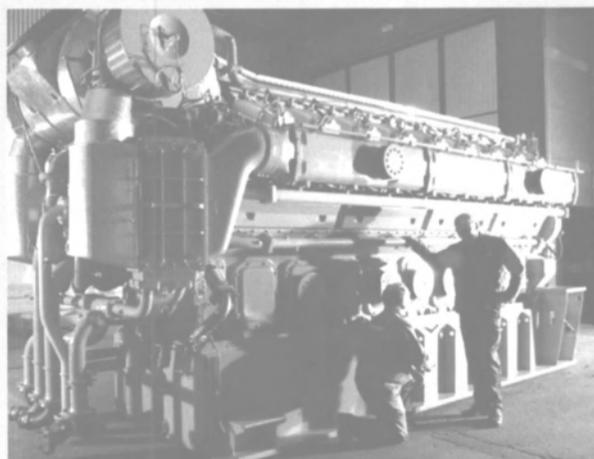
Use of ship technology to get ships safely and efficiently operating in some of the world's most inhospitable environs will grow in importance. (Photo Credit: Kvaerner Masa-Yards)

investments are made in terminal facilities.

LR said the industry had witnessed a rush to order ice-reinforced tankers in 2003, driven mainly by the expected growth in the export traffic via Primorsk, and so far largely entailing high ice-class tankers of Aframax size. Not only the scale of the traffic, but also the distribution and emphasis in shipment destinations, such as short-haul to western Europe and long-haul to the USA and elsewhere, will impact on the nature of vessel demand. In the event of Primorsk-routed exports to the U.S. reaching 30-million tons by 2010, the traffic would equate to 35 Aframax tankers. A contemporaneous export volume of 75-million tons to the U.S. by way of ice-free, albeit low-temperature Murmansk, would equate to 32 VLCCs.

A flagship project for the society was the classification of Fortum Shipping's 106,000-dwt, Sumitomo-built *Tempera* and *Mastera*, designed to provide year-

round service to the owning group's Finnish oil refineries, and distinguished by 1A Super Ice Class notation, podded electric propulsion, and embodiment of Kvaerner Masa-Yards' double-acting design concept. The double-acting principle, involving stern-going navigation in heavy ice, is being considered as a possible solution to shipping requirements for the Northern Sea Route passage through the Russian Arctic in the European Commission's ARCOP (Arctic Operational Platform) research project. A total of 21 organizations from Finland, Germany, Italy, the Netherlands, Norway, Russia and the UK, including LR, are participating in the study, focused on the transport needs associated with the development of natural resources in Russia's Arctic regions. It is thought that the probable application for the ARCOP ship design concepts will be shuttle or short-haul tankers for the transfer of oil to Murmansk for transshipment.



## New Era for Gas Engines

With more than 300 lean-burn, spark-ignited gas engines supplied for stationary power applications over the past 15 years, Rolls-Royce is making a determined bid to break into the marine propulsion market with its newly-bolstered series of Norwegian-developed, gas-fueled Bergen engines. The preparation of the K-G4 type for shipboard use, plus the unveiling of the altogether more potent B35:40V-G design, have been driven by mounting environmental legislation and by national commitments to air pollution reduction attendant to the Kyoto Protocol.

While cognizant of the longer-term, international market scope, the business rationale in developing a marine offering of environmentally-friendly reciprocating prime movers, conceived for 100-percent operation on gas, has an immediate national relevance, given the opportunities presented by Norway's investment in its LNG fuel supply infrastructure. A government-inspired project for five gas-fuelled, double-ended road ferries to serve two of the country's longer fjord crossings is expected to provide an important platform for the technology, and the gradual extension

of LNG bunkering points along the sea rim, coupled with a circumspect national energy policy, is expected to stimulate the uptake of gas-fuelled power and propulsion plant in coastal and offshore vessels. A small Norwegian LNG tanker and a modern fjord ferry currently use LNG as fuel in their high-speed engine plant, while two sophisticated offshore support vessels working Norwegian fields are distinguished by dual-fuel, medium-speed prime movers. The planned adoption of dual-fuel plant in French LNG carrier newbuilds has provided a fillip to the advocates of that technology. However, Rolls-Royce contends that its medium-speed, purely gas-ingesting machinery provides a simple, highly effective solution to low-emission powering needs, lending itself both to direct mechanical coupling to propellers and thrusters, and to shipboard electricity production. Moreover, test results have demonstrated that there are no operational limitations on sustained low load or transient operations.

Among the claimed advantages of employing lean-burn, gas-fuelled, Otto cycle engine technology are the low level of Nox (oxides of nitrogen) emission and the negligible release of Sox (oxides of sulfur) and particulates. LNG as a fuel has the attraction that its carbon content is lower than other hydrocarbon fuels such as diesel oil. If it is efficiently burned, the CO<sub>2</sub> (carbon dioxide) emissions from the engine are correspondingly low, a very positive factor for countries that have signed up to the Kyoto Agreement, and salient also to anticipated future international edicts governing CO<sub>2</sub> from ships' machinery. An added economic benefit is that lube oil consumption is low, and oil change intervals are long.

The main frame and much of the running gear of the K-gas engine is derived from the successful Bergen K-series diesel engines used in hundreds of vessels. A power output of 220-kW per cylinder is available, with running speeds between 600- and 1,000-rpm. The K-G4 has been released in configurations of 6, 8 and 9 in-line cylinders, and in 12-, 16- and 18-cylinder vee-form, covering unit powers to approximately 4,000-kW. If required at some later stage, K-gas engines can be converted for operation on marine diesel oil, and the company has also declared its readiness to convert K diesel engines to burn gas. A much larger, lean-burn, spark-ignition engine, founded on the B32:40 diesel engine hardware and K-gas engine technology, has been

launched for unit power needs up to 8,800-kW. Offering 440-kW per cylinder, in vee-type models of 12, 16 and 20 cylinders, the B35:40V-G design is said to have a thermal efficiency of 47-per-

cent. Although the B-gas engine has been primarily conceived for the expanding market for reciprocating engines for stationary, industrial uses, the 350 mm-bore design offers scope as

a marine power unit. In its 20-cylinder layout, the new Norwegian-built offering is claimed to be the world's most powerful spark-ignited, reciprocating gas engine.

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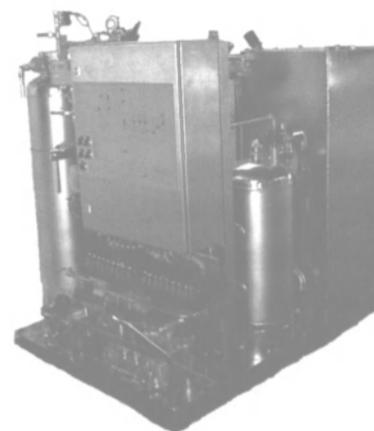


### Emulsion Breaking Bilge Water Cleaning System

Marinfloc AB is reportedly first manufacturer of Emulsion Breaking Bilge Water Cleaning System (EBWCS) that

shipowners and shipyards can choose to fulfill the new IMO regulations for new-buildings after January 1, 2005. The new Marinfloc Mark III type CD fully complies with the new IMO MEPC 107 (49).

The Marinfloc Mk III type CD is a fully automatic constant flow Emulsion Breaking Bilge Water Cleaning System. The manufacturer touts additional benefits to the new design, such as less sen-



sitivity to tensides, soot, fibers and chemicals, and, at the same time, less need for pre-heating of the process water while having a higher tolerance to fluctuations in the PH value. The separating and emulsion breaking technology used in the Mk III type CD keeps the water content in the drain/refuse to a minimum. In line with its predecessors, the Mk I and Mk II, the processed effluent water in the Mk III contains less than 5 PPM of oil.

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## NEW LEADERSHIP. NEW COMMITMENT.



ATLANTIC MARINE'S NEW TOP EXECUTIVES. Ron McAlear (left) is president of Atlantic Marine's new construction and ship repair facilities at Mobile, Ala., and Ed Fleming now heads up both new construction as well as ship repair at the Jacksonville, Fla. shipyard.

Over the past 40 years, Atlantic Marine has worked hard to build a reputation for quality workmanship, customer-friendly service, and on-time delivery in both new construction and ship repair. Now, our company has acquired new leadership that is eminently qualified and deeply committed to helping us achieve those goals on a consistent basis at both our Jacksonville and Mobile shipyards. This is a giant step forward for our company that we take with pride and enthusiasm.

Ron J. McAlear is now president of both our repair facility and new construction yard in Mobile. Ron is a former president and CEO of Kvaerner Philadelphia Shipyard. He served in various management positions for Avondale Industries from 1988 to 2000 and has been involved in shipyard operations for 30 years.

In Jacksonville, Ed Fleming has been promoted to president of our new construction yard. Ed has been president of our Jacksonville repair yard since 1989 and has been with Atlantic Marine for over 25 years.

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### Autoload 6.0 for Bulk, Tanker Markets



Autoship Systems Corporation (ASC) recently released Autoload 6.0 - a loading instrument software with specific features tailored to meet key requirements of the bulk and tanker markets. Autoload/Bulk 6.0 and Autoload/Tanker 6.0 are based on Autoload 5.0.1, but with a number of improved functions. For example, the Autoload 6.0 tank and weight dialogs have been improved for even easier load management with the use of intuitive new automatic and manual data entry methods. Plus, the user now has the option to have screen strength and stability information updated automatically or updated on demand. Other advantageous features include: Volume Correction Factor (VCF) Calculation; Ullage Survey Report is Internationally Recognized; Loading and Unloading Sequence Development; Ballast Exchange Preparation; Longitudinal Strength Curves Always Visible; Bulkhead Shear Force Correction; and Damage Stability Assessment.

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Maritime Reporter & Engineering News

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# Balancing Security, Safety and Commerce

By Thomas H. Collins, Admiral, U.S. Coast Guard

By any measure, 2003 was a turning point in the 213-year history of the U.S. Coast Guard. Beginning with the introduction of a new Maritime Strategy for Homeland Security early in the new year and continuing with its realignment under the Department of Homeland Security in March as part of the largest reorganization of the federal government since the post-World War II era, the scope and scale of the Coast Guard's maritime, multi-mission, and military operations during the past year were nothing short of extraordinary.

Coast Guard men and women rose to the challenge, bolstered by the largest mobilization of reservists in our history. Collectively, they fought the Global War on Terrorism at home as well as overseas. Heightened Coast Guard presence and vigilance in U.S. ports, waterways, and coastal areas significantly increased the safety of American citizens, protected critical infrastructure, and assured the free flow of sea-borne commerce. Coast Guard forces also were engaged valiantly halfway around the world supporting combatant commanders during Operation Iraqi Freedom.

Each of these accomplishments is significant individually. When considered in combination with its performance in other traditional mission areas, the collective magnitude of the Coast Guard's sustained operational excellence during 2003 is truly noteworthy.

We strive to be *semper paratus*, always ready, as we confront the global challenges to ensuring the peaceful and sustainable use of our world's oceans and resources.

Let there be no doubt, this is a changed world. The events of September 11, 2001, and their aftermath, created a seismic shift in how we address the multifaceted, national security risks confronting the United States.

## Importance of Maritime Sector

As a seafaring nation dependent upon the oceans for its economic prosperity, the scope of our maritime-security challenge is profound. Thousands of ships and millions of containers enter our 361 major seaports each year. Our maritime border consists of 95,000 miles of open shoreline, 25,000 miles of navigable waterways, and 3.4 million square miles of exclusive economic zone.

A successful terrorist attack against the U.S. maritime transportation system would wreak economic havoc. The Organization for Economic Cooperation and Development estimated that a terrorist strike against the U.S. cargo-shipping system could cost the U.S. economy as much as \$58 billion.

To forestall such devastation, the Marine Transportation Security Act of 2002 and the International Ship and Port Security Code regulations were created. Clearly these requirements have a tremendous economic and international impact on the shipping industry. That is why we are committed to using the International Maritime Organization, a multi-



lateral approach, to develop and enact the necessary standards. But, whether we like it or not, terrorism is a persistent threat ... it is real ... and it is impacting us today. I want you to envision the new security regime as an insurance policy, because hope is not the answer.... awareness and prevention are.

The Coast Guard's primary emphasis as a regulatory and law enforcement agency had been on safety, the environment, and vessel traffic management ... that is, the safe and efficient movement of waterborne commerce. With the horrors of September 11th came the imperative to identify and reduce security gaps in the maritime. It is essential that we get this right ... the maritime sector is one of the most valuable and vulnerable components of our transportation system. The challenge is substantial.

## Reducing Maritime Risks

As with other components of our transportation system, the challenge in securing the maritime sector is how to do so while concurrently facilitating the flow of people, cargo, and vessels. Our job is to manage that risk. The costs of a maritime terrorist event, the shutting down of a major port, would be in the billions, and the potential loss of life and public confidence would be devastating.

Let's remember, we've done this before. Think back to the early 90's, with our Domestic Port State Control program ... many were concerned about over-regulation and possible negative consequences. Well, in time, we had amazing improvements, resolving safety and environmental protection issues, and resulting in a 65% reduction in the number of unsafe vessels that had to be detained from entering the United States.

In keeping with the Coast Guard's duty to ensure the nation's maritime security, I must not only respond to today's threats, but I also must position the Coast

Guard to properly deal with the full range of potential threats likely to emerge in the future. I expect that five years from now, we will have similar improvements, with a reduction in the number of stowaways, as an example. There are great incentives for the good guys incorporated in these security requirements: people who subscribe will have smooth sailing.

## Maritime Security Strategy

To get to that state, we have developed four key elements to our maritime security strategy:

- Enhance our Maritime Domain Awareness by increasing our visibility of all activities associated with people, cargoes and vessels.
- Build and administer an effective maritime security regime - both domestically and internationally.
- Increase the federal, state and local operational presence in ports and coastal zones and beyond for a layered defense-in-depth security posture, by aggressively enforcing and exercising domestic and International Security standards, and
- Improve our response posture in the event a security incident does occur by building the right response capabilities and maintaining high readiness posture for our ships, aircraft, boats, and hazardous material strike teams.

## Implementing the Strategy

On the whole, we have developed a regulatory system which balances security and commerce to ensure the free flow of commerce. It mitigates risk while minimizing the negative impact to the marine transportation system.

- We in the Coast Guard set the standard, and gave industry the opportunity to define the response. We ensured a level playing field. Consistency is the key to a strong business climate and we strive for consistency on three levels - among companies, among states, and among countries.
- We conducted numerous town-hall meetings, co-sponsored public harbor safety committee gatherings and reviewed more than 2000 written comments to the proposed rule-making.
- Our risk-based decision model allowed us to focus on and only regulate those entities that presented the greatest relative risk. Many vessels, facilities adjacent to the water, and offshore platforms, will not be regulated, due to their minimal threat level, thereby keeping security costs to a minimum.
- We opted not to mandate some specific requirements that were considered earlier--such as specific licensing or training course requirements, or requirements to install bridge video monitoring equipment.
- We used performance-based measures generally to allow those regulated to select the best measures for their vessel or facility.
- We encourage industry trade associations to customize these security standards to their industry segment through alternative security programs.



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- We allow for "equivalent levels of security" to recognize more cost-effective ways of attaining the same security level.

**Progress since September 11th, 2001**

We have made progress in all four elements of our strategy ... from my perspective we are getting more secure each day:

- We have increased advance notice of arrival to 96 hours.
- We require more detailed information and visibility and risk awareness of cargo, passengers and crew.

- We have an international agreement to accelerate AIS (Automated Identification System) requirements, and we are proposing long-range tracking devices be required internationally.
- We have greatly expanded both our security capacity and capabilities, including a sea marshal program, new MSST's (Marine Safety and Security Teams), and vertical insertion and use of force from helicopters.
- We have successfully partnered with industry to provide reward for good behavior: Port State Control provides incentives for compliance by foreign flag vessels.

**Conclusion**

As General Eisenhower once said, 'History does not long entrust the care of freedom to the weak or the timid. America has been freedom's protector for more than 200 years. It is our nation's greatest strength...our collective heritage passed down by patriots who fought and died to preserve and protect it.

We have not come this far to forsake freedom now. We must not flag in our determination, in our devotion to this great cause. We must protect it while we are on watch and ensure that it continues to flourish for future generations."

Terrorism is an international threat. Shipping is an international business. Maritime security requires long-term international solutions. The U. S. Coast Guard will aggressively implement and enforce the international maritime security standards and hold other nations that trade with us accountable for the full implementation of the ISPS Code by July 1, 2004. While there are costs in implementing the requirements of ISPS, the financial and human costs of not implementing necessary security measures are too high. The loss of freedom to travel and trade are not acceptable alternatives. The threat to the security of our maritime homeland is not an acceptable alternative.

I believe we have done much to work with the private sector to ensure that the regulations are consistent and fair, while minimizing the cost of security and the impact on the flow of commerce. The key to this initiative is strong partnerships. The cooperation at the port and state levels has been tremendous since September 11th. But we cannot let our guard down. No one company ... no one agency ... no one country ... can do this alone. We must continue to work together to enhance security and advance our public and economic interests.

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## Columbia Coastal Security Plan Approved

Columbia Coastal Transport, an East Coast container barge operator, said that its Vessel Security Plan was approved by the U.S. Coast Guard. This approval remains valid for five years, and insures the company's compliance with the final Maritime security requirements mandated by the Maritime Transportation Security Act (MTSA) of 2002. "Columbia Coastal is among the first companies to date that have had their Vessel Security Plans approved by the U.S. Coast Guard," said Bruce Fenimore, president of Columbia Coastal. "This indicates not only our commitment to serve our customers without interruption, but also to the ports and terminals that we call on a regular basis. As a U.S.-flag operator, our commitment to security is paramount, and this early approval shows that we take that commitment seriously."

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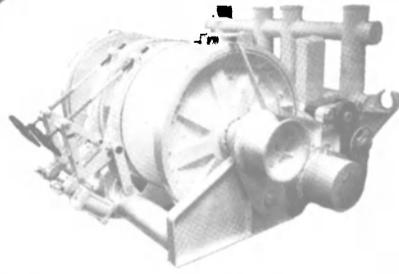
## MX Marine Earns Triple Approval

MX Marine, Leica Geosystems announced the receipt of BSH (Federal Maritime and Hydrographic Agency, Germany), USCG (U.S. Coast Guard), and CCS (China Classification Society) approvals for its' MX521 and MX525 GPS and DGPS Systems. The MX521 and MX525 GPS and DPGS antennas comply with the latest IMO performance standards which apply to all new SOLAS-compliant marine GPS receivers installed after July 1, 2003, for Receiver Autonomous Integrity Monitoring (RAIM), higher accuracy course and speed outputs and improved electrical interference immunity.

Both products are designed to accept differential signals from DGPS beacon stations as well as Space-Based Augmentation Systems (SBAS), including the U.S. Wide-Area Augmentation System (WAAS), the European Geostationary Navigation Overlay System (EGNOS) and the Japanese MTSAT system. These products provide horizontal accuracy of two meters when operating in a differential mode, and five meters using stand-alone GPS.

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June 2004



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June 30, 2004

# When the Clock Strikes Midnight

Coast Guard Atlantic Area includes five Coast Guard Districts spanning 14 million square miles and involves 30,000 personnel. Captain **John E. Schrinner** discusses his philosophy on making it run smoothly.

By Greg Trauthwein

When the clock strikes midnight June 30, 2004, the world will watch with wonder to see if shipping as we know it will come to a screeching halt off the U.S. coast, as the deadline for companies to comply to the letter of the new

maritime security laws enters force. With speculation running rampant and a flurry of last-minute paperwork, retiring Chief of the Marine Safety Division, Coast Guard Atlantic Area, Captain **John E. Schrinner**, offers this perspective.

"I remember as a trainee in 1973 the mantra was (for the USCG) to facilitate commerce," Schrinner said.

Learned young and practiced over a decorated 30 year plus career, Capt. Schrinner is intent on seeing that the Coast Guard does its job — specifically,



Captain John E. Schrinner, Chief of the Marine Safety Division, Coast Guard Atlantic Area.



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the enforcement of Marine Transportation Security Act (MTSA) and the International Ship and Port Facility Security Code (ISPS) — while simultaneously ensuring that commerce continues.

"By the letter of the law, we can deny entry of a ship (not in compliance), but before leaping to that drastic step, there are options," Capt. Schrinner said.

The enforcement posture post July 1, 2004 is not black and white, Capt. Schrinner admits, as the USCG has developed a "proportional scale of enforcement."

These options, depending on a myriad of factors including the overall performance history of the vessel, the port of origin and the last port-of-call before reaching U.S. shores, include but are not limited to expanded security checks at sea, vessel escorts, and the requirement of the operating company to hire additional security personnel.

While the Coast Guard holds its duty to protect U.S. interests in the highest regard, it is clear that a combined effort within the Department of Homeland Security, the Maritime Administration and the State Department is intent on ensuring that companies, and in some cases entire countries, in good partner trading status with the U.S. are not financially ruined by a hard-line, non-flexible approach to enactment of the new rules.

"We have to balance the effects of security sanctions versus U.S. trade policy," Capt. Schrinner offered. "Overall, though, it looks as if a large percentage of shipping companies will be in good shape."

The Coast Guard will, in fact, employ its resources to assist companies and organizations with the implementation of new security structures, and it has been involved in an unprecedented outreach to industry around the world to offer guidance in these matters.

While all eyes are focused on the July 1 deadline, Capt. Schrinner maintains that much effort should be invested in the study and analysis of the costs, asking questions such as "Who's going to pay these costs?" and "How can we ensure that security costs are not unwitting contributors to, for example, competition between ports?"

"After July 1, there will be a need for a lot more discussion on the long-term business implications," Capt. Schrinner said.

#### USCG: Capable and Flexible

Always a cornerstone of protection,

the Coast Guard's current role, which is unique and ever-evolving, had its stature and responsibilities raised exponentially in the general public's eyes following the September 11 terrorist attacks and the resulting security status that has

exposed maritime as a potential weak spot.

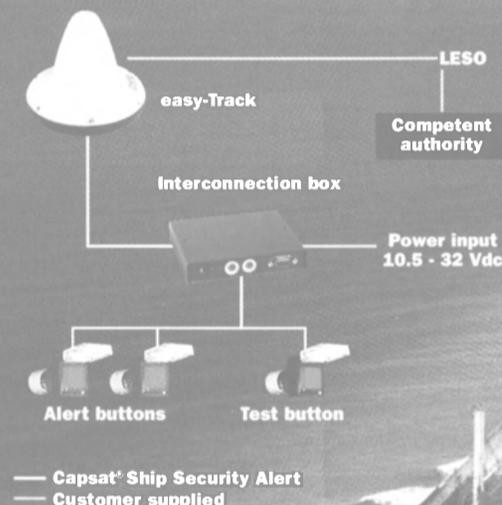
"Working in the Coast Guard Response to 9/11, and everything that followed, including the development of the new security rules and regulations,"

has been the most challenging, yet rewarding part of my career, Capt. Schrinner said. Schrinner received his commission at the Coast Guard's Officer Candidate School in December 1973, and served an initial tour of duty in Civil

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The solution has obtained type approval from Inmarsat, Lloyds Register and most of the major classification societies. In addition the Thrane & Thrane Capsat Ship Security Alert solution has received system acceptance from a number of flag states and the process of receiving these is ongoing.

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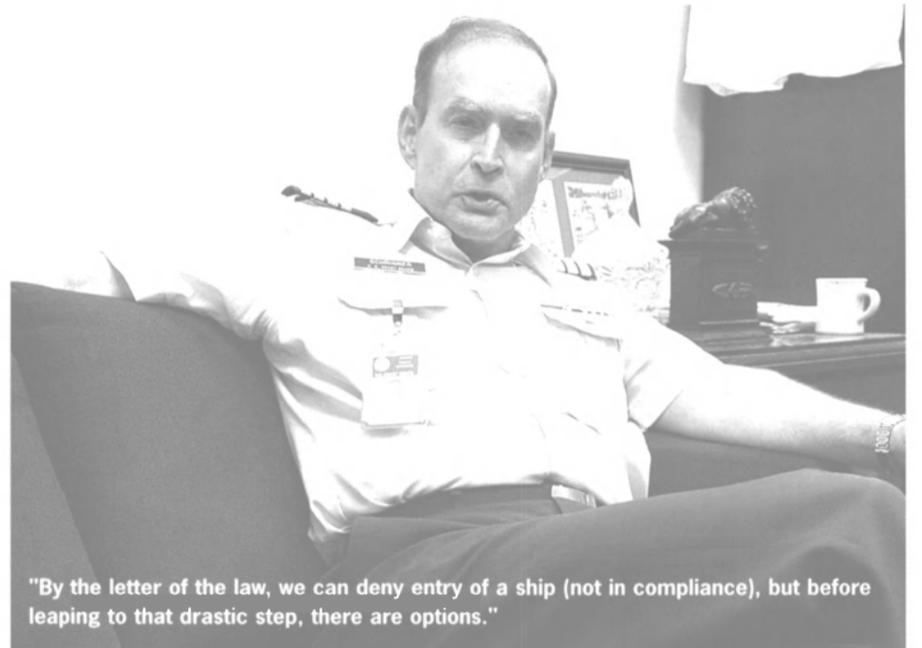
Engineering at Coast Guard headquarters. Prior to his current assignment, Capt. Schrinner has served in various capacities at several units within the Coast Guard's Marine Safety and Environmental Protection program, and was twice assigned to the IMO, first as IMO Regional Consultant on Marine Pollution and Port Security, and later as Senior Project Officer at IMO headquarters in London.

Though the transformation of the Coast Guard since September 11 is profound, the service has always prided itself on its flexibility. The shrinking of government in the early to mid 1990s forced the Coast Guard to take more a partnering relationship stance with industry, a relationship which undoubtedly

paid big dividends in the arduous task to create and implement the new security regulations.

"The old approach was to develop regulations not with the full input of the industry, and (in the mid-1990s) it was decided that we should change," said Capt. Schrinner. "At the time, the hot topics were commercial fishing vessel safety, uninspected vessels and cruise ships."

From this grew partnership initiatives with the likes of the American Waterways Operators for tugboat and towboat safety, with the Passenger Vessel Association for small passenger vessels and with the International Council of Cruise Lines for cruise ships calling in the U.S.



"By the letter of the law, we can deny entry of a ship (not in compliance), but before leaping to that drastic step, there are options."

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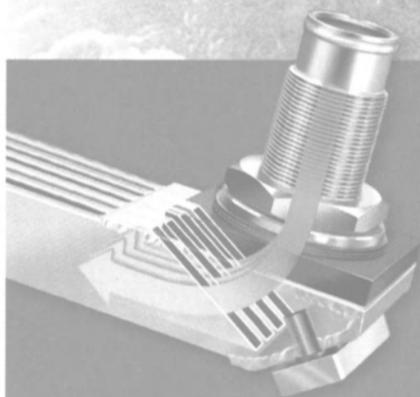
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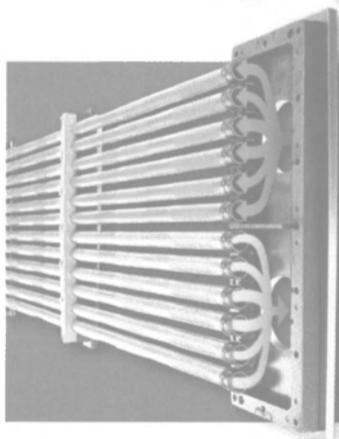
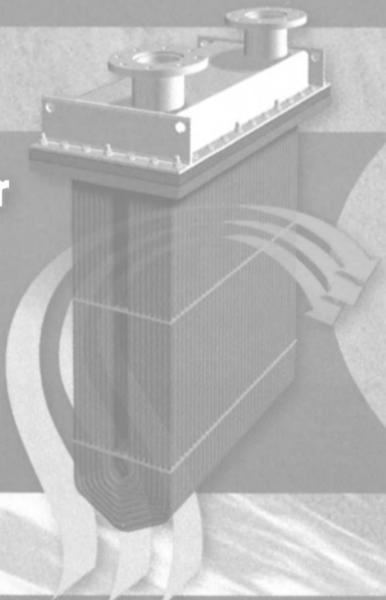


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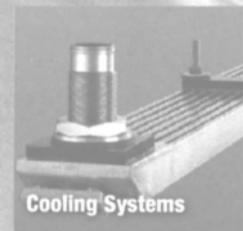
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# The Layered Approach from a One-Stop-Shop

The rush to shore up security along all links of the transportation chain — and the multi-billion dollar budgets that go with them — have naturally brought companies out of the woodwork in what some see as a dash for cash. While the Department of Homeland Security, still relatively in its infancy, has been prudent in the award of contracts to date, the proliferation of funds seems to be loosening in the estimation of many interested parties, and companies that

can exhibit a long and strong history of supplying integrated security solutions should obviously have a strategic advantage.

Smiths Detection is such a company, offering a history of successfully providing security solutions to both civil and military clients, dealing from a vast product and system arsenal.

The terrorist attacks of September 11 and resulting national and international security regulations, obviously, have

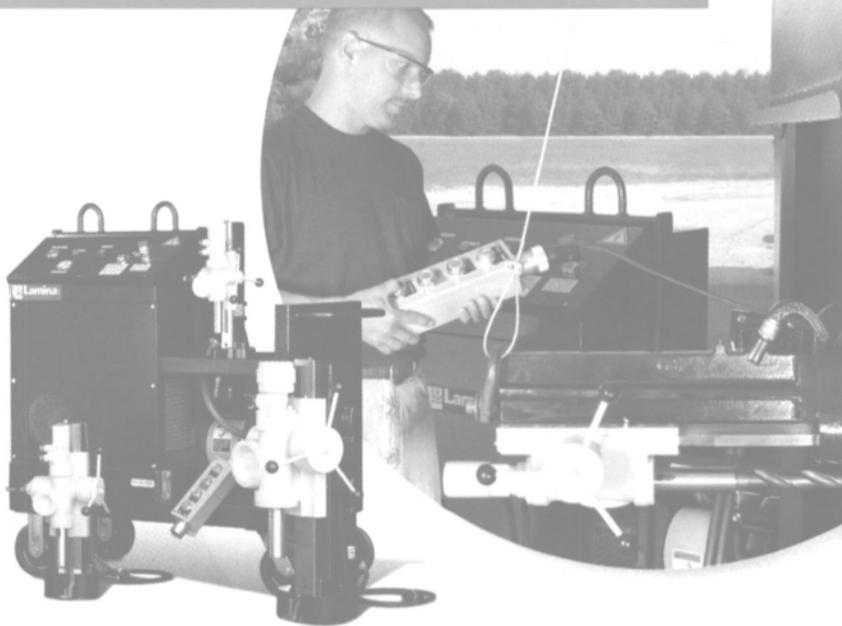
changed the security stance of around the world, modifying, sometimes drastically so, the steps that are taken in order to ensure the security of the U.S. transportation infrastructure. At the same time, the world economy is dependent on a seamless flow of goods, with long delays producing quickly mounting losses.

"While recent events have attracted new companies to this industry, security detection has been deployed for decades

with the first Heimann x-ray system, now Smiths Detection, being deployed at airports in the 1970s," said **Wayne Horvath**, Director of Sales, Ports and Borders. "We are one of the largest companies and have plans to further grow by developing and acquiring new detection technologies."

Part of the growth strategy was recently enacted with the company's acquisition of SensIR Technologies LLC, a manufacturer of infrared-based analyz-

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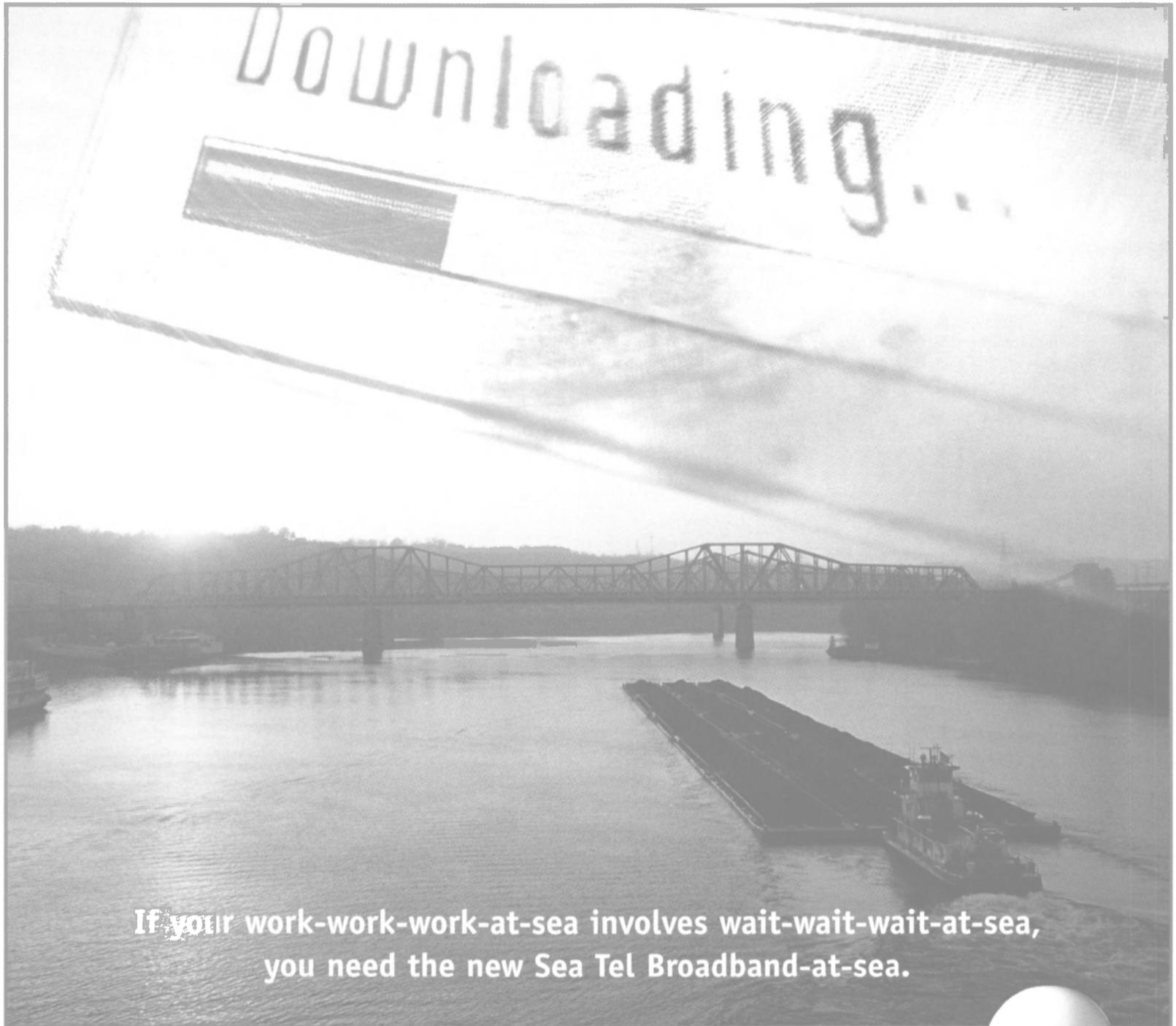
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ers, for a total of \$75 million ... the second acquisition for Smiths Detection in 2004.

SensIR supplies analyzers for the identification of potentially hazardous substances in solid and liquid form. Its products are principally used by military forces and the emergency services, notably first responders, hazmat (hazardous material) teams and fire services worldwide.

The acquisitions help to complement an already impressive product line-up, that includes these non-intrusive inspection sources: Trace detection; Biological Agent Detection; Chemical Agent Detection; Explosives Detection; Forensic; Fuel Vapor Monitoring; Meteorological Measuring; and



Narcotics Detection. Horvath counts this breadth as strategically advantageous. "No single product is capable of mitigating all potential threats." He notes that there is no "silver bullet" security solution. Growing opinion among security professionals confirms that the layering of multiple technologies offers the greatest level of protection.

"Its extensive range of detection technologies allows Smiths Detection to secure access points from multiple threats, as opposed to the single product providers that have traditionally occupied this space."

For more information from  
Smiths Detection  
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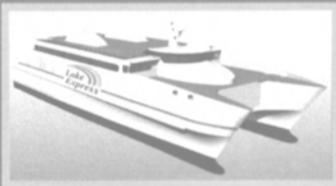
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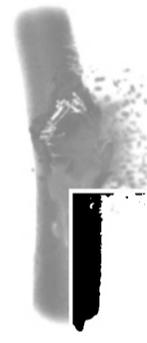


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# JHOC: Eyes Wide Open

By Greg Trauthwein

The Joint Harbor Operation Center (JHOC) — pronounced "Jay - Hawk" — on Naval Station Norfolk is the pinnacle of cooperation between the U.S. Coast Guard and the U.S. Navy; jointly devised, outfitted, staffed and maintained to protect what is arguably one of the most diverse, sensitive and valuable series of waterfront installations in the nation.

The JHOC established on Naval Station Norfolk in wake of the September 11, 2001 attacks is serving as a sort of prototype for the rest of the nation, with a similar JHOC under development in San Diego. It is unique as, for the first time it brings together the Navy and the Coast Guard in a joint operation to ensure port security, specifically monitoring military and civilian vessels entering and exiting the lower part of the Chesapeake Bay.

## The 'Red Box on Stilts'

Left to the imagination, one might envision the JHOC housed in an ultra-sophisticated and secretive bunker; a James Bond-esque facility employing the latest technologies to effectively monitor such a vast expanse of waterway and track the vessels transiting them.

While much of the security attention has focused on New York and Washington for good reason, the

Norfolk area, with a diverse commercial and military mix of potentially attractive terrorist targets, is the quintessential locale for the JHOC experiment. Assets on the lower Chesapeake, which includes the Elizabeth and James Rivers, include: the largest concentration of naval ships and facilities in the world, including Navy Intelligence Command, and, at any given time, perhaps a half dozen aircraft carriers; the Cove Point LNG facility; three major container ports, in addition to a fourth, recently announced \$400 million container port; a growing Cruise Port; as well as a number of bridges and tunnels.

While the new JHOC facility in Norfolk, scheduled to open later this summer, will fit the high-tech mold, the current facilities are, in fact, the polar opposite.

JHOC's home today is an old degaussing tower that had been used to neutralize the magnetic field surrounding ships, and prior to September 11 was empty and scheduled to be demolished. Dubbed by some observers as "the red box on stilts" (see photo, right), the center was opened about a month after September 11 and was "basically a box with a pair of binoculars and a space heater ... and the space heater didn't work too well," said **Robert T. Nelson, Jr.**, Lieutenant Command, U.S. Coast Guard Reserve.

From humble roots JHOC will evolve into a template upon which other such ventures may be based, but



JHOC's original home, dubbed "the red box on stilts," was opened with "a pair of binoculars and a space heater ... and the space heater didn't work too well." A new state-of-the-art JHOC center is due to open later this summer.

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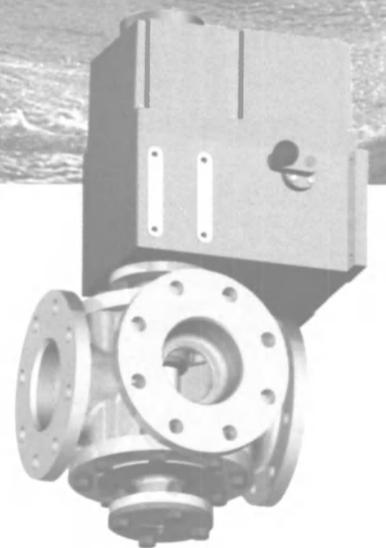
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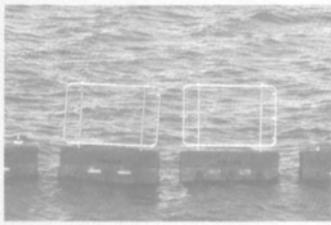
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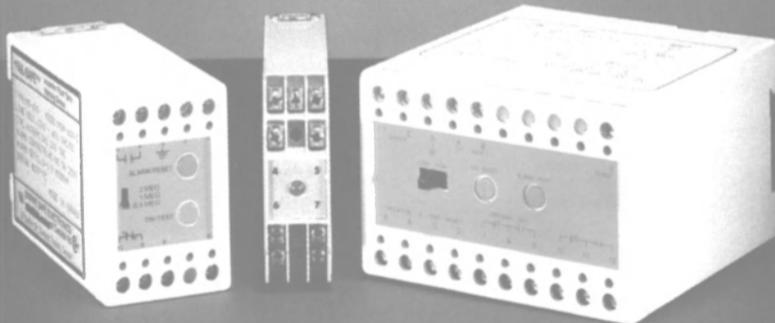
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there are currently only loose plans to develop JHOCs in areas where there is a strong Navy presence.

Evolution is the keyword, as the U.S. security stance, with the creation of the Department of Homeland Security, which subsequently integrated the U.S. Coast Guard from the Department of Transportation — continues to morph in devising an adequate security posture for an estimated 95,000 miles of waterfront.

While JHOC is a natural evolution and an efficient use of information and resources, operations such as this have raised questions as it is considered by some close to crossing borders established by The Posse Comitatus Act (PCA) of 1878, which states:

### The Posse Comitatus Act of 1878

*The Posse Comitatus Act of 1878 (PCA) prohibits the use of the Army or the Air Force as a posse comitatus to execute the laws of the U.S.*

*"POSSE COMITATUS ACT" (18 USC 1385): A Reconstruction Era criminal law proscribing use of Army (later, Air Force) to "execute the laws" except where expressly authorized by Constitution or Congress. Limit on use of military for civilian law enforcement also applies to Navy by regulation. Dec '81 additional laws were enacted (codified 10 USC 371-78) clarifying permissible military assistance to civilian law enforcement agencies--including the Coast Guard--especially in combating drug smuggling into the United States. Posse Comitatus clarifications emphasize supportive and technical assistance (e.g., use of facilities, vessels, aircraft, intelligence, tech aid, surveillance, etc.) while generally prohibiting direct participation of DoD personnel in law enforcement (e.g., search, seizure, and arrests). For example, Coast Guard Law Enforcement Detachments (LEDETS) serve aboard Navy vessels and perform the actual boardings of interdicted suspect drug smuggling vessels and, if needed, arrest their crews). Positive results have been realized especially from Navy ship/aircraft involvement.*

While debaters debate, JHOC employs the strengths of USCG and USN to provide an effective harbor security solution.

For example the Navy is not in the business of commercial port operation, and left to its own devices may impose a more stringent 'stop and check' of every-

thing moving in the harbor, effectively stymieing commerce in the region. However, the Navy does have much "deeper pockets" than the Coast Guard, and of course a superior number of

advanced boats and firepower. For its part, the Coast Guard delivers its port operations experience.

In the event of a valid threat, the USCG is able to physically commandeer

naval resources to adequately meet and address it. The result is maximum protection of high value naval and commercial targets, with the continuation of commerce in "business as usual" mode.

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"While we are responsible for our ships and our Navy ports, the Coast Guard is in charge of the entire port of

Hampton Roads," said Capt. **Joseph F. Bouchard**, the commanding officer of Naval Station Norfolk. "By working

together we can accomplish more with the resources available to each agency. We can track ships throughout the har-

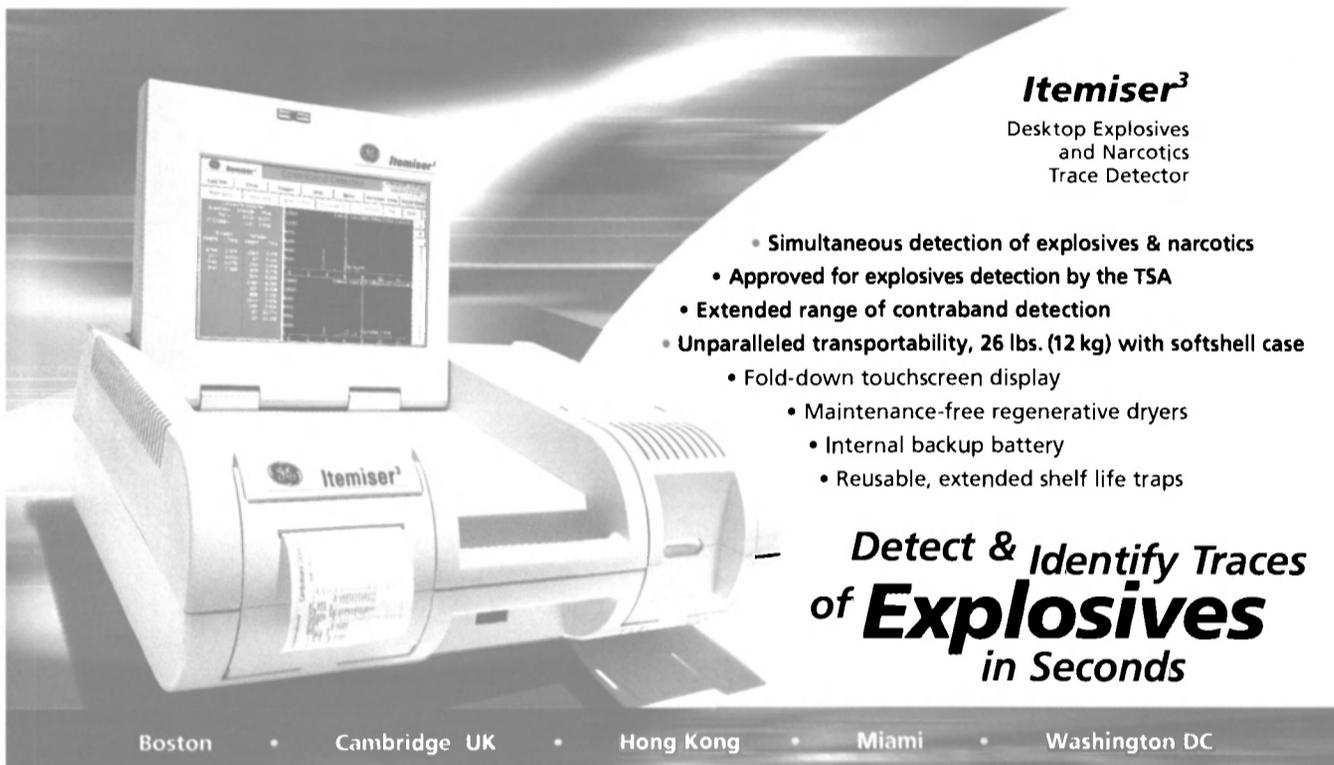
bor. It greatly extends our defensive perimeter. Now we can detect potential threats before they can become a problem off the naval station piers," he said.



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## Iridium-based SSAS from SAILOR

The recently launched Ship Security Alert System (SSAS) by SAILOR using the Iridium System has now been approved by DNV, meeting all requirements for Ship Security Alert Systems as specified in the amendments to SOLAS, chapter XI, Annex 6 (Dec. 2002). When one of the up to four Alert Buttons is activated, an SMS-based alert is generated and transmitted through the SAILOR SC4000 Iridium terminal. The alert includes the identification and position of the vessel as well as time and date. The alert is delivered as an e-mail or an SMS (to another Iridium terminal) to pre-defined recipients. The alert is transmitted continuously at a pre-defined interval until de-activated.

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## SKANTI Iridium SSAS Approved

SKANTI has obtained DNV approval for the add-on SSAS-box for the Iridium terminal. DNV approves that the SKANTI Iridium SSAS complies to SOLAS, chapter XI, Annex 6 (Dec. 2002).

Shipowners around the world have particularly shown interest in the fact that SKANTI's Iridium SSAS fulfils two features at the same time: While an SSAS-Box is dedicated to the alert system, the SKANTI Scansat-7701 Iridium Terminal can still be used for standard Iridium features such as cost-effective Voice and Data Communications.

Circle 22 on Reader Service Card

## Jacksonville Selects ObjectVideo's Solution

The Jacksonville Port Authority selected ObjectVideo VEW, intelligent video surveillance software, for its patented "video tripwire" technology. ObjectVideo VEW is designed to protect the waterfront and landside of Blount Island, Talleyrand and Dames Point marine terminals, which in 2003 han-



dled 7.3 million tons of cargo including more than 540,000 vehicles. "As a major port in the U.S. we look for advanced security

technologies that provide the intelligence needed to effectively deny threats," said **Charles White**, JAXPORT Director of Security. "ObjectVideo's technology can distinguish between an every day occurrence and a potential threat to provide us with actionable intelligence in real time. Additionally, its video tripwire feature enables us to create sophisticated security rules that empowers us to quickly extend or retract perimeter lines to adjust to different MARSEC security conditions." ObjectVideo recently received a U.S. patent for its video tripwire feature available in ObjectVideo VEW. Port security personnel can create virtual perimeters on land and water by simply drawing a video tripwire directly on a computer snapshot of the camera's view. Rules can be configured according to a number of criteria that allow detection based on the direction an object is moving and object type (boat, vehicle, person, etc.).

Since the lines are virtual and do not have to be physically moved, personnel can make instant adjustments in the perimeters to respond to changes in a port's security level or to address specific maritime threats.

Because JAXPORT is a designated port for U.S. military cargo transportation, agencies including U.S. Customs, federal protection and local law enforcement are involved in protecting it.

**Circle 23 on Reader Service Card**

### Ship@Sight SSAS

Radio Holland and Royal Dirkzwager, a maritime information and service provider, have teamed to offer a solution to comply with SSAS: a combination of SSAS hardware, web tracking and a 24-hour response center. The Radio Holland/Royal Dirkzwager SSAS solution is based on a three-tier package:

- **Hardware:** Radio Holland can provide Inmarsat D+, Mini-C, Inmarsat-C and Iridium SSAS equipment.
- **Security Alerting Service:** In close co-operation with ship owners and Radio Holland, Royal Dirkzwager can provide a 24-hour attended focal point

in order to establish a smooth settlement of security alerts. This service is based on a 24x7 response centre. It provides: first line alerting response from the vessel; alerting service to security response centers as well as to pre-defined security officers and/or management staff at subscribing customers; periodical

reporting on systems as well as processed alerts; arrange for periodical testing of the total "alerting" chain without alerting rescue and security response systems.

- **Tracking service:** Ship@Sight: In addition to the alert service, Radio Holland provides tracking and fleet

monitoring facilities through the Internet. The customer will have access to position information of his fleet and a short message service to and from his ships. Ship@Sight is a tracking system, based on SSAS transceiver equipment (e.g. Inmarsat D+) and the Internet.

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# The Midas Touch

Minimizing the risk of a water-borne or delivered terrorist attack is no small responsibility. *Maritime Reporter* visited recently with U.S. Coast Guard LCDR Stephen M. Midas, Chief, Planning and Risk Management Department, Marine Safety Office Hampton Roads, for some insights.

When historians document the early 21st century evolution of the U.S. Coast Guard, the current era will be considered a watershed for many reasons. In the midst of a dramatic transformation of assets and responsibilities, the Coast Guard, which was taken in whole into the new Department of Homeland Security, has been an exemplary extrovert in efforts to communicate with industry in the implementation of measures to meet the new Marine Transportation Security Act (MTSA) and the International Ship and Port Facility Security Code (ISPS). Tasked with burgeoning and ever-evolving responsibilities that transcends military, industry and public service, it has been a lead voice in helping to secure our shores while facilitating the business of the world's lead trade partner.

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Alternately, it has played some cards very close to the vest — understandably so — particularly in regards to its means and methods utilized to identify potential threats and critical waterfront infrastructure, the latter which was expanded significantly under MTSA.

Its role as protector versus known and yet-to-be-known terrorist threats must constantly be weighed against the need to facilitate efficient port operations, all the while maintaining a long list of traditional duties that are core to the public interest.

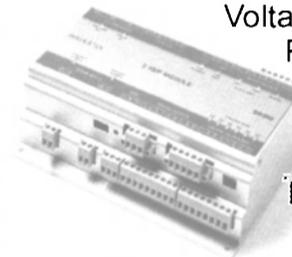
While the knee-jerk reaction to enhanced maritime security capabilities may be the integration of the latest technological product or system, it is apparent that there is no "silver bullet" solution to mitigate these threats, and the buzz word today is taking the 'layered approach' to maritime and port facility security. "Industry in this area and across the country realizes and understands that they all have a role, and that this is an all hands evolution," said Midas. "The challenge is getting everyone together, playing off of the same sheet of music."

Central to this is communication, and LCDR Midas was one of the key people behind the effort to improve coordination and communications between local groups like the Hampton Roads Harbor Safety/Port Protection/Emergency Control Committee, which was recognized by headquarters as the 2003 Harbor Safety Committee of the Year, the

Anti-Terrorism Advisory Council and the Area Maritime Security Committee. The humble Midas would be reluctant to take too much credit though. "One of the biggest complaints that we had was that no one was talking to each other," said Midas. "We started with the Port Security Committee to ensure everyone knew the other guys' business and capability, to better coordinate response (to an emergency)."

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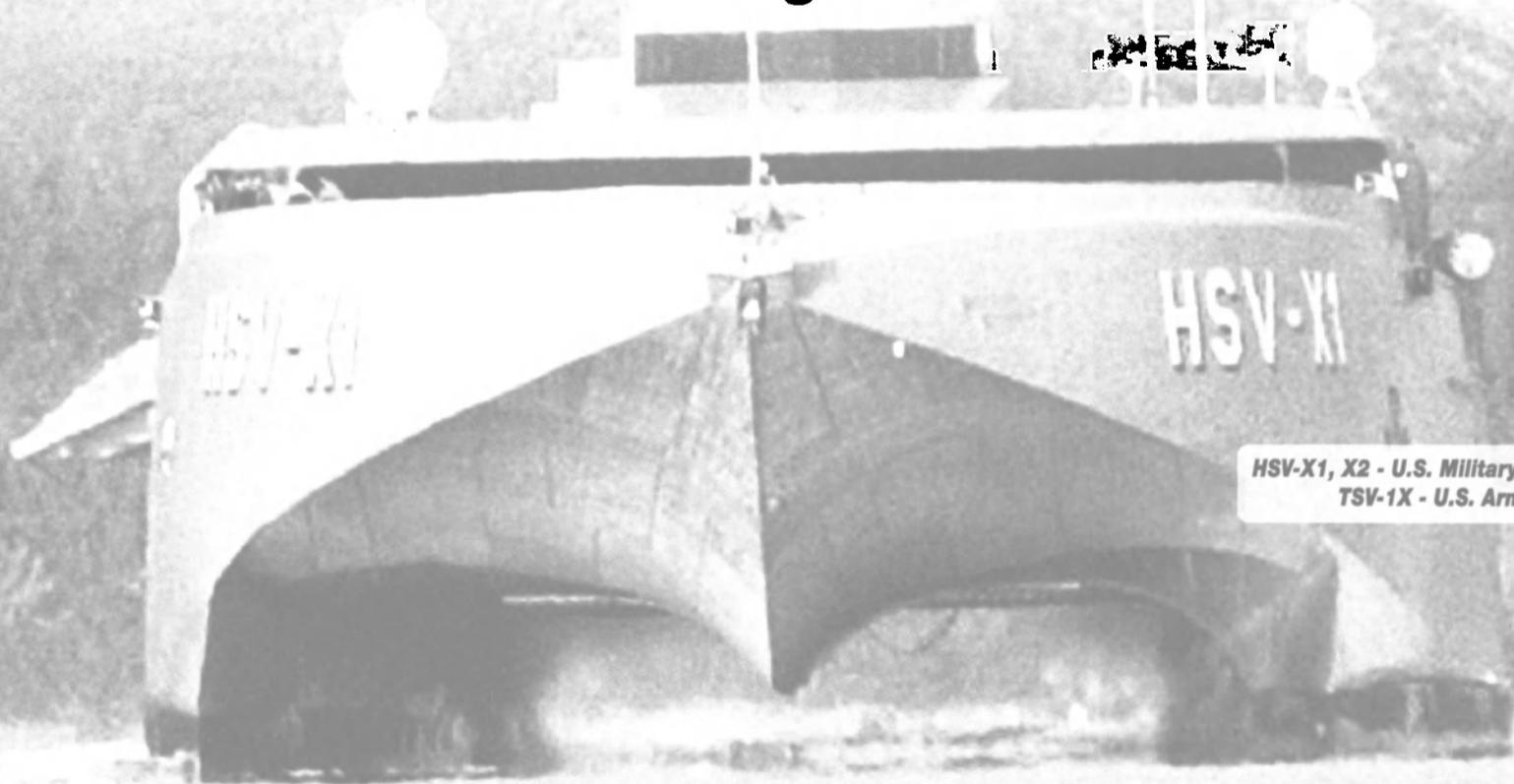
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From the MTSA evolved the Area Maritime Safety Committee, of which there are approximately 75 members (in the local AMS), with a 15-member executive committee representing the state

and local governments, as well as industry." Across the country there are a total of about 46 Area Maritime Security Committees.

Regular communication, mixed with

awareness of local waterfront and infrastructure assets, classroom training, on-water training and simulation are all major steps in the enhanced security direction.

#### Safety and Then Some

While communication and cooperation between government and industry is a key to maritime security, it is far from the total solution. Midas admits that physical assets, such as more boats patrolling the waterways; more people, whether regular Coast Guard or civilian; advanced detection such as radiation detectors; and computer-based programs help to round out the task at hand.

A cornerstone in the Coast Guard's effort to identify and thwart threats before they reach U.S. shores is a technological one, in the form of a new computer-based tool that is used to assess risk, as well as identify critical waterfront infrastructure. While Midas could not share details on how the system works or discuss the threats that have been identified, he assured that maximum effort is being paid to the issue of maritime security.

The mantra today is "extending the borders" of the U.S., by getting more information on shipments to the U.S. before they arrive on U.S. shores, and he credits the cooperation of industry, the international community, as well as new technologies that "allow us to look inside of a box" with helping to achieve this goal.

At the same time, he was quick to point out, the USCG must still maintain itself to address traditional duties, such as Search and Rescue, oil spill response, coordination of military outloading and preparing for a myriad of special events, such as aircraft carrier ceremonies at Northrop Grumman Newport News Shipbuilding. "That's still here," he said, "it does not all go away just because of MTSA."

#### Waterside Sentry Aims to Stop Waterborne Threats

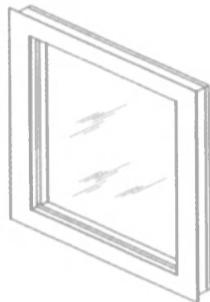


The Waterside Sentry System, developed by CompuDyne's Quanta Systems division, is an "invisible fence" comprised of radar, sonar and cameras. The Waterside Sentry System uses radar and sonar technology to detect a terrorist threat from the sea and instantly alerts

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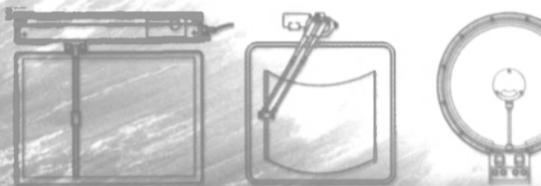
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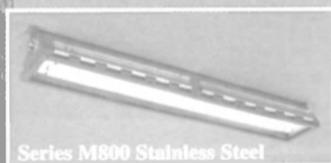


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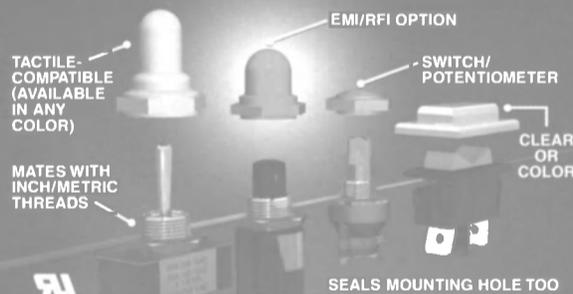
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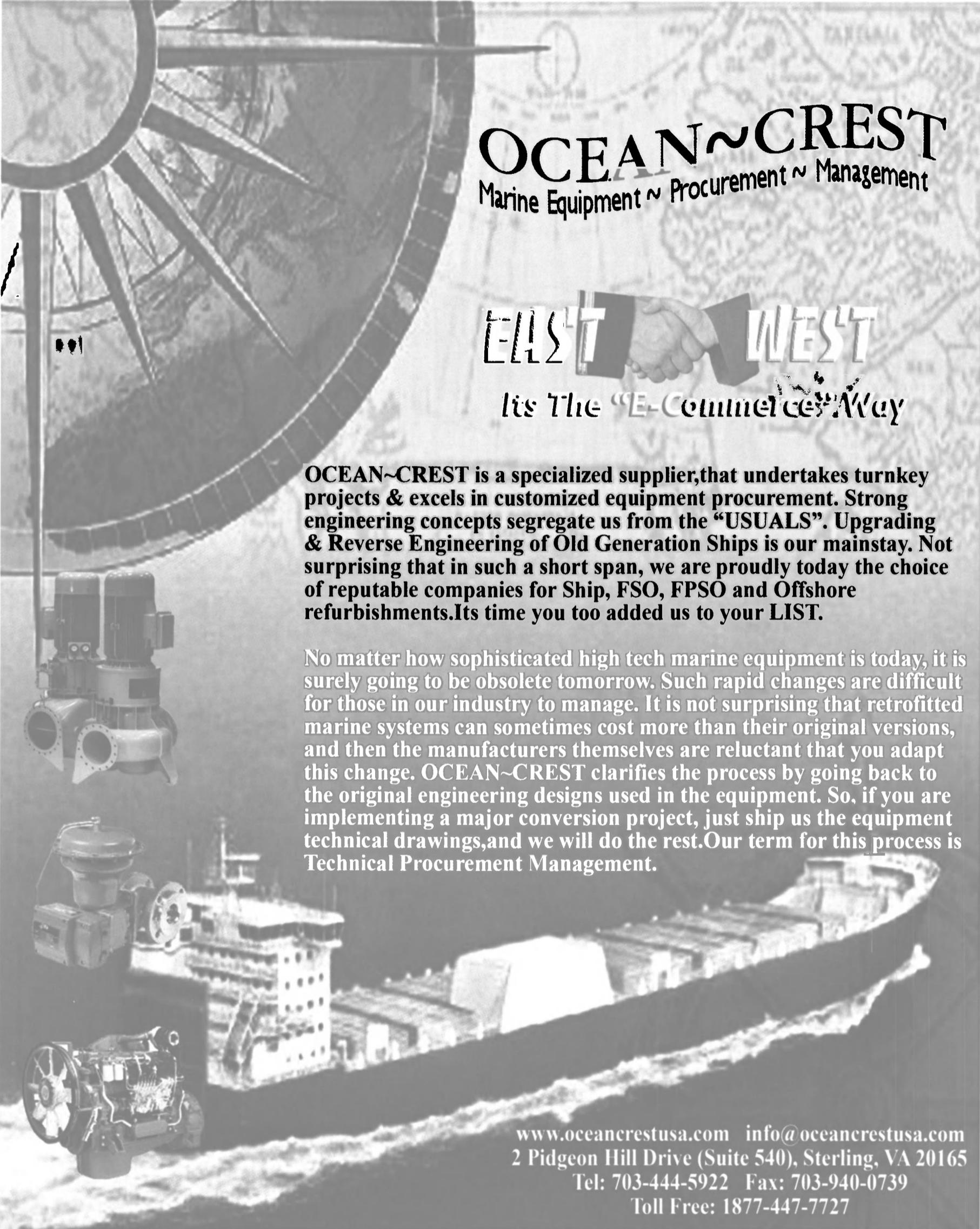
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the crew, Coast Guard or other government defense agencies. This "invisible fence" system, already in place at several key U.S. government and naval facilities, can be based on land or water and

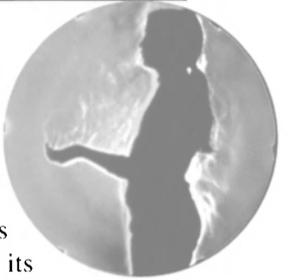
can detect a sea born attack from as far as 50-miles away. The system can be mounted on a ship, a platform or tower. It's also an option for oil rigs.

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### GE's EntryScan3 Piloted by TSA

GE Infrastructure, a unit of General Electric Company, said that the United

States Transportation Security Administration (TSA) will pilot GE's EntryScan3 walk-through explosives detector as part of its Transit and Rail Inspection Pilot (TRIP) program for screening rail passengers for explosives. The EntryScan3's patented sample collection system takes advantage of a natural air-flow phenomenon called the "human convection plume." This eliminates the need for forced air from a fan, which would stir up contaminants, dirt and dust, and enables cleaner sample acquisition for higher detection sensitivity. EntryScan3 uses GE Ion Track's patented Ion Trap Mobility Spectrometer (ITMS) technology, enabling its users to detect a wider range of contraband with unprecedented sensitivity. It achieves this through a proprietary ion "trap" that increases ionization efficiency, the main factor determining detection sensitivity. EntryScan3 is the only walk-through portal with versatile detection of both positive and negative ions, enabling the detection of the broadest spectrum of contraband in seconds.



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### BV Backs High-Speed Craft Safety Design Tool

Bureau Veritas (BV) has backed a new tool designed to enhance the safety and cost-effectiveness of high-speed craft. Dubbed the Safety at Speed (S@S) tool, the product was developed by a consortium of 15 companies backed by EU research funding. "This S@S design tool will help designers, class societies, yards and government authorities to evaluate high-speed craft at an early design stage, improving safety and cost-effectiveness," said Pierre Besse, research director of Bureau Veritas. The intent is to extend and customize the product for other ship types. The aims of the S@S project were to develop new design tools and methodologies that would raise the profile of safety issues at the very beginning of the design process. These aims have been exceeded with the delivery of a semi-automated design tool capable of evaluating the safety level and cost of a High Speed Craft at the preliminary design stage.

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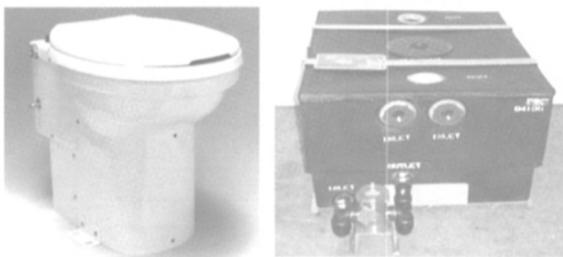
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## Security and Safety: Questions & Answers

MR recently sought some safety insights from **Jim Ligotti** is Vice President, Maritime Solutions, Ingersoll-Rand Security and Safety Solutions, Ingersoll-Rand Company Limited (IR).

### Q: What does ISPS mean for ports and vessels?

A: All of the more than 300 coastal and interwaterway ports in the U.S., and the thousands of vessels that dock at them each year, were required to define their security plans by December 31, 2003. Other "contracting" countries of the IMO were required to fulfill similar requirements.

Once the security plans are established, the ISPS requires that all port and vessels implement the necessary security measures outlined in the plan by July 1, 2004. Because of the ISPS, maritime facilities will have to make significant, unprecedented changes in their security and safety operations.

### Q: What makes maritime security applications challenging?

A: In the complex world of maritime trade, hundreds or even thousands of crew members, drivers, maintenance workers, administrators and longshoremen, employed by unaffiliated companies and agencies, work together to move goods in and out of a port. A security system that relies on paper and people to track, manage and monitor vulnerable assets is simply unreliable and inefficient when used in such a demanding environment. Unfortunately, for most ports today, conventional methods continue to act as the backbone for securing people and assets.

### Q: What are the basic principles involved with IR's approach to security and safety?

A: The primary goal of Ingersoll-Rand's approach is to integrate the security and safety requirements for every element of, and activity that takes place, at a maritime facility. The basic elements are categorized as people, openings, and assets. For example, a ship's "openings" include the engine control room, electrical control/equipment room, cargo storage area, bridge, and steering gear room. A port's "people" include longshoremen, crew, administrators, maintenance workers, and truck drivers. Assets for both a port and vessel may include the vessels themselves, as well as equipment, vehicles, containers and cargo.

### Q: How are the people, openings and assets integrated?

A: Ingersoll-Rand's methodology integrates people, openings and assets

together through a connected information-technology infrastructure based on an expandable, open information technology (IT) architecture. Data is generated through the power of electronics — access cards with electronic codes or

biometric identifiers replace or supplement paper forms of I.D., reducing significantly the number of security personnel required for security screening.

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## Coast Guard Deepwater Program Progress Report

# Storm Warnings Raised over Readiness Concerns

By Capt. Gordon I. Peterson, USN (Ret.)

This June's two-year anniversary of the Coast Guard's award of contract for the Integrated Deepwater System reflects steady progress in efforts to modernize the nation's maritime guardians, but heightened concerns over falling readiness have led some congressional lawmakers to renew calls to accelerate the comprehensive 20-plus-year recapitalization program.

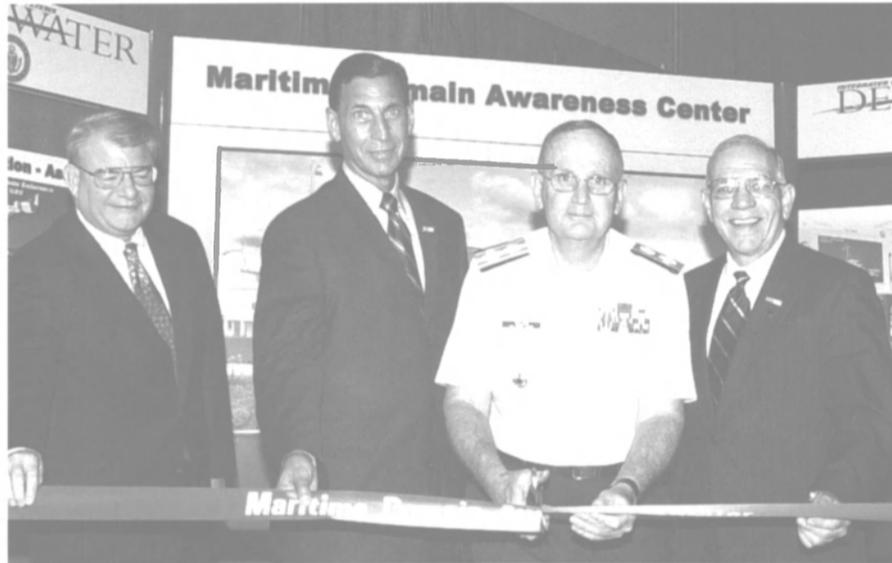
Coast Guard Commandant Adm. **Thomas H. Collins** described his concern over current readiness trends in early March during congressional testimony on the Bush administration's proposed fiscal year 2005 budget.

"Our greatest threat to mission performance continues to be that our aircraft, boats and cutters are aging, technologically obsolete, and require replacement and modernization," Collins told the House Coast Guard and Maritime Transportation Subcommittee on March 4. Two weeks later, during his "State of the Coast Guard" address at the National Press Club in Washington, D.C., Collins elaborated. "There are storm warnings along our projected track line," he told a capacity audience. "There are clear warning signals that our ability to sustain our readiness into the future is increasingly at risk. We are experiencing system failures at a steadily increasing rate."

### Readiness Down, Costs Up

Vice Adm. **Thomas J. Barrett**, vice commandant of the Coast Guard, echoed the commandant's concerns during his own testimony on the Deepwater Program before the same House subcommittee April 26. Noting that most Coast Guard cutters and aircraft will reach the end of their projected service lives by 2010, Barrett revealed that the service's annual safety review for fiscal year 2003 reflected a mishap rate for reported apparent in-flight engine power losses of 62.74 per 100,000 flight hours. "This rate is unacceptable," Barrett said, "and far exceeds the FAA [Federal Aviation Administration] guidelines of no more than 1 mishap per 100,000 hours or the U.S. Navy Safety Center guidelines of no more than 10 mishaps per 100,000 hours."

Barrett emphasized that the Deepwater



Senior dignitaries cut the ribbon to open Lockheed Martin's new Maritime Domain Awareness Center in Moorestown, N.J., in April. The Center supports development, testing and integration of C4ISR assets for the Integrated Deepwater System. Shown here, from left, are **Robert Coutts**, executive vice president of Lockheed Martin Electronics Systems; Rep. **Frank LoBiondo** (R-NJ); **Adm. Thomas H. Collins**, commandant of the Coast Guard; and Rep. **Jim Saxton** (R-NJ). Rep. LoBiondo, chairman of the House Coast Guard and Maritime Transportation Subcommittee, has advocated a fiscal year 2005 authorization of \$1.1 billion to accelerate the Deepwater Program.

(Photo Courtesy of Lockheed Martin)

Program was urgently needed to recapitalize the Coast Guard. "I cannot overstate the importance of the Deepwater acquisition on the current and future capability of your Coast Guard and its ability to meet national priorities," he said. "The Deepwater Program represents a direct investment in the maritime safety and security of the nation.

However, declining fleet readiness and increasing costs of maintaining aging assets are jeopardizing our ability to adequately address maritime security threats."

Of note, Barrett said that the Coast Guard experienced 676 unscheduled maintenance days for its cutters during the past year—a 41 percent increase over



The upgraded 123-foot cutter USCGC Matagorda, shown here with its new seven-meter Short Range Prosecutor small boat during preliminary acceptance trials in January, was delivered to the Coast Guard by Bollinger Shipyards at its yard in Lockport, La., yard March 5, 2004, as part of the Deepwater Program's modernization and recapitalization of the Coast Guard. The Matagorda will return to her homeport of Key West, Fla., later this summer following post-delivery maintenance availabilities.

2002 and the equivalent of losing more than three and one-half cutters to service. "We have legacy cutters that are free of major equipment casualties less than 50 percent of the time," he stated. "Maintenance costs are escalating far beyond budgeted support levels and, given the exponential growth, choices become more and more difficult each year."

Saying that Coast Guard crews took great pride in stretching the functional life of ships and aircraft, Barrett questioned how much longer they would be able to do so. "We have been able to maintain minimum levels of readiness largely through the Herculean efforts, courage, and innovation of your Coast Guard personnel, however, only so much is possible with assets that are largely obsolete and whose machinery continues to fail," he said.

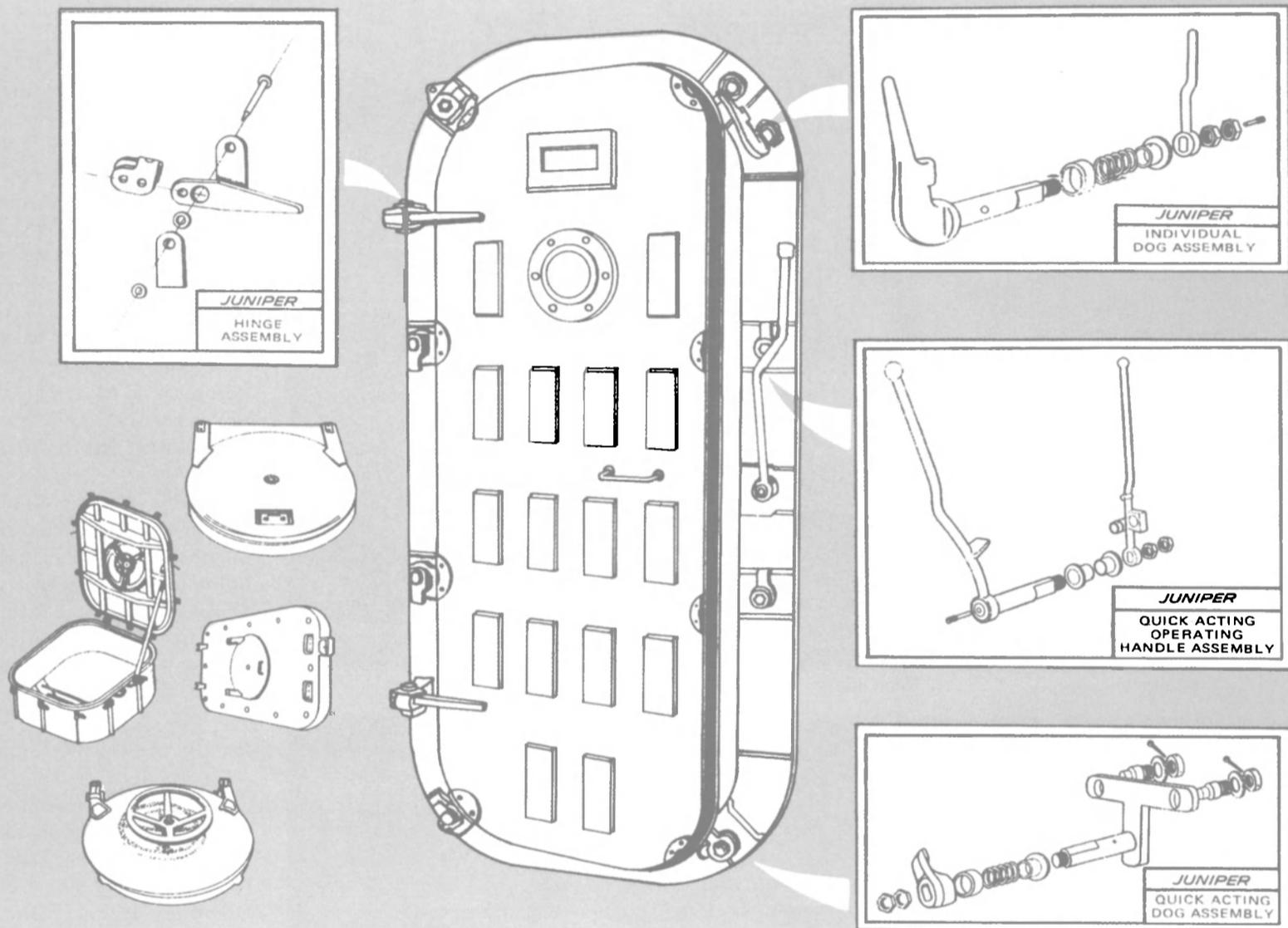
### Restacked Priorities

Early in 2004 the Coast Guard took steps to reprioritize the Deepwater Program's modernization planning—what Collins described as a "restacking of priorities"—to address its growing concern with deteriorating readiness and system failures on legacy air and surface platforms. Integrated Coast Guard Systems (ICGS), the joint venture between Northrop Grumman and Lockheed Martin serving as Deepwater's systems integrator, was directed to take immediate action to re-engine the Coast Guard's HH-65 "Dolphin" helicopter fleet. The re-engineing project will gain momentum during the months ahead following installation of the first upgraded, more powerful replacement engine and improved fuel-control system on an HH-65 helicopter in May.

In response to continued deterioration in the hull condition of its fleet of 110-foot Island-class patrol boats (WPBs), the Coast Guard's senior leadership also ordered the acceleration of the design and development of Deepwater's Fast Response Cutter—the intended replacement for 110-foot boats—as well as moving forward on the design of the Offshore Patrol Cutter, the platform slated to replace the Coast Guard's medium endurance cutter fleet. A business-case analysis is being conducted to determine the appropriate number of 110-foot to

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123-foot Deepwater conversions to complete prior to the transition to the FRC; a decision is expected later this year. Eight 110s are now under contract

for conversion by Bollinger Shipyards into the upgraded 123-foot design; the first boat to be converted, the Matagorda, was delivered to the Coast

Guard in March.

Deepwater's modernization upgrades for C4ISR (command, control, communications, computers, intelligence, sur-

veillance, and reconnaissance) systems on legacy assets and at shore installations also have been adjusted to be responsive to emergent requirements. In response to a request from the Pacific Area Commander in March, for example, the Coast Guard accelerated Deepwater's planned C4ISR upgrades on the Cutters MUNRO and RUSH to support upcoming out-of-hemisphere deployments.

The upgrades provided each cutter with access to the Department of Defense's Secure Internet Protocol Routing Network (SIPRNET) and a classified local area network. Concurrent with these command-and-control upgrades, Deepwater's C4ISR upgrade at the Communications Area Master Station Pacific (CAMSPAC) facility at Point Reyes, Calif., was completed. The first shore-based communications upgrade under the Integrated Deepwater System was completed in September 2003 at Communications Area Master Station Atlantic (CAMSLANT).

"Looking ahead," Barrett told the Subcommittee, "it is clear that attaining additional capacity and capability is critical to the Coast Guard's ability to achieve the levels of future readiness needed to perform its expanded homeland-security tasks while concurrently carrying out its other responsibilities."



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### RAND: "An Open Question"

The RAND Corporation reinforced this view with its recent release of the findings of its independent, third-party evaluation of the Deepwater Program. In November 2002, the Coast Guard's Deepwater Program Office commissioned RAND to evaluate whether the Deepwater Program remains valid for the Coast Guard's new, traditional, and emerging responsibilities and missions as a result of the terrorist attacks of 9/11. Faced with a legislative requirement to report to Congress on the feasibility of accelerating the Deepwater program, RAND also was asked by the Deepwater Program Office to complete its own evaluation of the feasibility of doing so.

Noting that the current Deepwater acquisition buildout was planned before the 9/11 terrorist attacks, RAND documented how the Coast Guard has taken on expanded roles in homeland defense and homeland security in the new Department of Homeland Security. "Whether the original 20-year Deepwater acquisition schedule is appropriate for these new conditions is an open question," RAND concluded.

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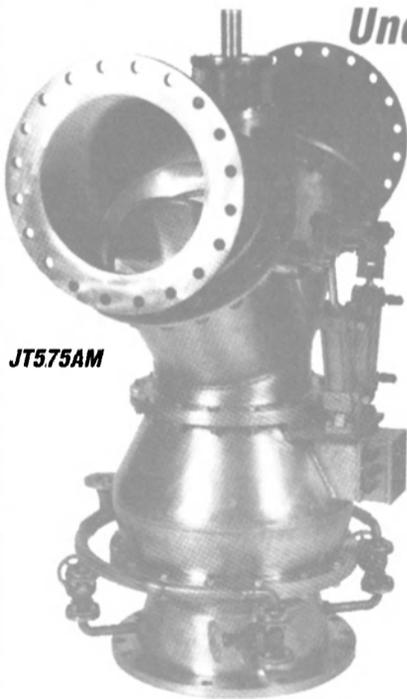
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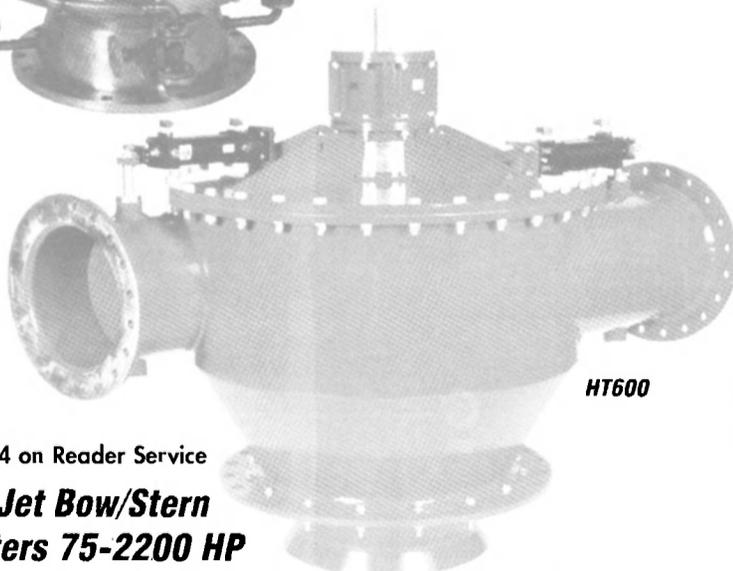
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The majority of MMA Continuing Education courses are programs designed to serve the needs of professional mariners, maritime industry personnel and other professionals engaged in businesses or services related to MMA's mission. Most are conducted at MMA's campus in Castine. Some (as noted) are offered at Southern Maine Community College's campus in South Portland. Particular courses such as Company/Ship and Port Facility Security Officer Training as instructed by Maritime Protective Services, Inc ([www.mpsint.com](http://www.mpsint.com)), may be contracted for private delivery at Castine or locations worldwide. Provide us with 30 days lead time, agree to a contracted price that includes a minimum # of seats (tuitions), instructor travel and expenses and we will do all possible to meet your request. Minimum enrollment determination is made three weeks prior to course start dates. All courses require deposits. CEUs are available for all courses. Asterix\*denotes new courses in 2004. Don't see what you want? Let us know. We keep a log of requests and are constantly planning for future courses that fit with MMA's mission and facilities.

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The RAND study, delivered in April, recommended that the Coast Guard pursue a two-pronged strategy to accelerate and expand Deepwater's current plan to acquire new assets—with twice as many cutters and 50 percent more air vehicles—and, at the same time, to identify and

explore new platform options, emerging technologies, and operational concepts that could leverage those assets. The Coast Guard will use the results of the RAND study as an additional data point in its ongoing assessment of the need to revise Deepwater's requirements for

recapitalizing the Coast Guard in light of the post-9/11 operating environment.

This assessment will be completed this summer and reviewed by the Department of Homeland Security's Joint Requirements Council. Program officials emphasize that Deepwater's acquisition strategy and current Deepwater Implementation Plan solution remain sound for the new and evolving responsibilities and missions that the Coast Guard has been asked to undertake.

The Deepwater system-of-system acquisition [Ed. Note: see "Special Report: Deepwater," Maritime Reporter, July 2003] retains the flexibility to enable it to be adapted to changing cir-

cumstances and emerging requirements, they say.

"There have been some people who have looked at the status of the Deepwater program at the present budget time and wondered why the 20-year marathon, as initially defined at contract award, has changed somewhat," said Rear Adm. Patrick M. Stillman, Deepwater's program executive officer, at the Navy League's Sea-Air-Space Exposition in Washington, D.C., in April. "The answer to that question is that change is fundamental our planetary existence, and it is absolutely fundamental to the agility and flexibility of this contracting strategy that will bring this enterprise to fruition

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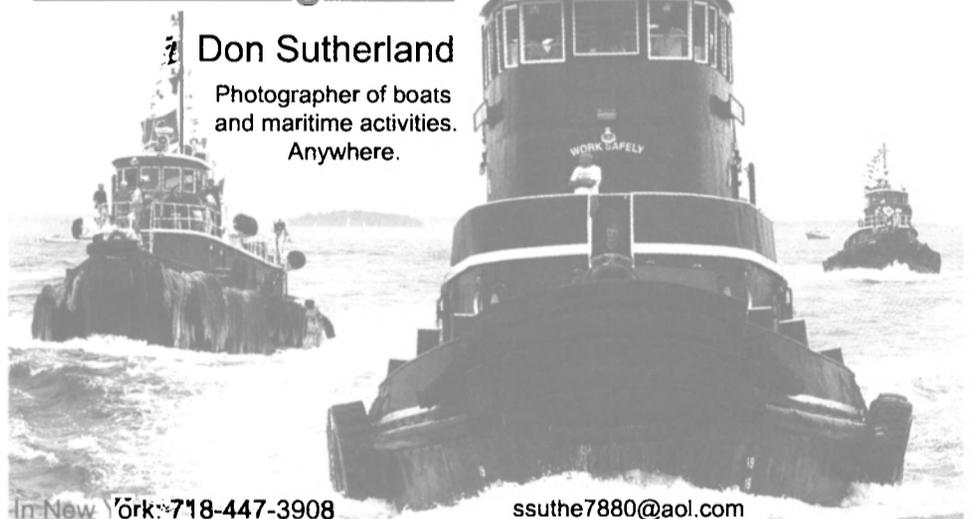
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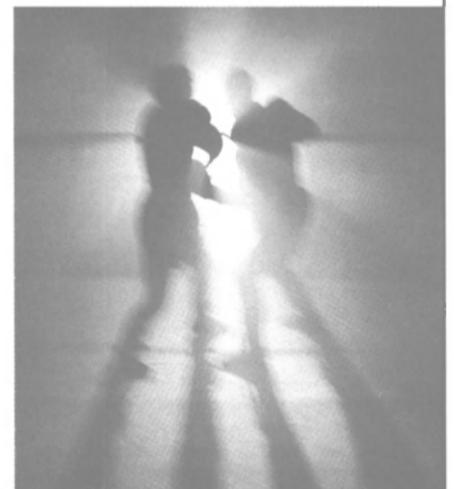
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### Lawmakers Urge Acceleration

Homeland-security minded lawmakers in both the U.S. House of Representatives and the U.S. Senate have sponsored efforts to increase Deepwater's funding level to enable it to be completed in 10 to 15 years. Last November, 14 senators signed a joint letter to the director of the Office of Management and Budget urging the Bush administration to include \$1.892 billion in fiscal year 2005 funding to accelerate the Deepwater Program as a "prudent way" to improve U.S. homeland security. Of the \$6.8 billion in fiscal year 2004 funding appropriated for the Coast Guard, \$668.2 million is allocated to Deepwater. The administration's budget proposal for fiscal year 2005 identifies \$678 million in funding for the Deepwater modernization and recapitalization program. Citing the important need to provide adequate funding to enable the Coast Guard to continue to fulfill its many missions, the House of Representatives Transportation and Infrastructure Committee voted unanimously in April to approve bipartisan legislation authorizing approximately \$8 billion for the Coast Guard in fiscal year 2005, including \$1.1 billion for Deepwater. "This bill will provide the Coast Guard the resources that it needs to perform the many important homeland security and traditional missions that we expect the Coast Guard to carry out every day," said Rep. Frank LoBiondo (R-NJ), chairman of the Coast Guard and Maritime Transportation Subcommittee.

"The bill allocates \$1.1 billion for the Deepwater Program, putting us on track to accelerate the program's completion date to 2016-five years earlier than originally planned. Acceleration is critically needed as the Coast Guard's aging fleet of vessels and aircraft are deteriorating at an alarming rate." Earlier this year, the Senate amended its fiscal year 2004 authorization legislation for the Coast Guard to include a fiscal year 2005 authorization. House Transportation and Infrastructure Committee members said they will work to include the House authorization spending level in the final Coast Guard package that is forged during a Senate-House authorization conference this year. Rep. Don Young (R-Alaska), the House Transportation Committee chairman, said, "It is important that we continue to support the work of the Coast Guard and to provide adequate funding to insure that the Coast Guard can continue to fulfill the many missions we have given them." Following his Subcommittee's Deepwater hearing in April, Rep. LoBiondo reiterated his call to accelerate the Deepwater Program. "The dura-

tion and magnitude of the Deepwater program require continued oversight and adjustment of the acquisition plan to meet the ever-changing conditions that the Coast Guard faces in its operational environment," he said.

"The Subcommittee understands the importance of this ongoing review; however, we are concerned with impacts

on costs, complexity and procurement delays that may result as the program is 're-baselined'. These adjustments to planned assets have combined with multiple years of underfunding to result in the situation that we find ourselves in today. The Coast Guard has estimated that the Deepwater program is now running at two to seven years behind the

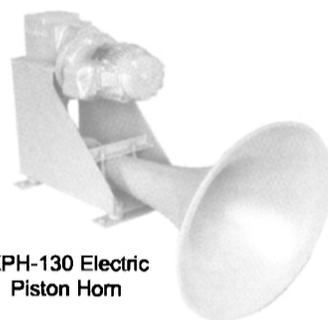
original 20-year schedule. This is simply unacceptable. We should be accelerating not decelerating," LoBiondo said.

*Capt. Gordon I. Peterson, U.S. Navy (Ret.) is a technical director with Anteon Corporation's Center for Security Strategies and Operations.*

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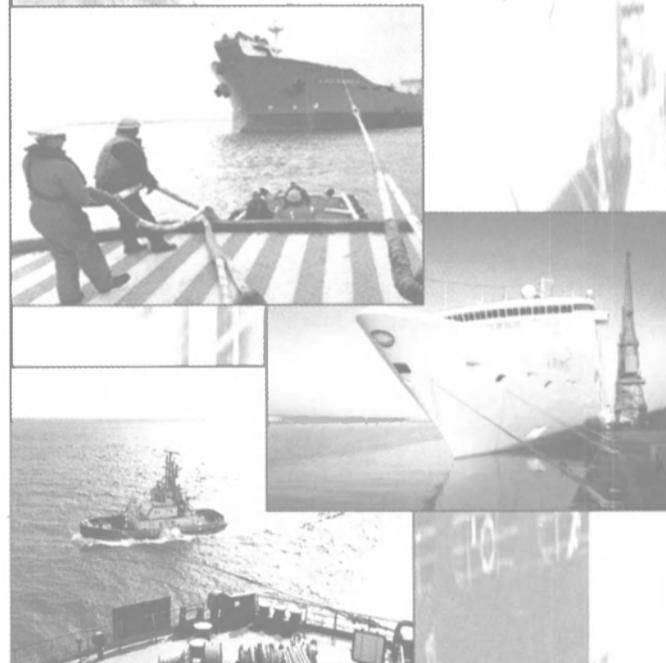
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## RIBS

# MACC 2004: Multi-Agency Craft Conference set for June 15-17

One of the more unique conferences — the Multi Agency Combat Craft (MACC 2004) — is set to take place again this month. MACC provides a forum for open exchange and discussion

about boat and craft between Government agencies and the maritime community. In addition to topical conferences and an exhibition venue, a unique aspect of MACC are the numer-

ous in-water boat demonstrations.

The primary focus of MACC is the dialog between the DoD and other Government agencies on common issues unique to boats and craft in their

service. The types of craft discussed range from Army & Navy service craft, Navy and Coast Guard patrol boats, to Naval Special Warfare and Marine Corps combatant craft. Craft types include RIB's, patrol and insertion craft, landing craft, utility craft and special purpose craft.

The conference serves as a way to capitalize on the joint nature of today's military environment. The conference leverages larger returns from the combined efforts of the relatively small boat communities in each service. Within each service, boats and craft remain low on the funding priority list and the conference helps prevent different agencies from expending funds solving a common problem.

The MACC is a conference, not an exhibition. While an exhibition hall is offered, it is a secondary aspect of the conference. A quote from past attendees summarize this aspect of the conference well:

"It is an exceptional opportunity for the military and commercial communities to meet and discuss where the military is going and what its future needs may be. It also brings commercial firms together that may cooperate on joint projects to be able to provide the military with what it really needs and wants." For more information visit: [www.boats.dt.navy.mil/macc](http://www.boats.dt.navy.mil/macc)

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### Moose Wins Six-Boat Navy Deal



Moose Boats won two contracts from the U.S. Navy to build six more Moose 340C Catamaran Patrol Boats. The contract totals approximately \$2.9 million, and the first boat is scheduled to be delivered in January 2005. The Moose 340C is a 36.5-ft. All-Aluminum Jet Powered Catamaran with twin Cummins 380 hp turbo diesels and is propelled by Hamilton 292 water jets. These vessels will be assigned to stations in San Diego, Calif. If required, the boat can be deployed at speeds over 34 knots with armament including 50 caliber and M60 machine guns. Moose Boats will demonstrate the 340C Patrol Boat in the water at MACC 2004.

Circle 8 on Reader Service Card

**Willard's 36: Fit 'Enforcer'**

Willard Marine's 36 ft. Enforcer RIB features a removable cabin. These all-weather craft, complete with heating and air-conditioning, can be used for ship's boats and for 24-hour patrol. This model is based on the standard Willard 36 ft. NSW-type open, 30-passenger, RIB being produced for the U.S. Navy. Production has begun at the rate of two 36 ft. RIBs per month. Equipped with water-jets or outdrive propulsion, these jumbo-sized versatile 36 ft RIBs perform well in elevated sea-states with large loads. The deep V hull design is by C. Raymond Hunt Associates.

**Circle 40****Ribcraft Mitigator**

Ribcraft's Mitigator 25 ft. (7.8 m) vessel is a popular choice for the U.S. government, selected by the U.S. Coast Guard and U.S. Air Force recently. The new 25 ft. Ribcraft Mitigator integrates multiple technologies designed to enhance driver and passenger comfort and safety by mitigating many of the naturally occurring actions generated by changing sea conditions and high speeds.

**Circle 41****SeaArk: Continues Success**

SeaArk is arguably one of the more successful boatbuilders, profiting from the recent



June 2004

splurge in boat buying from federal, state and local authorities. Its RAM design uses proven, existing hull forms, and modify a very small area to accept a simple but effective attachment system. The result is a vessel that utilizes the benefits of a Rigid Hull Inflatable, without sacrificing the design or function of the boat. Interior structure, framing, and hull plating all remain basically the same as the standard Commander and Dauntless class vessels. Cockpit and superstructures can be configured identical to non-collared boats.

**Circle 42****State of Art Rescue/Salvage**

The quick response rescue RIB, Safe/Sea Block Island, measures 33 x 12 ft. and was built by Almar for Safe/Sea. The Almar hull is welded marine aluminum of heavy duty construction, and features 28-in. diameter Wing polyurethane tubes; twin 315 hp Yanmar Diesel engines; Borg Warner 1:1 gears; and Hamilton 274 jet propulsion units.

**Circle 36****OTECH Offers New Boat**

Ocean Technical Services, Inc. (Otech) offers a new boat fabricated in marine grade aluminum, designed to perform various missions including patrol, surveillance, search and rescue, port security, diving and anti-terrorism activities. The hull form is a hydrofoil supported catamaran that offers increased stability and large

deck areas. This Patrol Boat was one of three U.S.C.G. Response Boat Medium (RB-M) prototypes completed in Phase I of the project. Otech teamed with Viking Fast Craft Solutions, LLC (Viking) on the design of the RB-M prototype.

**Circle 37****Northwind USV is Sly Design**

Air dropable, ship deployable and multi-mission configurable Northwind Marine's unmanned surface vehicle (USV) dubbed the "SeaFox" is a little package delivering multiple capabilities for the expanding requirements of fleet and port security. Originally commissioned through the Office of Naval Research (ONR) Tech Solutions Program for towing air gunnery training targets at 40 knots, the 16-ft x 5-ft Northwind Marine Inc. engineered, alternative fuels USV, is compact and capable of carrying relatively large payloads.

Other potential applications include pre-fire weapons range clearance, location inspection for reconnaissance teams, night surveillance, data relay and commercial fishing support. In conjunction with other companies, Northwind is working on several electronics packages that fulfill a wide range of mission functions. Although existing SeaFox USVs are in use, Northwind Marine Inc. is planning to demonstrate the most recent version at MACC 2004. It is designed to operate at 40 knots in sea state 3 with a 200-hp JP5 engine.

**Circle 38****VT Halmatic Arctic 24 RIB**

VT Halmatic delivered an Arctic 24 RIB to the island of Tristan da Cunha. Located in the South Atlantic, approximately 1,740 miles west of Cape Town, Tristan da Cunha is acknowledged as the world's most remote inhabited island.

The island supports a thriving community concentrating on fishing and agriculture. Power is provided by twin 200 hp outboard motors and the vessel is capable of speeds in excess of 50 knots.

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## Challenges Facing IMO

(Continued from page 28)

We must also ensure that MARPOL\* annex VI on Prevention of Air Pollution from Ships and the International Convention on the Control of Harmful Anti-fouling Systems on Ships come into force and are widely and effectively implemented.

When we consider our main goals of safety, security and pollution prevention, it is hugely important to ensure the preservation of the unity among the IMO membership which has served international shipping and the international community as a whole so well. There is no doubt that an international industry like shipping, in which the prime physical assets - the ships themselves - actually move between countries and continents and therefore between different legal jurisdictions, simply has to be regulated internationally.

Conventions such as SOLAS and MARPOL derive much of their strength from the fact that they are applicable to nearly 100 per cent of the international fleet and are accepted universally. They give to each and every Party the confidence that the same, mutually acceptable standards are being applied on foreign vessels that visit their ports, and the right to take action whenever these agreed standards are not met. The alternative is impossible even to contemplate.

To expect ship operators to navigate through an archipelago of different standards and contrasting requirements would be completely impractical and the resulting confusion and misunderstanding would, I am sure, be detrimental to safety and environmental protection overall.

Given the universality of the IMO standards, another key challenge that the Organization is facing now and will continue to face in the future is to shift the focus of our Members and of the shipping community as a whole onto the implementation of existing regulations, rather than the formulation and adoption of ever more new standards.

Wherever changes in the existing regulatory regime are needed, they will, of course, be made and IMO, through its structure of sub-committees and working groups, is ideally placed to make sure that the framework we now have keeps pace with advancing technology and changing expectations. But, by and large, shipping accidents do not occur because of major gaps in the regulatory structure; in the main, they occur because what we already have has not been implemented effectively or because of human error.

Implementation of proper safety stan-

dards requires the development of a safety culture that embraces everyone involved in shipping, from the seafarers at the "sharp end" and those who work for shipping companies through to the officials and policy-makers in Governments and shipping administra-

tions. At IMO, we are doing all we can to develop and promote that safety culture, and we have quite consciously focussed our efforts on the human element. The revised STCW\* Convention, for example, lays down standards for training and certification, and is

designed to ensure the industry's human resources can actually perform the tasks that their certificates suggest they can. The International Safety Management (ISM) Code provides a blueprint for best practice at the managerial level within shipping companies. Our program of

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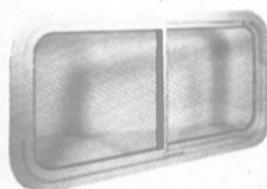
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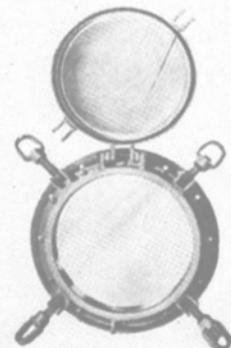
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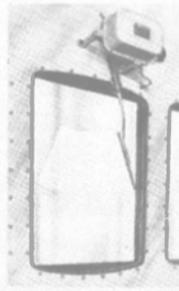
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technical co-operation and assistance is designed to ensure that developing countries can get the help they need to develop their own maritime infrastructures and their own pool of able and qualified people.

The Organization is also currently responding to the increasingly vociferous calls to offer assistance to our Members in assessing to what extent they are implementing and enforcing applicable IMO instruments, with a view to enhancing their performance as flag, port and coastal States.

The development of the Voluntary IMO Member State Audit Scheme is progressing well towards the target of adoption of such a scheme by the IMO Assembly in 2005.

The scheme is envisaged to address such issues as conformance of the Member State in enacting legislation for the applicable IMO instruments to which it is a Party; the administration and enforcement of the applicable laws and regulations of the Member State; the delegation of authority by a Member State in terms of the implementation of convention requirements; and the control and monitoring mechanism of the Member State's survey and certification processes and of its recognized organizations.

Such a scheme would bring many benefits. Identifying where capacity-building activities would have the greatest effect and targeting the appropriate

action would be greatly improved; the Member States themselves would receive valuable feedback, intended to assist them in improving their own capacity to put the applicable instruments into practice, and generic lessons learnt from audits could be provided to all Member States so that the benefits could be widely shared.

I see the audit scheme as a tool to enable us to make even further progress in eliminating sub-standard shipping. It will satisfy our friends and silence those who label IMO as a "toothless tiger" with no real control over the implementation of the rules and regulations it develops. My vision is of a scheme which, rather than causing embarrassment to those to be audited by exposing their weaknesses, will instead bring us closer together - the one helping the other in pursuit of our common goals of enhanced safety and environmental protection.

For the future, I am also concerned by a number of other issues which we cannot afford to ignore.

It is essential that we find a way of addressing the question of safety standards aboard non-convention ships. The tragic ferry accidents in the Philippines and the Maldives this year have highlighted how devastating these incidents can be in terms of loss of life. IMO has already promoted the development, adoption and implementation of safety codes for non-convention

vessels in Asia and the Pacific, Africa, the Caribbean and the Mediterranean, and will continue to explore initiatives to assist countries in avoiding these tragedies in the future.

Much has been written and spoken about introducing new legislation to criminalize those found responsible for causing pollution from ships through negligence. Even though I fully understand the anger felt by victims and those whose coasts and livelihood are damaged by pollution, the concept of such legislation causes me serious concern.

Criminal prosecution for non-compliance was never envisaged when IMO Conventions were drafted and any moves in that direction should be weighed very seriously against the impact they will have on serving seafarers as well as on youngsters we try to attract to the maritime profession, particularly at a time when the statistics on the international maritime workforce paint a gloomy picture.

Moreover, the criminalization of individuals might also jeopardize effective response to a major incident, including by salvors, as it might lead to fear and indecision at crucial times.

Another serious concern is with regard to seafarers detained ashore following accidents involving ships on which they were serving. It is a complex issue and I understand and respect the independence of the judiciary in countries that have suffered in many ways as a result of accidents. However, I am very alarmed at the impact prolonged detention may have on the morale of the seafarers under detention and of the seafarers of the world as a whole who may justifiably fear for their future.

There is no doubt that an international industry like shipping, in which the prime physical assets - the ships themselves - actually move between countries and continents and therefore between different legal jurisdictions, simply has to be regulated internationally. IMO must add its weight to the global efforts of Governments and industry to prevent accidents happening in the first place and, consequently, remove any perceived incentive for unilateral or regional measures. IMO has succeeded in improving standards in the past because it has never rested on its laurels and is always looking to move the agenda forward.

IMO today continues to provide a professionally sound and well considered regulatory mechanism which balances the demands of governments and civil society with the needs and capacity of industry.

Moreover, IMO has increasingly demonstrated its agility and its ability to fast-track consideration of issues that are considered urgent, but remain complicated. It repeatedly shows itself to be capable both of reacting to events in an appropriate and timely manner and of anticipating and mitigating potential problems before they arise.

The goal for the standards that IMO adopts is that they be the highest practicable, which means that they should not only be of the highest level but capable of being implemented globally. The best possible witnesses to their success are the casualty and pollution statistics, which show continued improvement. Overall, IMO is moving confidently towards further and greater achievements in the future, in order that we might move ever closer towards the goals encapsulated in our mission statement — safe, secure and efficient shipping on clean oceans.

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## Bee Clear Opens Office

Vacuum sewage system specialists, The Bee Clear Group opened an office in Hollywood, Fla., in partnership with Chesterfield based marine outfitters,

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## O.W. Bunker Expands Far East Business

O.W. Bunker has expanded its activities in the Far East with the establishment of O.W. Bunker China Ltd. The new company will be situated in Hong Kong and is the result of the purchase of all activities from South Horizons International Petroleum Ltd. (SHIP), Hong Kong. With effect from May 1, 2004, all bunker activities of SHIP Hong Kong will be transferred to the newly established company.

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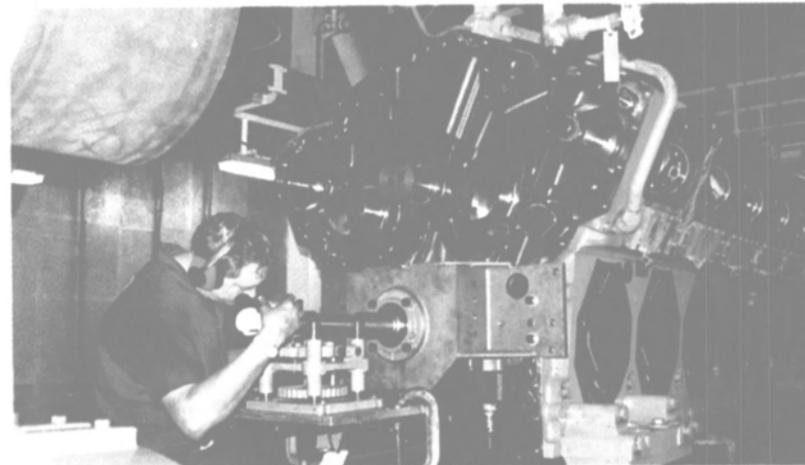
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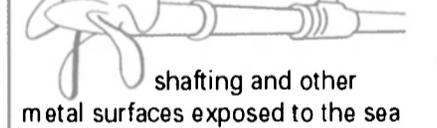
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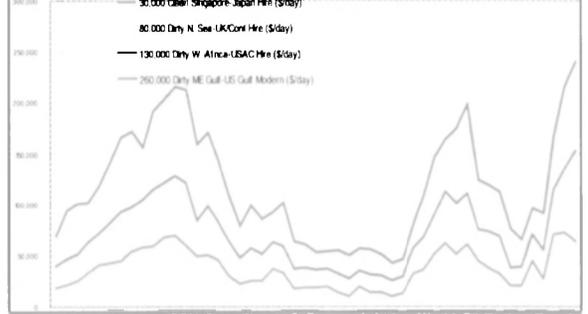
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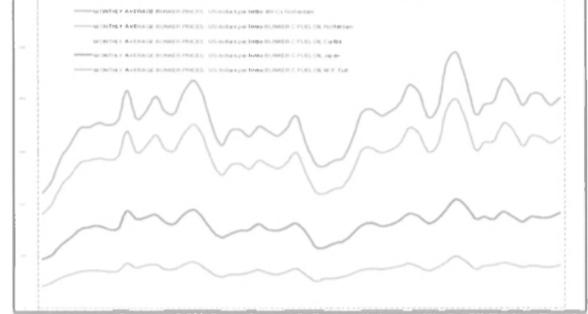
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**Oil Tankers: Indicative Spot Voyage Earnings (Monthly Averages - 2000 to Jan. 2004)**



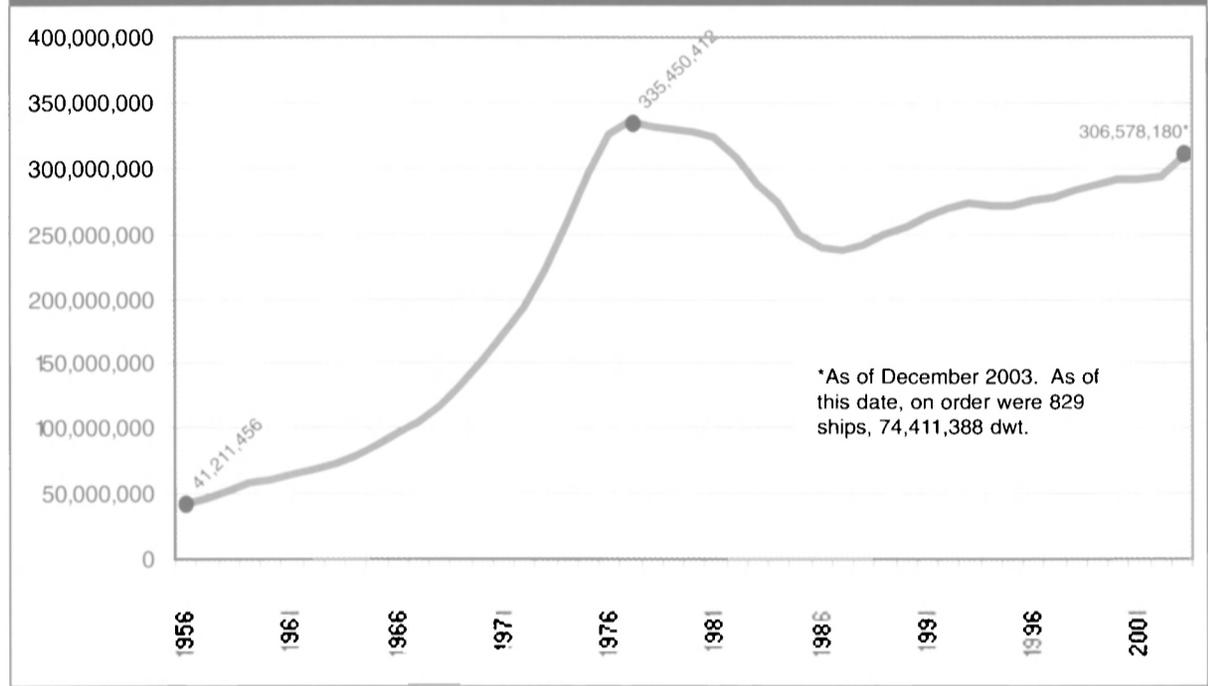
Source: SSY Consultancy & Research Ltd. • World Oil Tanker Trends Volume 1 2004 • www.ssyonline.com

**Monthly Average Bunker Prices • U.S. Dollars per ton - (1999 to Jan. 2004)**



Source: SSY Consultancy & Research Ltd. • World Oil Tanker Trends Volume 1 2004 • www.ssyonline.com

**Development of World Tanker Fleet • by DWT • 1956 to 2003**



\*As of December 2003. As of this date, on order were 829 ships, 74,411,388 dwt.

Source: SSY Consultancy & Research Ltd. • World Oil Tanker Trends - Volume 1 2004 • www.ssyonline.com

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### World Tanker Fleet • by DWT, 1956 to 2003

End Year	No.	dwt	Ave. dwt
1956	2,316	41,211,456	17,794
1957	2,493	46,532,484	18,665
1958	2,680	52,628,731	19,638
1959	2,759	57,914,836	20,991
1960	2,757	61,231,364	22,209
1961	2,755	64,347,351	23,357
1962	2,739	67,490,836	24,641
1963	2,743	72,057,669	26,270
1964	2,778	78,826,560	28,375
1965	2,860	87,391,721	30,557
1966	2,880	96,210,768	33,407
1967	2,931	104,869,038	35,779
1968	2,998	116,231,239	38,770
1969	3,025	131,843,300	43,585
1970	3,110	151,815,798	48,815
1971	3,216	171,919,048	53,457
1972	3,306	193,383,339	58,495
1973	3,417	220,355,516	64,488
1974	3,597	259,080,278	72,027
1975	3,633	295,120,845	81,233
1976	3,603	325,424,258	90,320
1977	3,513	335,450,412	95,488
1978	3,310	330,732,560	99,919
1979	3,260	329,893,169	101,194
1980	3,281	328,101,461	100,000
1981	3,285	323,651,319	98,524
1982	3,199	307,908,543	96,251
1983	3,042	287,758,098	94,595
1984	2,923	274,263,093	93,829
1985	2,780	248,852,108	89,515
1986	2,743	239,289,114	87,236
1987	2,751	237,280,232	86,252
1988	2,781	240,887,838	86,619
1989	2,847	248,921,544	87,433
1990	2,907	255,790,398	87,991
1991	2,973	264,165,935	88,855
1992	3,005	269,723,503	89,758
1993	3,012	273,978,625	90,962
1994	2,996	270,844,275	90,402
1995	3,011	271,281,849	90,097
1996	3,060	275,003,945	89,871
1997	3,110	277,721,658	89,300
1998	3,217	284,143,057	88,325
1999	3,298	287,160,877	87,071
2000	3,324	291,999,201	87,846
2001	3,336	291,109,956	87,263
2002	3,368	293,570,541	87,165
December 2003	3,524	306,578,180	86,997
On order (December 2003)	829	74,411,388	89,760

Source: SSY Consultancy & Research Ltd. • World Oil Tanker Trends- Volume 1 2004 • www.ssyonline.com

Cruise Passenger Statistics<sup>1</sup>  
Cruise Length and Passenger-Days  
2001 through 2003  
(Passenger-Days in Thousands)

Port	2003		2002		2001	
	No. of Cruises	Passenger Days	No. of Cruises	Passenger Days	No. of Cruises	Passenger Days
2 to 5 Days	1,221	10,684	1,188	10,160	1,140	9,212
6 to 8 Days	2,164	34,107	1,998	30,533	1,748	25,939
9 to 17 Days	433	7,654	407	7,353	306	5,103
Greater than 17 Days	22	486	13	344	29	781
Total	3,840	52,931	3,606	48,390	3,223	41,034

<sup>1</sup>North America Cruises by Ten Major Brands  
Source: U.S. Maritime Administration, Office of Statistical and Economic Analysis

Cruise Passenger Statistics<sup>1</sup>  
Cruise Destinations  
2001 through 2003  
(Passenger in Thousands)

Port	2003		2002		2001	
	Cruises	Passengers	Cruises	Passengers	Cruises	Passengers
Western Caribbean	1,324	2,916	1,138	2,445	755	1,653
Bahamas	511	750	524	1,249	522	1,232
Eastern Caribbean	423	1,016	427	1,003	199	1,013
Alaska	412	766	389	722	381	678
Southern Caribbean	324	741	332	748	339	765
Mexico (Pacific)	177	731	285	627	311	611
Hawaii	109	222	117	231	41	71
Bermuda	129	207	133	190	136	167
Canada/New England	87	169	76	158	78	154
Trans-Panama Canal	62	91	67	96	78	117
Other Destinations	92	130	118	188	112	164
Total	3,840	8,283	3,606	7,645	3,223	6,626

<sup>1</sup>North America Cruises by Ten Major Brands  
Source: U.S. Maritime Administration, Office of Statistical and Economic Analysis

Cruise Passenger Statistics<sup>1</sup>  
Departure Ports  
2001 through 2003  
(Passenger in Thousands)

Port	2003		2002		2001	
	Cruises	Passengers	Cruises	Passengers	Cruises	Passengers
Miami	755	1,865	776	1,899	684	1,710
Port Canaveral	451	1,116	423	1,036	359	885
Fort Lauderdale	544	1,078	544	1,065	473	877
San Juan	225	571	239	582	346	717
Los Angeles	225	515	236	536	298	586
Vancouver, C.A.	260	460	270	501	274	486
New York	212	424	177	291	137	220
Tampa	213	418	174	323	145	274
Gibsonville	203	377	149	271	85	150
New Orleans	143	297	126	256	54	124
All Other Ports	629	1,160	492	803	368	598
Total	3,840	8,283	3,606	7,645	3,223	6,626

<sup>1</sup>North America Cruises by Ten Major Brands  
Source: U.S. Maritime Administration, Office of Statistical and Economic Analysis



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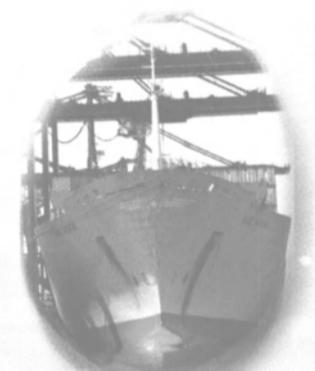
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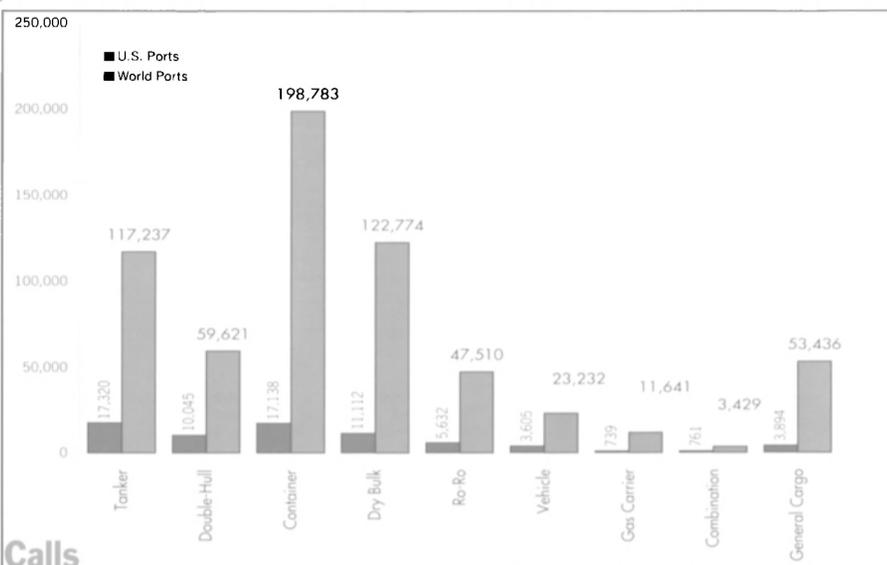
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## U.S. Statistics



In 2002, vessel calls at U.S. ports accounted for about 10 percent of vessel calls at world ports. The U.S. calls were made by 6,114 vessels, or 44 percent of the active world fleet (Table H-2). Of the 56,596 U.S. calls, 31 percent were by tankers, 30 percent were by containerships, 20 percent were by dry bulk carriers and 10 percent were by RoRo vessels.

### Tanker

From 1998 to 2002, tanker calls at U.S. ports increased by three percent. Over the same period foreign-flag tanker calls, which are in U.S. import trades, increased by 10% reflecting the substitution of imports for domestic shipments. In 2002, foreign-flag vessels accounted for 80% of tanker calls at U.S. ports, up from 74% four

years earlier. Over this period, petroleum imports increased by 10% (52 million metric tons) while domestic ocean shipments, which are reserved for U.S.-flag vessels, fell by 13% (21 million metric tons). In 2002, 58% (10,045) of the tanker calls at U.S. ports were by double hull tankers, up from 37% (6,255) four years earlier. Of these, 5,770 were by tankers smaller

### Vessel Calls at U.S. Ports

(By Vessel Type, 1998 and 2002)

Vessel Type	1998	2002	% Ch. 98-02
Tanker	16,841	17,320	2.8
Double-Hull	6,255	10,045	60.6
Product	10,208	10,949	7.3
Double-Hull	3,612	5,770	59.7
Crude	6,633	6,371	-3.9
Double-Hull	2,643	4,275	61.7
Container	15,846	17,138	8.2
Dry Bulk	12,674	11,112	-12.3
Ro-Ro	4,251	5,632	32.5
Vehicle	2,431	3,605	48.3
Gas Carrier	685	739	7.9
Combination	846	761	-10.0
General Cargo	4,978	3,894	-21.8
All Types	56,121	56,596	0.8

In the Background: A high quality double hull tanker from Stena. (Photo Credit: Stena)

### Active Fleets (Vessels)

(That Called At U.S. Ports and World Ports, 2002)

Vessel Type	U.S. Call	World Call	% U.S. Call
Tanker	1,456	3,384	43.0
Double-Hull	840	1,583	53.1
Container	1,026	2,368	43.3
Dry Bulk	2,488	5,237	47.5
Ro-Ro	425	671	63.3
Vehicle	307	369	83.1
Gas Carrier	120	386	31.1
Combination	92	136	67.6
General Cargo	507	1,607	31.5
<b>All Types</b>	<b>6,114</b>	<b>13,789</b>	<b>44.3</b>

### Existing Tanker Fleet - Flags of Registry

Flag	No.	Total Dwt.	%
Panama	586	61,785,915	19%
Liberia	474	45,932,708	15%
Greece	242	28,242,358	9%
Bahamas	188	23,027,489	8%
Malta	233	16,381,378	5%
Norway*	36	3,887,073	1%
Singapore	168	15,928,099	5%
Marshall Islands	111	12,904,274	4%
Cyprus	122	7,217,694	2%
U.S.A.	85	5,717,383	2%
Japan	27	4,857,299	2%
India	82	5,394,848	2%
Isle Of Man	52	5,903,420	2%
Bermuda	15	1,836,913	1%
Iran	31	5,467,298	2%
Italy	102	3,889,682	1%
China	94	3,565,720	1%
Kuwait	17	2,967,860	1%
Brazil	44	2,090,751	1%
Other Flags	815	49,580,018	16%

TOTALS 3,524 306,578,180 100%  
Norway Includes Norwegian International Register

Source: SSY Consultancy & Research Ltd. • World Oil Tanker Trends - Volume 1 2004 • www.ssyonline.com

### Vessel Calls at U.S. and World Ports

(by Vessel Type, 2002)

Vessel Type	U.S. Ports		World Ports	
	Calls	%	Calls	%
Tanker	17,320	30.6	117,237	21.1
Double-Hull	10,045	17.8	59,621	10.7
Container	17,138	30.3	198,783	35.8
Dry Bulk	11,112	19.6	122,774	22.1
Ro-Ro	5,632	10.0	47,510	8.6
Vehicle	3,605	6.4	23,232	4.2
Gas Carrier	739	1.3	11,641	2.1
Combination	761	1.3	3,429	0.6
General Cargo	3,894	6.9	53,436	9.6
<b>All Types</b>	<b>56,596</b>	<b>100.0</b>	<b>554,810</b>	<b>100.0</b>

Source: Vessel Calls at U.S. Ports 2002, Released March 2004  
Office of Statistical and Economic Analysis • www.marad.dot.gov/marad\_statistics

Table H-9

### Vessel Calls by Coastal Region, 2002

Vessel Type	North Atlantic	South Atlantic	Puerto Rico	Pacific NW	Pacific SW	U.S. Gulf	Total
	Tanker	3,122	1,297	241	1,793	2,069	8,798
Product	2,231	1,263	219	824	1,303	5,100	10,940
Crude	891	34	13	969	766	3,698	6,371
Container	3,043	5,444	568	1,787	5,034	1,262	17,138
Bulk	1,388	1,156	85	2,111	1,389	4,983	11,112
Ro-Ro	1,804	1,555	167	792	883	431	5,632
Vehicle	1,362	815	99	450	688	191	3,605
Gas Carrier	73	26	33	43	50	514	739
Combination	234	69	14	0	26	418	761
General Cargo	789	828	269	171	570	1,267	3,894
<b>All Types</b>	<b>10,453</b>	<b>10,375</b>	<b>1,377</b>	<b>6,697</b>	<b>10,021</b>	<b>17,673</b>	<b>56,596</b>

Source: Vessel Calls at U.S. Ports 2002, Released March 2004  
Office of Statistical and Economic Analysis • www.marad.dot.gov/marad\_statistics

than 70,000 dwt, which carry primarily petroleum products, and 4,275 were by tankers 70,000 or greater. For the period 1998 to 2002, double-hull tanker calls increased by 61% while single-hull tanker calls declined by 31%.

### Container

Over the last four years, containership calls at U.S. ports increased by eight percent. Over the same period, the number of containerships calling at U.S. ports increased by 28 percent to 1,026, but, as larger containerships entered U.S. trades, average calls per containership fell.

### Dry Bulk

A 42 percent decline in U.S. coal exports contributed to the 12 per-cent decline in dry bulk vessel calls at U.S. ports since 1998. The primary impact was on South Atlantic ports which had a 34 percent decline in dry bulk calls.

### Ro-Ro/Vehicle

From 1998 to 2002, RoRo calls at U.S. ports increased by 33 percent. Vehicle carriers accounted for about 85 percent of the increase, reflecting a 52 percent increase in U.S. vehicle imports, and a movement schedules that require higher call frequencies.

### Tanker Orderbook by Vessel Type/Owner Nationality

Nationality	Dirty dwt		Clean dwt		Chem/Specialist dwt		Total dwt
	No.	dwt	No.	dwt	No.	dwt	
Greece	77	11,989,763	67	4,255,706	14	592,786	158 16,838,255
Norway	9	1,252,600	0	0	8	279,913	17 1,532,513
Iran	2	599,000	5	175,000	0	0	7 774,000
Italy	7	866,900	50	2,719,218	15	481,575	72 4,067,693
Japan	40	7,674,174	24	1,424,094	23	662,023	87 9,760,291
U.S.A.	4	681,700	7	407,150	3	93,500	14 1,182,350
Hong Kong	6	1,055,370	15	1,148,800	0	0	21 2,204,170
Saudi Arabia	0	0	4	191,000	3	138,000	7 329,000
Denmark	4	938,500	13	956,000	7	202,548	24 2,097,048
Taiwan	4	1,160,300	6	347,400	0	0	10 1,507,700
Sweden	2	144,000	11	741,799	15	317,992	28 1,203,791
Singapore	6	1,661,000	19	968,960	7	247,100	32 2,877,060
Turkey	9	1,069,900	2	74,000	0	0	11 1,143,900
Germany	2	230,000	19	726,037	18	413,500	39 1,369,537
Others	99	16,385,700	168	9,553,993	35	1,584,387	302 27,524,080
<b>Total</b>	<b>271</b>	<b>45,708,907</b>	<b>410</b>	<b>23,689,157</b>	<b>148</b>	<b>5,013,324</b>	<b>829 74,411,388</b>

Source: SSY Consultancy & Research Ltd. • World Oil Tanker Trends - Volume 1 2004 • www.ssyonline.com

# 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 [Lowe@marinelink.com](mailto:Lowe@marinelink.com)

**ACCOMMODATION LADDERS & GANGWAYS**  
Rampmaster, Inc., 6600 NW 32nd Avenue, Miami, FL 33147, 800-327-8917, 305-694-8270, [sales@rampsonline.com](mailto:sales@rampsonline.com), Contact: Al Davis, [www.rampsonline.com](http://www.rampsonline.com)

**AIR CONDITIONING & REFRIGERATION**  
Adrick Marine Corp., P.O. Box 1549, N.Massapequa, NY 11758, 631-491-9475, 631-491-9478, [adrick1976@aol.com](mailto:adrick1976@aol.com)  
Bailey Refrigeration, 4986-1 Euclid Road, Virginia Beach, VA 23462  
Cospolich Refrigeration, 14695 Highway 61, Norco, LA 70079  
Flagship Marine, Inc., 2427 SE Dixie Hwy., Stuart, FL 34996, 800-316-6426, 772-283-4611, [sales@flagshipmarine.com](mailto:sales@flagshipmarine.com), Contact: Tom Martland, [www.flagshipmarine.com](http://www.flagshipmarine.com)  
Stork Bronswerk Inc., 3755 C Boul. Matte, Brossard, Quebec J4Y 2P4, Canada

**AIRHORNS/SIGNALING EQUIPMENT**  
Aircrime Manufacturing Co., 5478 267th St., Gloucester Industrial Estate., Langley, BC V4W 3S8, Canada  
Kahlenberg Brothers Co., P.O. Box 358, Two Rivers, WI 54241

**ALARMS, FACTORY-MUTUAL APPROVED**  
NREC Power Systems, 5222 Hwy 311, Houma, LA 70360  
Selco USA Inc., 2508 Lakebrook Ct, Atlanta, GA 30360-1715

**ALUMINUM BOATS**  
Island Boats, 6806 Highway 90 East, New Iberia, LA 70560  
Metal Craft Marine Inc., 347 Wellington St., Kingston, Ontario K7K 6N7, Canada  
Sea Ark Marine, P.O. Box 210, Monticello, AR 71655-0210  
William E. Munson Co., 18130 Sunset Way, Edmonds, WA 98026

**ALUMINUM SUPPLIER**  
Aluminum & Stainless Inc., 101 Thru-Way Park, Brossard, LA 70518, 800-252-9074, 337-837-5439, [sales@aluminumandstainless.com](mailto:sales@aluminumandstainless.com)

**ANCHORS & CHAINS**  
Anchor Marine, PO BOX 58645, Houston, TX 77258  
CS Controls Inc., 101 Dickon Road, Houma, LA 70363, 985-876-6040, 985-876-0751, [info@cscontrols.com](mailto:info@cscontrols.com), Contact: Paul Srigley, [www.cscontrols.com](http://www.cscontrols.com)  
G.J. Wortelboer Jr. B.V., P.O. Box 5003, 3008 AA Rotterdam, Netherlands

**ANTI-FOULING**  
Flexdel Corp./Aquadag, 1969 Rutgers University Blvd., Lakewood, NJ 08701, 888-353-9335, 732-901-6504, [flexabar@sprintmail.com](mailto:flexabar@sprintmail.com), Contact: Joe, Andy, or Rick, [www.aquadag-boatpaint.com](http://www.aquadag-boatpaint.com)  
Jotun Paints USA, 9203 Highway 23, Belle Chasse, LA 70037

**AUTOPILOT SYSTEMS**  
AG Marine Inc., 5009 Pacific Highway East 11, Tacoma, WA 98424  
ComNav Marine Ltd., 13511 Crestwood Pl., Ste 15, Richmond, BC V6V 2G1, Canada  
Mackay Communications, 2721 Discovery Dr., Raleigh, NC 27616-1851

**BALLAST**  
Ballast Technologies, 4620 S. Coach Dr., Tuscan, AZ 85714  
Redland Genstar Inc., Executive Plaza IV, Hunt Valley, MD 10912-1031

**BATTERY CHARGERS**  
La Marche, 106 Bradrock Drive, Des Plaines, IL 60018, 847-299-1188, 847-299-3061, [sales@lamarchemfg.com](mailto:sales@lamarchemfg.com), Contact: John Pawula, [www.lamarchemfg.com](http://www.lamarchemfg.com)

**BEARING- RUBBER, METALLIC, NON METALLIC**  
Cooper Bearing, 5795 Thurston Ave., Virginia Beach, VA 23455  
Craft Bearing, 5000 Chestnut Ave., Newport News, VA 23605  
Duramax Marine LLC, 17990 Great Lakes Parkway, Hiram, OH 44234, 440-834-5400, 440-834-4950, Contact: Richard Spangler  
Orkot Composites, 2535 Prairie Rd, Unit D., Eugene, OR 97402, 541-688-5529, 541-688-2079, [msscott@polymersealing.com](mailto:msscott@polymersealing.com), Contact: Mike Scott, [www.orkotmarine.us](http://www.orkotmarine.us)  
Thordon Bearings Inc., 3225 Mainway, Burlington, Ontario L7M 1A6, Canada

**BILGE SYSTEMS**  
Westfalia Separator, Inc., 100 Fairway Court, Northvale, NJ 07647, (201) 767-3900, (201) 784-4399, [brown.courtney@wsus.com](mailto:brown.courtney@wsus.com), Contact: Courtney Brown

**BOATBUILDER**  
Kivchak Marine, 469 NW Bowdoin Place, Seattle, WA 98107  
ROSBOROUGH BOATS, 37 Crane Lake Dr., HALIFAX, NS B3S 1B5, Canada  
Sea Ark Marine, P.O. Box 210, Monticello, AR 71655-0210  
Washburn Doughty, P.O. Box 296, E. Boothbay, ME 04544

**BOLLARDS**  
Maritime International, 100 E. Vermilion St. #212, Lafayette, LA 70501

**BRIDGE SUNSCREENS**  
Martek Marine Blinds, Unit 46, Century Business Centre Maversway, Rotherham, South Yorkshire S63 5DA, UK

**BULKHEAD SEALS/PANELS**  
CSD North America, 880 Candia Rd., Unit 10, Manchester, NH 03109  
Thermax, 3115 Range Rd., Temple, TX 76501

**CAD/CAM SYSTEMS**  
Albacore Research, 4196 Kashtan Place, Victoria, BC V8X 4L7, Canada  
Albacore Research LTD., 304-3960 Quadra St., Victoria, B.C. V8X 4A3, Canada, 250 479-3638, 250 479-0868, [Marketing@ShipConstructor.com](mailto:Marketing@ShipConstructor.com), Contact: Silke Sommerfeld, [www.ShipConstructor.com](http://www.ShipConstructor.com)  
Autoship Systems Corp., 611 Alexander Street, Suite 312, Vancouver, BC V6A 1E1, Canada, 604-254-4171, 604-254-5171, [sales@autoship.com](mailto:sales@autoship.com)  
Cadmatic, Ostra Strandgatan 72 (Vita Huset), FI-20810 Turku, Finland

Creative Systems Inc., P.O. Box 1910, Port Townsend, WA 98368

**CAPSTANS**  
Coastal Marine Equipment Inc., BLDG. 9114 MISAAP Industrial Complex, Stennis Space CTR., MS 39529, 228-813-1700, 228-813-1709, [sales@coastalmarineequipment.com](mailto:sales@coastalmarineequipment.com), Contact: Ralph Waguespack, [www.coastalmarineequipment.com](http://www.coastalmarineequipment.com)  
CS Controls Inc., 101 Dickon Road, Houma, LA 70363, 985-876-6040, 985-876-0751, [info@cscontrols.com](mailto:info@cscontrols.com), Contact: Paul Srigley, [www.cscontrols.com](http://www.cscontrols.com)  
McElroy/Catchot Winch Company, Inc., P.O. Box 4632, Biloxi, MS 39535-4632, 228-875-6327, 228-872-7880, [hcatchot@bellsouth.net](mailto:hcatchot@bellsouth.net), Contact: Harold Catchot, [www.mcelroycatchotwinch.com](http://www.mcelroycatchotwinch.com)  
Superior Lidgerwood Mundy, 1101 John Ave., Superior, WI 54880

**CARGO MONITORING & CONTROL SYSTEM**  
Hermatic Inc., 4522 Center St., Deerpark, TX 77536

**CARGO SECURING SYSTEM**  
Peck and Hale, 180 Division Street, W Sayville, NY 11796

**CAST IRON REPAIR**  
In-Place Machining, 1929 N. Buffum St, Milwaukee, WI 53212

**CHAINS**  
G.J. Wortelboer, Postbus 5003, 3008 AA Rotterdam, Netherlands

**CLASSIFICATION SOCIETY**  
American Bureau of Shipping, 16855 N. Chase Drive, Houston, TX 77060  
Lloyds Register Americas, Inc., 1401 Enclave Pkwy., Ste 200, Houston, TX 77077

**CLOSED CIRCUIT TELEVISION**  
Hernis Scan Systems A/S, Postboks 619, NO\_4809 Arendal, Norway

**CNC PLATE CUTTING**  
Advanced Fabricating Inc. PO Box 3721, Galveston, TX 77552

**COATINGS/ CORROSION CONTROL/ PAINT**  
Chugoku Marine Paints, P.O. Box 73, 4793, Netherlands  
Ferro Corp., 1301 North Flora St., Plymouth, IN 46563  
Flow International Corp., 23500 64th Ave., South Kent, WA 98059  
Hempel Coatings, 10-3511 Viking Way, Richmond, BC V6V 1W1, Canada  
Jotun Paints USA, 9203 Highway 23, Belle Chasse, LA 70037  
MK Production Resources Inc., 1610 Reynolds Street, Brunswick, GA 31520  
Mr. Longarm, Inc., P.O. BOX 377, Greenwood, MO 64034-0377  
NAPASCO Inc., 213 Main Project Road, Shriever, LA 70395, 985-449-0730, 985-449-0740, [napasco@napasco.com](http://napasco@napasco.com), Contact: Pam Bartell, [www.napasco.com](http://www.napasco.com)  
Sherwin Williams, 101 Prospect Ave., Cleveland, OH 44115  
Sigma USA, P.O. Box 816, Harvey, LA 70059  
Visions East, Inc., 1600 West State Rd. 84, Suite 5, Ft. Lauderdale, FL 33315

**COMMUNICATIONS**  
Inmarsat Ltd, 99 City Rd., London EUY 1AX, UK  
Japan Radio, 10111 SW Kickitai Way, Bldg B Suite 100, Seattle, WA 98134  
L-3 Communications, 6000 Fruitville Road, Sarasota, FL 34232  
Mackay Communications, 2721 Discovery Dr., Raleigh, NC 27616-1851  
Seawave, 76 Hammarlund Way, Middletown, RI 02842  
World-Link Communications, 74 Main St., Framingham, MA 01701

**COMPOSITE SHAFTS**  
Centa Corp., 815 Black Hawk Drive, Westmont, IL 60559

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

**COMPUTER SOFTWARE MONITORING SYSTEMS**  
Azonix Corp., 900 Middlesex Turnpike, Bldg 6, Billerica, MA 01821, (978) 670-670-6300, (978) 670-8855, [ProPanel-Mariner@azonix.com](mailto:ProPanel-Mariner@azonix.com)

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Autoship Systems Corp., 611 Alexander Street, Suite 312, Vancouver, BC V6A 1E1, Canada  
Creative Systems Inc., P.O. Box 1910, Port Townsend, WA 98368  
Spec Tec., Professor Koth's Vey, 1366 Lysaker, Norway

**CONSOLE- GMDSS**  
Mackay Communications, 2721 Discovery Dr., Raleigh, NC 27616-1851

**CONSULTANTS**  
Captain R.J. Underhill & Associates, P.O. Box 1030, Groves, TX 77619  
Elliot Bay Design Group, 5301 Shishole Ave. NW, Ste. 200, Seattle, WA 98107  
Hornblower Marine Services, P.O. Box 112476, Campbell, CA 95011-2476

**CONTROL SYSTEM-MONITORING/STEERING**  
Alma Impex, Inc., 4000 Broderstown Ave., Suite 15, Sayreville, NJ 08872  
Electronic Marine Systems, 800 Ferndale Pl., Rahway, NJ 07065  
Electrowave U.S.A., 6125 W. Sam Houston Pkwy., Ste 406, Houston, TX 77041  
G.R. Bowler, 2261 Lake Rd., Ontario, NY 14519  
Industrial Power Systems, 3010 Powers Avenue Unit 16, Jacksonville, FL 32207, 904 731-8844, 904 731-0188, [marine@ipsjax.com](mailto:marine@ipsjax.com), Contact: Glenn Beaupre, [www.ipsswitchgear.com](http://www.ipsswitchgear.com)  
Kobelt Manufacturing Co., Ltd., 8238-129 Street, Surrey, BC V3W0A6, Canada  
L-3 Communications Westwood Corp./Tano Div., 5700 Citrus Blvd, Ste E, New Orleans, LA 70123, 504-733-4777/1-800-229-TANO, 504-734-2127, [guy.hardwick@l-3com.com](mailto:guy.hardwick@l-3com.com)  
MMC International, 60 Inip Dr., Inwood, NY 11096  
Prime Mover Controls, 3600 Gilmore Way, Burnaby, BC V5G 4R8, Canada  
Seastate Pty Ltd., 2 Egmont Road, Henderson WA 6166, Australia

**CORROSION CONTROL**  
Apex Engineering Products, 1241 Shoreline Dr., Aurora, IL 60504  
Furuno USA Inc., 4400 NW Pacific Rim Blvd, Camas, WA 98607  
Gardner Denver Water Jetting Systems, 12300 N. Houston Rosslyn Road, Houston, TX 77086

Ultra Strip, 3515 SE Lionel Terrace, Stuart, FL 34996

**COUPLERS- TUG & BARGE**  
Intercontinental Engineering, PO Box 9055, Kansas City, MO 64168

**COUPLINGS**  
American Vulkan, 2525 Dundee Rd, Winter Haven, FL 33884  
Centa Corp., 815 Black Hawk Drive, Westmont, IL 60559  
Geislinger Corporation, 200 Geislinger Drive, Battle Creek, MI 49015  
Interexpo Ltd Couplings In Stock, Plateia Theatrou 4, Athens 105 52, Greece, +30 210 3245666, +30 210 3248666, +30 210 3249666, [interexpo@interexpo-ltd.gr](mailto:interexpo@interexpo-ltd.gr), Contact: Marie Helene Charon, [www.coupling.gr](http://www.coupling.gr)  
Mapeco Products, 91 Willenbrock Rd., Unit B, Oxford, CT 06478  
MMC International, 60 Inip Dr., Inwood, NY 11096

**CRANE - HOIST - DERRICK - WHIRLEYS**  
Bisso Marine Co., P.O. Box 4113, New Orleans, LA 70178  
CS Controls Inc., 101 Dickon Road, Houma, LA 70363, 985-876-6040, 985-876-0751, [info@cscontrols.com](mailto:info@cscontrols.com), Contact: Paul Srigley, [www.cscontrols.com](http://www.cscontrols.com)  
DMW Marine, LLC, 1123 Street Matthews Road, Chester Springs, PA 19425  
E. Crane, 241 Executive Dr., #3, Marion, OH 43302  
Liebherr Werk Nenzing GMBH, P.O. Box 10, A-6710, Nenzing, Austria

**CRANKSHAFT REPAIR**  
In-Place Machining, 1929 N. Buffum St, Milwaukee, WI 53212  
Waltz & Krezner, 91 Willenbrock Rd., Oxford, CT 06478

**CUTTING & WELDING MACHINES**  
Bug-O-Systems, 3001 W. Carson St., Pittsburgh, PA 15204  
ESAB Cutting Systems, 411 South Ebenezer Road, Florence, SC 29501

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Coastal Marine Equipment, Bldg 9114 MISAAP Ind. Complex, Stennis Space Center, MS 39529  
Coastal Marine Equipment Inc., BLDG. 9114 MISAAP Industrial Complex, Stennis Space CTR., MS 39529, 228-813-1700, 228-813-1709, [sales@coastalmarineequipment.com](mailto:sales@coastalmarineequipment.com), Contact: Ralph Waguespack, [www.coastalmarineequipment.com](http://www.coastalmarineequipment.com)  
CS Controls Inc., 101 Dickon Road, Houma, LA 70363, 985-876-6040, 985-876-0751, [info@cscontrols.com](mailto:info@cscontrols.com), Contact: Paul Srigley, [www.cscontrols.com](http://www.cscontrols.com)  
DMW Marine, LLC, 1123 Street Matthews Road, Chester Springs, PA 19425  
Intercontinental Engineering, PO Box 9055, Kansas City, MO 64168  
Markey Machinery, P.O. Box 24788, Seattle, WA 98124  
McElroy/Catchot Winch Company, Inc., P.O. Box 4632, Biloxi, MS 39535-4632, 228-875-6327, 228-872-7880, [hcatchot@bellsouth.net](mailto:hcatchot@bellsouth.net), Contact: Harold Catchot, [www.mcelroycatchotwinch.com](http://www.mcelroycatchotwinch.com)

Norwegian Maritime Equipment AS, BOX 244, NO-5480 HUSNES, Norway  
Rapp Hydema, 4433 27th Ave West, Seattle, WA 98199  
Skookum, P.O. Box 280, Hubbard, OR 97032  
Smith Berger Marine, 7915 10th Ave. S., Seattle, WA 98108  
Superior Lidgerwood Mundy, 1101 John Ave., Superior, WI 54880

**DEEPWELL PUMPS**  
Marflex Deepwell Pumps, Louis Pasteurstraat 12, 3261 LZ Oud-Beijerland, Netherlands

**DEHUMIDIFIERS**  
EBAC Industrial Products, 704 Middle Ground Blvd, Newport News, VA 23606, 800-433-9011, 757-873-3632, [sales@ebacusa.com](mailto:sales@ebacusa.com), Contact: Gray Coughlan, [www.ebacusa.com](http://www.ebacusa.com)

**DESALINATION - REVERSE OSMOSIS**  
Exstar International, 6709-B Netherlands Drive, Wilmington, NC 28405  
Reverse Osmosis of South Florida, Inc., 150 S.E. 29th St., Fort Lauderdale, FL 33316

**DIESEL CYLINDER INDICATORS**  
General Thermodynamics Corp., PO BOX 642, Hampton Falls, NH 03844  
Kiene Diesel, 325 S. Fairbanks St., Addison, IL 60101

**DIESEL ENGINE OVERHAUL**  
Detroit Diesel Corporation, 13400 Outer Drive West, Detroit, MI 48329-4001  
Motor-Services Hugo Stamp, 3101 S.W. 3rd Ave., Ft. Lauderdale, FL 33315

**DIESEL ENGINE- SPARE PARTS & REPAIR**  
Alma Impex, Inc., 4000 Broderstown Ave., Suite 15, Sayreville, NJ 08872  
Aquamarine Engineering, P.O. BOX 83495, San Diego, CA 92138  
Chris Marine AB, Box 9025, 200 39 Malmo, Sweden  
Cummins Marine, 4500 Leeds Ave., Ste 301, Charleston, SC 29405  
Giro Engineering Limited, Talisman, Duncan Road, Park Gate, Southampton, Hants SO31 7GA, UK  
GUASCOR INC, 7220 NW 36TH ST #310, MIAMI, FL 33166  
Man B&W Diesel, 17 State St., NY, NY 10004  
Man B&W Diesel A/S, Telgholmsgade 41, Copenhagen SV DK-2450, Denmark  
Man B&W Diesel AG, Stadtbachstrasse 1, Augsburg D-86153, Germany  
Marine Exhaust Systems of Alabama, P.O. Box 698, 757 Nichols Ave., Fairhope, AL 36533  
Marine Turbo & Diesel Inc., 1090 7th St., Richmond, CA 94801  
Motor-Services AB, Box 2115, Ronninge S-144 04, Sweden  
Motor-Services Hugo Stamp, 3101 S.W. 3rd Ave., Ft. Lauderdale, FL 33315  
Scardana Americas Bkg., 502 Empire St., Greenfield Park J4V 1V7, Canada  
Wartsila Diesel, 201 Defense Hwy, Annapolis, MD 21401  
Wartsila North America, Inc., 16330 Air Center Boulevard, Houston, TX 77032

**DIESEL FUEL DECONTAMINATION**  
Algae X International, P.O. Box 4011, Fort Myers Beach, FL 33932

**DIGITAL TORQUE METER SYSTEMS**  
Instruments, Computers & Controls, 78 Londonderry Tpke, Hooksett, NH 03106

**DISPLAY TECHNOLOGY**

Data Modul Inc, 1751-46 Veterans Memorial Hwy, Islandia, NY 11749

**DIVING & SALVAGE**  
Bisso Marine Co., P.O. Box 4113, New Orleans, LA 70178  
Muldoon Marine Services Inc., P.O. BOX 41340, Long Beach, CA 90853

**DOOR LOCKS**  
The Brass Works Inc., P.O. BOX 566, DeLand, FL 32721, 386-943-8857, 386-943-8810, [info@marinedoorandcabinhardware.com](mailto:info@marinedoorandcabinhardware.com)

**DOORS- MARINE & INDUSTRIAL**  
Deansteel Mfg., 111 Merchant St., San Antonio, TX 78204  
Joiner Systems, 1925 52nd Avenue, Lacine, Quebec H8T 3C3, Canada

Juniper Industries Inc, 72-15 Metropolitan Avenue, Middle Village, NY 11379, 718-326-2546, 718-326-3786, [marinesales@juniperindustries.com](mailto:marinesales@juniperindustries.com), Contact: Sales, [www.juniperindustries.com](http://www.juniperindustries.com)  
Juniper International, 72-15 Metropolitan Ave., Middle Village, NY 11379  
Manly Marine, P.O. Box 86788, N. Vancouver, BC V7L 4L3, Canada  
Mapeco Products, 91 Willenbrock Rd., Unit B, Oxford, CT 06478  
Nabrico Marine Products, 1050 Trinity Road, Ashland City, TN 37016

USA Sliding Doors, Inc., 801 Hosmer Road, Churchville, NY 14428, 585-538-4160, 585-538-2806, [info@usaslidingdoors.com](mailto:info@usaslidingdoors.com), Contact: Mr. Robert Weiland, [www.usaslidingdoors.com](http://www.usaslidingdoors.com)  
Waltz & Krezner, 91 Willenbrock Rd., Oxford, CT 06478

**DRIVES**  
Allied Systems, 2300 Oregon St., Sherwood, OR

**DRIVESHAFTS**  
The Cline Company, 600 Buncombe St., Greenville, SC 29602

**DRUG TEST KITS**  
Sun State Specialty K-9s, 1500 Beville Road, Daytona Beach, FL 32114

**DRY DOCKS- DESIGN**  
Heger Dry Dock, Inc., 13 Water St., Holliston, MA 01746

**ELASTOMER PIPING PRODUCTS**  
Elasto Valve Rubber, 1691 Pioneer Road, Sudbury, ON PG3 1R2, Canada

**ELECTRIC & CONTROL SYSTEMS**  
Geniro Systems Inc., 1885 Boul Dagenais West, Laval, QC H7L 5A3, Canada, 450-622-7575, 450-622-8484, [stefan@genirosys.com](mailto:stefan@genirosys.com)

**ELECTRICAL EQUIPMENT**  
MMC International, 60 Inip Dr., Inwood, NY 11096  
Olson Electric Corporation, 10901 Commercial Street, Richmond, IL 60071-0001

**ELECTRONIC CHARTS**  
C-Map Commercial, 133 Falmouth Rd, Mashpee, MA 02649  
Navionics, 6 Thatcher Lane, Wareham, MA 02571, 800-848-5896/508-291-6000, 508-291-6006, [sales@navionics.com](mailto:sales@navionics.com)

**EMERGENCY DISTRESS SIGNAL**  
Greatland Laser, LLC., 4001 West International Airport RD, Anchorage, AK 99502, 907-245-4475, 907-245-4599, [laser@alaska.net](mailto:laser@alaska.net), Contact: Jim O' Meara, [www.greatlandlaser.com](http://www.greatlandlaser.com)

**EMPLOYMENT**  
All American Marine, P.O. Box 191237, Tillman's Corner, AL 33619

**ENGINES**  
BTMC, 5810 Columbus Pike, Lewis Center, OH 43035, 740-548-4282, 740-548-5756, [davemiller@btmccorp.com](mailto:davemiller@btmccorp.com), Contact: Dave Miller, [www.btmccorp.com](http://www.btmccorp.com)  
DEUTZ Corporation, 3883 Steve Reynolds Blvd, Norcross, GA 30093  
Fairbanks Morse, 701 White Avenue, Beloit, WI 53111

**EVAPORATORS**  
Alfa-Laval Separation, Inc., 955 Meams Rd., Warminster, PA 18974  
Sasakura Engineering, 7-32 Takeshima, 4-Chome, Nishiyodogawa KY Osaka555, Japan

**EXHAUST**  
Marine Exhaust Systems of Alabama, P.O. Box 698, 757 Nichols Ave., Fairhope, AL 36533

**EXPANSION JOINTS**  
Elasto Valve Rubber, 1691 Pioneer Road, Sudbury, ON PG3 1R2, Canada  
Silix Inc., 6659 Ordan Dr., Mississauga, ON L5T 1K6, Canada

**EXTRUDED RUBBER PRODUCTS**  
Clean Seal Inc., PO Box 2919, South Bend, IN 46880

**FASTNERS**  
Superbol, PO Box 683, Carnegie, PA 15106

**FENDERING SYSTEMS/ BUOYS - DOCK & FENDEL**

Duramax Marine LLC, 17990 Great Lakes Parkway, Hiram, OH 44234, 440-834-5400, 440-834-4950, Contact: Richard Spangler  
Fender Care Americas Inc C/OBC Shipping Inc., 7611 Lake Road South Mobile, Mobile, Middle Bay Port Building 305., AL 36605, +44 78029 65765, [wendy.stephan@fendercare.com](mailto:wendy.stephan@fendercare.com), Contact: Wendy Stephan, [www.fendercare.com](http://www.fendercare.com)  
Maritime International, 100 E. Vermilion St. #212, Lafayette, LA 70501  
Schuyler Rubber Co., 16901 Woodred Rd., Woodinville, WA 98072  
Trelleborg Engineered Products, P.O. Box 98, Clearbrook, VA 22624  
Urethane Products, 9076 Rosecrans Ave, Bellflower, CA 90706  
Viking Fender Co., 1160 State St., Perth Amboy, NJ 08861

**FILTER INSERTS**  
CC Jensen Inc, 1557 NW Ballard Way, Seattle, WA 98107, 206-789-1710, 206-789-1747, [ccjensen@ccjensen.com](mailto:ccjensen@ccjensen.com), Contact: Sales, [www.ccjensen.com](http://www.ccjensen.com)

**FILTERS/FILTER SYSTEMS**

**AAF International**, 10300 Ormsby Park Pl. STE 600, Louisville, KY 40223, 888-388-0529, 888-398-0529, mbragg@aafintl.com, Contact: Myles Bragg, www.aafintl.com  
Alfa Laval Tumba AB, 147 80, TUMBA, Sweden  
Algae X International, P.O. Box 4011, Fort Myers Beach, FL 33932  
Boll Filter, 9822 General Drive, Ste. 180, Plymouth, MI 48170  
Hellan Strainer, 3249 East 80th St., Cleveland, OH 44104  
US Filter, 2 Milltown Ct., Union, NJ 07083

**FIRE & SAFETY PRODUCTS**

Brookdale International, 1-8755 Ash St., Vancouver, BC V6P 6T3, Canada  
DBC Marine Safety Systems, 101-3760 Jacombs Rd., Richmond, BC V6V 6T3, Canada  
IFSTA/Fire Services Program, 9030 N. Willis, Stillwater, OK 74078-8045  
IMSSCO Corporation, 2040 Harbor Island Drive, Ste. 201 A, San Diego, CA 92101

**FLANGES**

Jesse Engineering, 5225 7th St., E. Tacoma, WA 98424

**FUEL INJECTORS**

Interstate Diesel, 4901 Lakeside Avenue, Cleveland, OH 44114-3996

**GALLEY EQUIPMENT**

AF Larsen Co., 15040 NE 95th St., Redmond, WA 98052  
Cospolich Refrigeration, 14695 Highway 61, Norco, LA 70079  
Jamestown Metal Marine Sales, Inc., 4710 Northwest 2nd Ave., Boca Raton, FL 33431

**GALLEYS**

Deansteel Mfg., 111 Merchant St., San Antonio, TX 78204

**GANGING & SAMPLING**

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

**GANGWAYS**

WACO, 1330 KNECHT AVE, BALTIMORE, MD 21229

**GAS GENERATION SYSTEMS**

Air Products AS, Box 8100, Vagsbyggd, NO-4675 Knstiansand S, Norway

**GEARS & GEAR REPAIR**

Falk Corporation, 3001 West Canal St, Milwaukee, WI 53208-4200  
Karl Senner Inc., 25 W Third, Kenner, LA 70062

**GENERATOR CONTROLS**

Detroit Diesel Corporation, 13400 Outer Drive West, Detroit, MI 48329-4001

**GOVERNORS**

Governor Control Systems, 3101 SW 3rd Avenue, Ft. Lauderdale, FL 33315

**GROUNDINGS**

Sohre Turbomachinery, 132 Gilbertville Rd., P.O. Box 889, Ware, MA 01082-0889

**HATCHES & DOORS**

Juniper International, 72-15 Metropolitan Ave., Middle Village, NY 11379  
Manly Marine, P.O. Box 86788, N. Vancouver, BC V7L 4L3, Canada

**HEAT EXCHANGERS**

Alfa-Laval Separation, Inc., 955 Meams Rd., Warminster, PA 18974

Alfa Laval Tumba AB, 147 80, TUMBA, Sweden  
Aquamarine Engineering, P.O. BOX 83495, San Diego, CA 92138  
Duramax Marine LLC, 17990 Great Lakes Parkway, Hiram, OH 44234, 440-834-5400, 440-834-4950, Contact: Richard Spangler

**HEAVY FUEL TREATMENT**

Alfa Laval Tumba AB, 147 80, TUMBA, Sweden  
Algae X International, P.O. Box 4011, Fort Myers Beach, FL 33932

**HIGH SPEED FERRY BUILDERS**

Incat Australia Pty. Ltd, 18 Bender Manne, Hobart 7009, Australia

**HMI CONTROLS DISPLAY**

Azonix-Dynalco, 3690 NW 53rd St., Ft. Lauderdale, FL 33309

**HOISTS**

Coastal Marine Equipment, Bldg 9114 MISAAP Ind. Complex, Stennis Space Center, MS 39529

**HORNS/WHISTLES**

Airchime Manufacturing Co., 5478 267th St., Gloucester Industrial Estate., Langley, BC V4W 3S8, Canada  
Kahlienberg Brothers Co., P.O. Box 358, Two Rivers, WI 54241  
Kockum Sonics LLC, 933 Industry Road, Suite 105, Kenner, LA 70062

**HOSES/HOSE FITTINGS**

JGB Enterprises, Inc., 115 Metropolitan Dr., Liverpool, NY 13088

**HYDRAULIC SYSTEMS**

Allied Systems, 2300 Oregon St., Sherwood, OR  
Anchor Lamina, 38565 Country Club Drive, Farmington Hills, MI 48331

**INFRARED IMAGING EQUIPMENT**

Fliir Systems, 16505 SW 72ND AVE, Portland, OR 97224

**INSPECTION EQUIPMENT**

Staveley Instrument, 421 N. Quay St., Kennewick, WA 99336

**INSULATION**

M & A Supply LLC, 150 North Plains Industrial Rd., Wallingford, CT 06492, 203-294-9431, 203-294-1697, sales@ma-supply.com, Contact: Jeff Blake, www.ma-supply.com  
Mascoat Products, 10890 Alcott, Unit 12, Houston, TX 77043  
Shannon Enterprises of W.N.Y., Inc., 162 Sweeney Street, PO BOX 199, North Tonawanda, NY 14120-0199  
Superior Energies Inc., 3115 Main Ave., Groves, TX 77619

**INSURANCE SERVICES**

WQIS, 80 Broad St., 21st Floor, New York, NY 10004

**INTERIORS**

Directions in Design, Inc., 1849 Craig Road, St. Louis, MO 63146, 314 205-2010, 314 205-0889, May-Ziners@didinc.com, Contact: Sharon May-Zinser, www.didinc.com  
Jamestown Metal Marine Sales, Inc., 4710 Northwest 2nd Ave., Boca Raton, FL 33431  
Lit Industries, 516 Costner School Rd., Bessemer City, NC 28016-9801

**JOINER- WATERTIGHT DOOR-PANELING- CEILING SYSTEM**

Joiner Systems, 1925 52nd Avenue, Lacine, Quebec H8T 3C3, Canada  
Waltz & Krezner, 91 Willenbrock Rd., Oxford, CT 06478

**K-9 DETECTION**

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

**KEEL COOLERS**

Duramax Marine LLC, 17990 Great Lakes Parkway, Hiram, OH 44234, 440-834-5400, 440-834-4950, Contact: Richard Spangler

**LASER ALIGNMENT**

Ludeca, Inc., 1425 NW 88th Ave, Miami, FL 33172

**LEAK REPAIR**

Indumar Products Inc., 2500 Tanglewide, Suite 260, Houston, TX 77063

**LIFEBOAT TESTING**

Water Weights, Inc., 5139 Brook St., Suite E, Mont Clare, CA 91763

**LIFEBOATS/RAFTS**

DBC Marine Safety Systems, 101-3760 Jacombs Rd., Richmond, BC V6V 6T3, Canada

Survival Systems International, P.O. Box 1567, 931 Industry Rd., Kenner, LA 70062, 504-466-1884, service@ssinola.com

Viking Life Saving Equipment, 1625 N. Miami Ave., Miami, FL 33136

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

Wolong International, 151 Chin Swee Road #03-14, Manhattan House, 169876, Singapore

**LIFESAVING EQUIPMENT**

C.M. Hammar AB, August Barks Gatan 15 421 32 Vastra Frolunda, Sweden

Viking Life Saving Equipment, 1625 N. Miami Ave., Miami, FL 33136

**LIFT EQUIPMENT TESTING**

Water Weights, Inc., 5139 Brook St., Suite E, Mont Clare, CA 91763

**LIGHTING SYSTEMS/ EQUIPMENT**

ACR Electronics Inc., 5757 Ravenswood Rd., Ft. Lauderdale, FL 33310-5247

L.C. Doane, P.O. Box 975, Essex, CT 06426

Maritime Associates, P.O. BOX 1788, Crystal Bay, NV 89402, 775-832-2422, 775-832-2424, maritimes@charter.net, Contact: unknown, www.marinesigns.com

**LINE & NET CUTTERS**

Spurs Marine, 201 S.W. 33rd St., Ft. Lauderdale, FL 33315

**LUBRICANTS**

Exxon Mobil Marine Lubricants, 3225 Gallows Road, Fairfax, VA 22037, 1+609-409-2741, 1+609-409-5699, unknown, Contact: unknown, www.exxonmobil.com

**LUBRICANTS/LUBRICATION SYSTEMS**

Benjamin R. Vickers & Sons Ltd., Airedale Mills, 6 Clarence Road, Leeds, W. Yorkshire LS10 1ND, UK

**MACHINERY MAINTENANCE, REPAIR & TESTING**

Mackay Communications, 2721 Discovery Dr., Raleigh, NC 27616-1851

**MANEUVERING EQUIPMENT**

Van der Velden Manne Systems, Birkenweg 11, D-21465, Reinbek, Germany

**MARINE & OFFSHORE SIGNAGE**

Maritime Associates, P.O. BOX 1788, Crystal Bay, NV 89402, 775-832-2422, 775-832-2424, maritimes@charter.net, Contact: unknown, www.marinesigns.com

**MARINE DIESEL ENGINES**

MAN Engines & Components Inc., 591 SW 13th Terrace, Pompano Beach, FL 33069, 800-MAN-2842, 954-946-9098, www.man-mec.com

Wartsila North America, Inc., 16330 Air Center Boulevard, Houston, TX 77032

**MARINE ELECTRONICS**

ACR Electronics Inc., 5757 Ravenswood Rd., Ft. Lauderdale, FL 33310-5247

Comark Marine, 93 West Street, Medfield, MA 02052

DRS Technologies, 5 Sylvan Way, Parsippany, NJ 07054

Hatteland Display, Bogstadveien, 19, N-0355 Oslo, Norway

Jotron Electronics, Box 85, NO-3280T Jodalving, Norge, Norway

Manne Electronic Solutions, 1522 Crabapple Cove, Jacksonville, FL 32225

Midwest Instrument, 6500 Dobry Dr., Sterling Heights, MI 48314

Saab Marine Electronics, 502 5th St., Gothenburg, Sweden

**MARINE ENGINEERING**

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

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

Ocean Crest, 2 Pidgeon Hill Dr., Sterling, VA 20165

**MARINE EQUIPMENT**

Rasmussen Equipment Co, 8727 5th Ave S, Seattle, WA 98108

Scardana Americas Bkg, 502 Empire St., Greenfield Park J4V 1V7, Canada

Waterman Supply, P.O. Box 596, Wilmington, CA 90748

**MARINE FURNITURE**

Deansteel Mfg., 111 Merchant St., San Antonio, TX 78204

**MARINE GLASS**

ProCurve, 3535 Davisville Rd., Hatboro, PA 19040

**MARINE HARDWARE**

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

**MARINE HAZARD RESPONSE**

Marine Response Alliance LLC, 1102 SW Massachusetts St., Seattle, WA 98134-1030

**MARINE LIGHTING & ELECTRICAL SUPPLIES**

Manning Electric Inc., 154 27th Street, Brooklyn, NY 11232, 718-832-2488, 718-832-2493, info@manning-electric.com, Contact: Anthony Menditto, www.manning-electric.com

**MARINE MANAGEMENT**

Hornblower Marine Services, P.O. Box 112476, Campbell, CA 95011-2476

**MARINE POWER PLANT SYSTEMS**

Auramanne Ltd., Box 849, FI-20101 Turku, Finland

Wartsila North America, Inc., 16330 Air Center Boulevard, Houston, TX 77032

**MARINE SENSORS**

Airmar Technology Corp., 35 Meadowbrook Drive, Milford, NH 03055, 603-673-9570, 603-673-4624, sales@airmar.com, Contact: Peter Braffitt, www.airmar.com

**MARINE SERVICES**

International Shipping Agency, Freeport Harbour Complex, Bldg #2, Ste #9, Freeport F41109, Bahamas

**MARINE THERMAL IMAGING**

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

**MARINE VENTILATORS**

Tuthill Energy Systems, PO Box 8000, milbury, MA 01527

**MARITIME TRAINING & SCHOOLS**

Maine Maritime Academy, MMA, Castine, ME 04420-5000

Manne Safety International, Manne Terminal, Laguardia Airport, NY 11371

**METALIZING**

Climax Portable Machine, 2712 E. 2nd St., NEWBERG, OR 97132

Cutting Edge Metal Processing Inc, Po Box 42, Mobile, AL 36601

DMC Clad Metal Division, Po Box 680633, Houston, TX 77266

International Metalizing & Coatings, PO Box 201, Cherry Hill, NJ 08003

**METERS**

Selco USA, Inc., 2508 Lakebrook Court, Atlanta, GA 30360-1715, 1-877 selcous (1-877-735-2687) 770-455-9110, 770-455-3754, info@selcous.com

**MONITORING ALARM/CONTROL**

Marine Electric Systems, Inc., 33 Route 17 South, East Rutherford, NJ 07073, 201 531-8600 Ext 231, 201 531-8606, info@marineelectricsystems.com, Contact: Gary Mandell, www.Marineelectricsystems.com

**MONITORING SYSTEMS**

G.R. Bowler, Inc. Marine Controls, 2261 Lake Rd., Ontario, NY 14519, 800-524-9570, 315-524-8753, gary@grbowler.com, Contact: Gary R Bowler, www.grbowler.com

Mackay Communications, 2721 Discovery Dr., Raleigh, NC 27616-1851

Prime Mover Controls, 3600 Gilmore Way, Burnaby, BC V5G 4R8, Canada

**MOORAGE FACILITY**

Sea Ark Marine, P.O. Box 210, Monticello, AR 71655-0210

**MOTION CONTROL SYSTEMS**

Seastate Pty.Ltd., 2 Egmont Road, Henderson WA 6166, Australia

**MOTOR PROTECTION**

Manne Safe Electronics, 261 Milway Ave. #12, Concord, Ontario L4K 4K9, Canada

**NAV/COMM EQUIPMENT**

C. Map Commercial, 133 Falmouth Rd, Mashpee, MA 02649

Charco, New North Road, Hainault, Ilford Essex E16 2UR, UK

Electronic Marine Systems, 800 Femdale Pl., Rahway, NJ 07065

Furuno USA Inc., 4400 NW Pacific Rim Blvd, Camas, WA 98607

Hose-McCann Telephone Company, 1241 W. Newport Center Drive, Deerfield Beach, FL 33442, 954-429-1110, 954-429-1130, mchip@hosemccann.com

Mackay Communications, 2721 Discovery Dr., Raleigh, NC 27616-1851

**NAVAL ARCHITECTS, MARINE ENGINEERS**

A.K. Suda, Inc., 3004 19th St, Metairie, LA 70002-4989

Arthur D. Dargen, Inc, 3200 Ridgeway Dr., Suite 403, Metairie, LA 70002

Band, Lavis, & Associates, Inc., 900 Ritchie Hwy, Suite 203, Severna park, MD 21146

Bay Engineering, 253 N. First Ave., Sturgeon Bay, WI 54235

Bristol Harbor Group, Inc., 103 Poppasquash Road, Bristol, RI 02809

C. Baxter & Associates, P.O. Box 9006, Mobile, AL 36609

CDI Marine Co., 9550 Regency Square Blvd, Ste 400, Jacksonville, FL 32222

Computer Sciences Corporation-Advance Marine Center, 1201 M St. SE, Washington, DC 20003

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

GTR Campbell Marine, 24 Lambton Street, Ormstown, Quebec J0S 1A0, Canada

Guanno & Cox, 639 Lotus Drive, N., Suite 3, Mandeville, LA 70471

Jamestown Manne Service, 1084 Shennecossett Rd., Groton, CT 06340

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

KVAERNER MASA MARINE, 1818 CORNWALL AVE, VANCOUVER, BC V6J 1C7, Canada

Kvaerner Masa Marine Inc., 201 Defense Highway, Ste 202, Annapolis, MD 21401

MCA Engineers, Inc., 2960 Airway Ave., #A-103, Costa Mesa, CA 92626

McElroy Machine & Mfg Co., Inc., P.O. Box 4454, Biloxi, MS 39535-4454

MIL Systems, 200-1150 Morrison Drive, Ottawa, Ontario K2H 8S9, Canada

Nautical Designs, Inc., 2101 S. Andrews Ave., Ste 202, Fort Lauderdale, FL 33316

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

VUYK Engineering, P.O. Box 204., 9700 AE Groningen, Netherlands

Washburn Doughty, P.O. Box 296, E. Boothbay, ME 04544

**NAVIGATION**

ComNav Marine Ltd., 13511 Crestwood Pl., Ste 15 15, Richmond, BC V6V 2G1, Canada

D & B Technologies, 1458 OCEAN SHORE BLVD #132, ORMOND BEACH, FL 32176-3613

Klein Navigation, 11 Klein Drive, Salem, NH 03079, 603 890-1304, 603 890-9796, mail@kleinnavigation.com, Contact: Deborah Durgin, www.kleinnavigation.com

Nauticast AG, Mariahilfer Strasse 50/211, A-1070 Vienna, Austria

Scandinavian Micro Systems, 1001 South Andrews Avenue, Suite 120, Fort Lauderdale, FL 33316

**NOZZLES/ NOZZLE SYSTEMS**

Nautican, 115 Kelvin Grove Way P.O. Box 428, Lions Bay, BC VON 2E0, Canada, 604-921-1920, 604-921-1925, josip@nautican.com, Contact: Josip Gruzling, www.nautican.com

**OIL SPILL RESPONSE**

Donjon Marine, 1250 Liberty Avenue, Hillside, NJ 07205

MARINE PRESERVATION ASSOCIATION, 877 N GAINNEY CENTER DR, SCOTTSDALE, AZ 85258

Marine Response Alliance, 1102 SW Massachusetts St, Seattle, WA 98314-1030

Marine Spill Response Corporation, 220 Spring Street, Suite 50

**REMOTELY OPERATED VEHICLES**

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

**RIGID INFLATABLE BOATS**

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

**ROPE-MANILA-NYLON-HAWSERS-FIBERS**

Lankhorst Touwfabrieken bv, Maritime Div., P.O. Box 203, NL-8600 AE Sneek, Netherlands, +31 515 487 629, +31 515 487 669, mar.div@lankhorst-touwfabrieken.nl. Contact: unknown, www.lankhorst-touwfabrieken.nl

Marlow Ropes, South Road, Halisham, East Sussex BN27 3JS, UK  
Samson Rope Technologies, 2090 Thornton St., Ferndale, WA 98248

**ROTATING EQUIPMENT**

Delamar Company, Hwy 60, Rt 4, Box 190, Dillwyn, VA 23936  
Seatworthy, 22 Main Street, Centerbrook, CT 06409

**RUDDER BEARINGS & BUSHES**

Duramax Marine LLC, 17990 Great Lakes Parkway, Hiram, OH 44234  
Orkot Composites, 2535 Prairie Rd, Unit D., Eugene, OR 97402

**SAFETY PRODUCTS**

Brookdale International, 1-8755 Ash St., Vancouver, BC V6P 6T3, Canada

D & B Technologies, 1458 OCEAN SHORE BLVD #132, ORMOND BEACH, FL 32176-3613, 407-647-7500, 407-647-7505, HOTEYE@HOTEYENOW.COM

DBC Marine Safety Systems, 101-3760 Jacombs Rd., Richmond, BC V6V 6T3, Canada

Lalizas SA, 21 Haidariou St., 545 Piraeus, Greece  
Norwegian Maritime Equipment AS, BOX 244, NO-5480 HUSNES, Norway

Stearns Mfg. Co., PO Box 1498, St. Cloud, GA 56302-1498  
Thordon Bearings Inc., 3225 Mainway, Burlington, Ontario L7M 1A6, Canada

Viking Life Saving Equipment, 1625 N. Miami Ave., Miami, FL 33136

Walport USA, 39-5A Dover Rd South, Toms River, NJ 08757  
Warwick Mills, 301 Turnpike Rd, New Ipswich, NH 03071

**SALT REMOVING PRODUCTS**

Salt Away, P.O. Box 8797, Newport Beach, CA 92658

**SALVAGE**

Donjon Marine, 1250 Liberty Avenue, Hillside, NJ 07205  
Titan Maritime Industries Inc., P.O. Box 350485, Ft. Lauderdale, FL 33004

**SANITATION DEVICE- POLLUTION CONTROL**

Envirovac Inc, 1260 Turret Dr., Rockford, IL 61111  
EVAC Environmental Solutions, 1260 Turret Dr., Rockford, IL 61111

FAST@Systems, 8229 Brentwood Industrial Drive, Brentwood, MO 63144, 314-645-6540, 314-645-6131, solutions@marinefast.com, Contact: Alan Fleischer, www.marinefast.com

Headhunter Inc., 3380 SW 11th Ave., Ft. Lauderdale, FL 33315  
Hydrox Systems, 9800 McDonald Park Rd, Sidney, BC V8L 3S8, Canada

Microphor, 452 E. Hill Rd., Willits, CA 95490  
Research Products-INCINOLET, 2639 Andjon Drive, Dallas, TX 75220, 800-527-5551, 214-350-7919, sales@incinolet.com

**SATELLITE COMMUNICATIONS**

EMS Satcom, Green Lane, Tewkesbury, Gloucestershire GL20 8HD, UK

Eurocom Industries AB, Box 7071, DK-9200 Aalborg SV, Denmark  
France Telecom Mobile Satellite Communications, 16,bvd du Mont d'Est-BP 14-93161, Noisy le Grand, France, +33556223231, mobilesat@francetelecom-mobilesat.com, Contact: unknown, www.francetelecom-mobilesat.com

Furuno USA Inc., 4400 NW Pacific Rim Blvd, Camas, WA 98607

KVH Industries Inc., 50 Enterprise Center, Middletown, RI 02842  
Land Sea Systems, 509 Viking Drive, Suites K,L,M, Virginia Beach, VA 23452

Nera Satcom AS, Box 91, NO-1375 Billingstad, Norway  
Petrocom, 5300 West Sam Houston Parkway North, Houston, TX 77041, 1-800-PETROCOM, 713-580-4150, sales@petrocom.com

Stratos, 1501 Metcalfe St. Ste 1900, Ottawa, Ontario K2P 1P1, Canada  
Telenor Satellite Services-Marlink, NO-1331, Fornebu, Norway  
Thrane & Thrane A/S, Lundtoftegardsvj 93D, DK-2800 Lyngby, Denmark

Desmond-Stephan, P.O. Box 30, Urbana, OH 43078

Duramax Marine LLC, 17990 Great Lakes Parkway, Hiram, OH 44234

Kobelco Marine, Inc., 366 Fifth Avenue, Suite 312, NY, NY 10001, 212-967-5575, 212-967-6966, hawkins@kobelcomarine.com

Orkot Composites, 2535 Prairie Rd, Unit D., Eugene, OR 97402

H.O. Bostrom, 818 Progress Ave., Waukesha, WI 53186

Control Screening, 2 Gardiner Rd, Fairfield, NJ 07004  
GE Ion Track, 205 Lowell Street, Wilmington, MA 01887  
Loronix Video Solutions, 1120 W. 122nd Ave. Suite 200, Denver, CO 80234

Smiths Detection, 30 Hook Mountain Road PO Box 410, Pine Brook, NJ 07058, 973 830-2131, 973-830-2200, susan.cooper@smithsdetection.com, Contact: Susan Cooper, www.smithsdetection.com

Vingcard Marine, Bryan Oaks Business Park 1500 N.W. 1st Street, Dania, FL 33004

Seacor Environmental Products, P.O. Box 3535, Seattle, WA 98124

Trelleborg Engineered Products, P.O. Box 98, Clearbrook, VA 22624

**SECURITY CONSULTANTS**

Solutions Group, 9663 Santa Monica Blvd. Ste 175, Beverly Hills, CA 90210

**SENSORS**

3 Point Solutions, 810A Tradesmans Park Loop, Hutto, TX 78634  
Electronic Marine Systems, 800 Ferndale Pl., Rahway, NJ 07065

**SHAFT SEALS**

Duramax Marine LLC, 17990 Great Lakes Parkway, Hiram, OH 44234

**SHAFTS**

Centa Corp., 815 Black Hawk Drive, Westmont, IL 60559  
Geislinger Corporation, 200 Geislinger Drive, Battle Creek, MI 49015

**SHIP DISPLAYS**

Data Modul, 1767-46 Vets Memorial Highway, Islandia, NY 11749

**SHIP MANAGEMENT**

Crowley Maritime, 9487 Regency Sq Blvd, Jacksonville, FL 32225  
Eurasia Group, 22A Floor Chinachem Exchange Sq., 1 Hoi Wan St., Quarry Bay, Hong Kong

OCEAN TECHNICAL SERVICES, MILITARY OCEAN TERMINAL BAYONNE UNIT #8-FOOT OF 32ND STREET, BAYONNE, NJ 07002

**SHIP REPAIR**

Dubai Drydocks, P.O. Box 8988, Dubai, United Arab Emirates  
HALIFAX SHIPYARD, 3099 BARRINGTON ST, HALIFAX, NS, Canada

Manitowoc Marine Group, 1600 Ely St., Marinette, WI 54143-2434  
NORSHIPCO, PO BOX 2100, Norfolk, VA 23501-2100

Trident Technologies, 4011 C Highway 377 S., Fort Worth, TX 76109  
United Marine Enterprises Inc., P.O. Box 22077, Beaumont, TX 77720

Kongsberg Maritime AS, PO Box 1009, 3194 Horten, Norway

American Ship Repair, 1011 38th St, Brooklyn, NY 11219  
Atlantic Marine, Inc., P.O. Box 3202, mobile, AL 36652

Austal USA, 100 Dunlap Dr., Mobile, AL 36633  
Blount Marine, 461 Water St., Warren, RI 02885

Bollinger Lockport & Larose, P.O. Box 250, Lockport, LA 70374  
Curacao Drydock Co., Box 3012, Willemstad, Curacao, Netherlands Antilles

Damen Shipyards, P.O. Box 1 Gorinchem, 4200AA Holland, Netherlands  
Enavi Reparos Navais Ltda, 169 Barreto., Niteroi, RJ 24110-200, Brazil

Fincantieri Cantierieri Navali Italiani Spa, Merchant Shipbuilding Div., 34123 Trieste, Italy  
Gladding Hearn, 1 Riverside Ave., Somerset, MA 02725

Grand Bahama Shipyard, PO BOX F-42498-411, Freeport, Bahamas  
GTR Campbell Marine, 24 Lambton Street, Ormstown, Quebec J0S 1A0, Canada

In-Place Machining, 1929 N. Buftum St, Milwaukee, WI 53212  
Leevac Industries, LLC, P.O. Box 1190, Jennings, LA 70546

Motor-Services AB, Box 2115, Ronninge S- 144 04, Sweden  
NASSCO, 2798 E HARBOR DR, SAN DIEGO, CA 92113

Newport News Shipbuilding, 4101 Washington Ave., Newport News, VA 23607  
Signal International LLC, 2500 City West Blvd. Ste 300, Houston, TX 77042

United Defense, 1525 Wilson Blvd., Ste 700, Arlington, VA 22209-2444  
United Marine Enterprises Inc., P.O. Box 22077, Beaumont, TX 77720

VT Halter, PO Box 3029, Gullport, MS 39505  
Washburn Doughty, P.O. Box 296, E. Boothbay, ME 04544

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

Alabama Shipyard, P.O. Box 3202, Mobile, AL 36652  
Atlantic Marine, Inc., P.O. Box 3202, mobile, AL 36652

Bollinger Shipyards, 8365 Hwy 308 South, Lockport, LA 70374, 985 532-2554, 985 532-7225.

Roberts@bollingershipyards.com, Contact: Robert A. Socha, www.bollingershipyards.com

Bradford Marine, 3051 State Rd 84, Fort Lauderdale, FL 33312  
Dereckort Shipyard, 311 E. Boston Post Rd., Mamaroneck, NY 10543

Jeffboat, 1030 E. MARKET STREET, JEFFERSONVILLE, IN 47130  
Kvaerner Masa-Yards Oy, BOX 132, FI-00151, Helsinki, Finland

Leevac Industries, LLC, P.O. Box 1190, Jennings, LA 70546  
Offshore Inland, 3521 Brookdale Dr. S., Mobile, AL 36618

United Defense, 1525 Wilson Blvd., Ste 700, Arlington, VA 22209-2444

EM Products, 5380 Cottonwood Lane, Prior Lake, MN 55372, (952) 440-9200, (952) 440-3400, sales@zerostart.com

Silex Inc., 6659 Ordan Dr., Mississauga, ON L5T 1K6, Canada

Marine Safety International, Marine Terminal, Laguardia Airport, NY 11371

Maritime Institute of Technology, 5700 Hammonds Ferry Rd., Linthicum Heights, MD 21090

Poseidon Simulation AS, Box 89, NO-8370 Leknes, Norway  
Transas Marine Overseas Ltd., 12 Obukhovskoy, Oboron, St. Petersburg 193019, Russian Federation

MK Production Resources Inc., 1610 Reynolds Street, Brunswick, GA 31520

Waltz & Krezner, 91 Willenbrock Rd., Oxford, CT 06478

Creative Systems Inc., P.O. Box 1910, Port Townsend, WA 98368

Loadmaster International, St. Varvgarten 11B SE, 211 19 Malme, Sweden

Resurgence Software Inc., 2021 Lakeshore Dr., Ste 21D, New Orleans, LA 70122

**STEERING GEARS/ STEERING SYSTEMS**

A. Van der Velden B.V., Doopsstraat 67a, PO Box 2061, 2930 AB Krimpen a/d Lek, Netherlands

CS Controls Inc, 101 Dickon Road, Houma, LA 70363, 985-876-6040, 985-876-0751, info@cscontrols.com, Contact: Paul Srigley, www.cscontrols.com

Jastram Engineering, 467 Mountain Hwy, North Vancouver, BC V7J 2L3, Canada

Kobelt Manufacturing Co., Ltd., 8238-129 Street, Surrey, BC V3W0A6, Canada

Offshore Inland, 3521 Brookdale Dr. S., Mobile, AL 36618

**STERN TUBE BEARINGS/ BUSHES**

Duramax Marine LLC, 17990 Great Lakes Parkway, Hiram, OH 44234, 440-834-5400, 440-834-4950, Contact: Richard Spangler

Orkot Composites, 2535 Prairie Rd, Unit D., Eugene, OR 97402  
Thordon Bearings Inc., 3225 Mainway, Burlington, Ontario L7M 1A6, Canada

**STERN TUBE SEALS**

Superbolt, PO Box 683, Carnegie, PA 15106

**STRAINERS**

Hellan Strainer, 3249 East 80th St., Cleveland, OH 44104

**SUN PROTECTION SYSTEMS**

Solar Solve Marine, 7 St. Hilda Industrial Estate, South Shields NE33 1RA, UK, +44 191 454 8595, +44 191 454 8692, info@solosolv.com, Contact: Paul Hopkins, www.solosolv.com

**SURFACE PREP TOOLS**

Aurand Mfg., 1210 Ellis St., Cincinnati, OH 45223  
Dalseide Shipping Services, NO-5397, BEKKJARVIK, Norway

Flow International Corp., 23500 64th Ave., South Kent, WA 98059  
NLB Corp., 29830 Beck Road, Wixom, MI 48383, 248-624-5555, 248-624-0908, nlbmkgt@nlbusa.com, Contact: Jenna Eads, www.nlbcorp.com

UltraStrip Systems Inc., 3515 SE Lionel Terrace, Stuart, FL 34997, 772-287-4846, 772-781-4778, sales@ultrastrip.com, Contact: John Odwazny, www.ultrastrip.com

**SURVIVAL EQUIPMENT**

Brookdale International, 1-8755 Ash St., Vancouver, BC V6P 6T3, Canada

**SWITCHBOARDS**

Industrial Power Systems, 3010 Powers Avenue Unit 16, Jacksonville, FL 32207, 904 731-8844, 904 731-0188, marine@ipsjax.com, Contact: Glenn Beaupre, www.ipsswitchgear.com

**TANK LEVELING INDICATORS**

Ian Conrad Bergan, 3119 North Davis Highway, Pensacola, FL 32503, 850-434-1286, 850-434-1246, sales@icbergan.com, Contact: Ron Monell, www.icbergan.com

King Engineering Co, PO Box 1228, Ann Arbor, MI 48106  
Kockum Sonics LLC, 933 Industry Road, Suite 105, Kenner, LA 70062

Saab Marine Electronics, Box 13045, 402 5Goteborg, Sweden  
Technical Marine Services, 6040 North Cutter Circle, Portland, OR 97217

**TEAK DECK SEALANT**

Boatlife Industries, 2081 Bridgeview Drive, N. Charleston, SC 29415, 800-382-9706, 843-566-1275, Contact: Louise Schmidt

**TESTING SERVICES**

Wyle Laboratories, 7800 Govern's Dr. S.W., Huntsville, AL 35807

**THICKNESS GAUGES**

StressTel Ultrasonic Testing, 2790 West College Avenue, State College, PA 16801-260

**THRUSTER SYSTEMS**

Omnithruster, 30555 Solon Industrial Parkway, Cleveland, OH 44139, 440 542-9260, 440 542-9265, widmer@omnithruster.com, Contact: Kurt Widmer, www.omnithruster.com

Thrustmaster of Texas, Inc., 12227 FM-529, Houston, TX 77041, 713 937-6295, 713 937-7962, info@thrustmastertexas.com, Contact: Bert Ault, www.thrustmastertexas.com

**TRAINING**

International Maritime Training, 910 SE 17th St., Ste 200, Fort Lauderdale, FL 33316

SUNY Maritime College, 6 Pennyfield Ave, Bronx, NY 10465-4198  
USMMA- Global Maritime and Transportation School, 300 Steamboat Rd., Kings Point, NY 11024

**TRANSMISSIONS**

Karl Senner Inc., 25 W Third, Kenner, LA 70062

**TURBOCHARGERS**

ABB Turbo Systems AG, CH 5401, Baden, Switzerland

**TURBOCHARGERS- REPAIRS**

Motor-Services Hugo Stamp, 3101 S W 3rd Ave., Ft. Lauderdale, FL 33315  
Napier Turbochargers, P.O. Box 1, Waterside, South Lincoln LN5 7FD, UK

Ultra High Molecular Weight Marine Fendering, Ultra Poly, Inc., 2926 So. Steele Street, Tacoma, WA 98409

M.A.C.E, 5910 NE 15th Ave., Fort Lauderdale, FL 33331

Ultra Poly, Inc., 2926 So. Steele Street, Tacoma, WA 98409

C-Tech LTD, P.O. Box 1960, Cornwall Ontario K6H6N7, Canada

Industrial Vacuum Equipment Corporation, N8091 Maple Street, Ixonia, WI 53036, 800-331-4832, 920-261-7117, randy@industrialvacuum.com

Envirovac Inc, 1260 Turret Dr., Rockford, IL 61111  
Jeis Vacuum Sewage System, P.O. Box 14, N-6060 Hareid, Norway

**VALVES**

Norriseal, P.O. Box 40525, Houston, TX 77240, 713-466-3552, 713-896-7386, sales@norriseal.com, Contact: Gordon Dorr, www.norriseal.com

**VALVES & FITTINGS**

Leslie Controls, 12501 Telecom Dr., Tampa, FL 33637  
William E. Williams, 38-52 Review Ave, Long Island City, NY 11101

**VENTILATION SYSTEMS / PRODUCTS**

Delta T Systems, 858 West 13th Court, Riviera Beach, FL 33404  
Dry Air Technology, 313 North Oak St., Burlington, VA 88233

Jon M. Liss Associates, PO Box 5005-73, Rancho Santa Fe, CA 92067

**VIBRATION ANALYSIS**

Ludeca, Inc., 1425 NW 88th Ave, Miami, FL 33172  
Maritech, LLC, 100 Powermill Rd., Acton, MA 01725

**VISCOMETERS**

Cambridge Applied System, 196 Boston Ave., Medford, MA 02155

**VOYAGE DATA RECORDERS**

Rutter Technologies Inc., 22 Pearl Place, P.O. BOX 427, St. John's NL A1C 5N8, Canada

**WASTE WATER TREATMENT**

FAST@Systems, 8229 Brentwood Industrial Drive, Brentwood, MO 63144, 314-645-6540, 314-645-6131, solutions@marinefast.com, Contact: Alan Fleischer, www.marinefast.com

Marine Environmental Partners, 3874 Fiscal Ct, Suite 200, West Palm Beach, FL 33404

RWO, Leerkampe 3, D- 28259 Bremen, Germany  
ZNC International Incorporated, 200 William Street, Port Chester, NY 10573, 800-552-4403 / 914-690-0650, 914-690-0653, Chris@zncinlink.com, Contact: Chris Zimmerman, www.zncinlink.com

**WATER JET CLEANING**

Flow International Corp., 23500 64th Ave., South Kent, WA 98059  
Gardner Denver Water Jetting Systems, 12300 N. Houston Rosslyn Road, Houston, TX 77086

NLB Corp., 29830 Beck Road, Wixom, MI 48383

**WATER PURIFIERS**

Alfa-Laval Separation, Inc., 955 Meams Rd., Warminster, PA 18974  
Gardner Denver Water Jetting Systems, 12300 N. Houston Rosslyn Road, Houston, TX 77086

Pentair Water Treatment, 502 Indiana Avenue, SheBoygan, WI 53081, 866-873-7506, 866-203-7361, customerservice@plymouthwater.com

**WATERTIGHT CLOSURES**

Waltz & Krezner, 91 Willenbrock Rd., Oxford, CT 06478

**WELDING PRODUCTS & POWER EQUIPMENT**

ESAB Welding and Cutting Products, 411 S. Ebenezer Rd, PO Box 100545, Florence, SC 29501, 843-664-4411, 843-664-4258, dterry@esab.com, Contact: Donna Terry, www.esabna.com

**WINCHES & FAIRLEADS**

Coastal Marine Equipment, Bldg 9114 MISAAP Ind. Complex, Stennis Space Center, MS 39529

Coastal Marine Equipment Inc., BLDG. 9114 MISAAP Industrial Complex, Stennis Space CTR., MS 39529, 228-813-1700, 228-813-1709, sales@coastalmarineequipment.com, Contact: Ralph Waguespack, www.coastalmarineequipment.com

CS Controls Inc, 101 Dickon Road, Houma, LA 70363, 985-876-6040, 985-876-0751, info@cscontrols.com, Contact: Paul Srigley, www.cscontrols.com

Intercontinental Engineering, PO Box 9055, Kansas City, MO 64168

Jeamar Winches, 1051 Clinton St., Buffalo, NY 14206  
Markey Machinery, P.O. Box 24788, Seattle, WA 98124

McElroy/Catchot Winch Company, Inc., P.O. Box 4632, Biloxi, MS 39535-4632, 228-875-6327, 228-872-7880, hcatchot@bellsouth.net, Contact: Harold Catchot, www.mcelroycatchotwinch.com

MMC International, 60 Inip Dr, Inwood, NY 11096  
Nabco Marine Products, 1050 Trinity Road, Ashland City, TN 37016

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## Products

**ABB**  

 ABB TPL turbochargers were developed to meet market requirements far into this decade. Their design concept provides a robust platform for engine applications ranging from 1,250 kW up to the highest outputs on the market. The TPL...-A has been developed mainly for use on 4-stroke engines. TPL turbochargers are manufactured in production facilities at ABB's turbocharger factory in Baden, Switzerland.  
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**Allied**  

 Coalescing Filters for Liquid/Liquid applications. Filters separate water from any oil or fuel application. Sizes range from as small a 0.18" I.D. and 22 in. O.D. to over 40 in. Microns range from 0.1 to over 100. Allied can cross reference existing applications and custom design filters for new applications.  
**Circle 102**

**Americ**  

 Americ's ventilators are designed for most confined space applications. From man cooling to hazardous space atmospheres, they can provide the proper ventilator for the job. Manufactured of high density-polyethylene plastic, Americ's VAF-Series is portable. With features like centrally located handles that allow for maneuverability, Americ covers all the practical details.  
**Circle 103**

**amot** **Amot**  

 AMOT's new global capability offers a range of high quality PLC's, switches, sensors and detectors for monitoring and protection of rotating equipment. AMOT's marine diesel engine products are designed to monitor and provide fuel savings, and our quality temperature control valves provide emissions control and protection solutions for our customers.  
**Circle 104**

**Autoship Systems**  

 Autoship Systems provides integrated CAD-CAM software for vessel concept design right through to build drawings and nested part files. By connecting with third party software shipyards can realize improved workflow, shorter project times, reduced production costs and better overall yard efficiency.  
**Circle No. 105**

**FBM Babcock**  

 FBM Babcock Marine designs and builds high speed ferries, military patrol vessels and specialist craft, including SWATHs and Bridge Erection Boats (BEBs). Vessels are either built in the FBMA Babcock Marine shipyard in Cebu, Philippines or in a suitable licensed shipyard local to the customer.  
**Circle 106**

**General Thermodynamics**  

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**Circle 107**

**Comet**  

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**Circle 108**

**Harland and Wolff**  

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**Circle 109**

**Kistler**  

 The new miniature piezoresistive pressure sensor Type 4005A from Kistler can be used for measurements in intake ports, gas exchange investigations and other static pressure measurements. Its design features M5-size DCe technology with increased natural frequency.  
**Circle 110**

**Marine Travel Services**  

 Marine Travel Services provides total travel management service versus a traditional travel agency service. Their travel management relationships provide not only reservations, but also a suite of management tools that can assist and control travel expenses and company budgets.  
**Circle 111**

**McMurdo**  

 McMurdo has launched its new Search and Rescue Transponder (SART). The S4 Rescue is a fourth generation product from McMurdo and offers maximum reliability in a compact, rugged design. The S4 Rescue is a carry off 9GHz X-band Radar transceiver. Used for assisting ship or survival craft operation in accordance with IMO GMDSS requirements, the S4 is small and more lightweight than earlier SART models.  
**Circle 112**

**MMC**  

 The MMC Oxygen-sensor tells you the exact depth of the sensor and percent of oxygen in the inert gas in each tank. There's no mess or guesswork. The unit is battery operated, completely portably, with a built-in self-calibrating feature and is approved by BASEEFA as intrinsically safe. Just lock it on an MMC vapor control valve and lower the sensor to the correct ullage level.  
**Circle 113**

**Warwick Mills**  

 The TurtleSkin material technology is now being used in their line of WaterArmor protective suits for high pressure water jet operators. The TurtleSkin WaterArmor provides protection against accidental swipes of up to 40,000 psi. The patented technology used in the WaterArmor was first developed for the crash bags used in the Mars landings.  
**Circle 114**

**Ocean-Crest**  

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**Circle 115**

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**Circle 116**

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**Circle 117**

**Peck & Hale**  

 Peck & Hale is a designer and manufacturer of cargo securing systems for the Defense and Transportation industries. Peck & Hale focus on continued product development that services the needs of their customers by offering a comprehensive service for the design, supply, refurbishment and replacement of equipment for all types of cargo securing systems.  
**Circle 118**

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**Circle 119**

**Ultima**  

 A new bulletin detailing the features and benefits of the Ultima RF Wireless Network is now available from MSA Instrument Division. The Ultima RF System is a gas detection system combining the digital networking benefits of the Ultima PLUS System with the latest in wireless communication technology.  
**Circle 120**

**Vetus**  

 VETUS products are marketed and serviced in more than 100 countries worldwide, through branch offices, independent importers and commercial agents or by means of direct sales to the major boat builders (OEMs). Nearly all VETUS products, which are mainly intended for installation in pleasure craft and smaller commercial vessels, are still being developed in-house.  
**Circle 121**

**Viking**  

 Offering specifications, certificates of approval and technical drawings of life-saving equipment, www.vikingsafetyshop.com is a valuable online tool for customers. The site provides information about all of the products Viking Life-Saving Equipment manufactures and distributes worldwide in a user-friendly.  
**Circle 122**

**VingCard**  

 VingCard Marine's North American and Caribbean Service Centre is situated in Dania, Florida. The Dania office stocks a complete range of TrioVing and VingCard traditional products. Contact our Sales Manager at: marinesales.usa@vingcard.com for further information.  
**Circle 123**

**Seacor**  

 Seacor Environmental Products provides oil spill containment and cleanup equipment, marine security and force protection/security barriers, consumable supplies and ancillary equipment for oil & hazardous materials spills. Specializing in meeting specific requirements, the products team supports international and domestic clients.  
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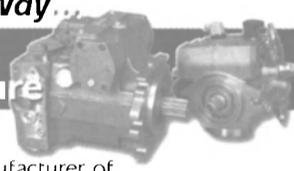
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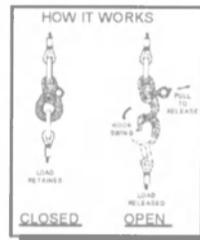


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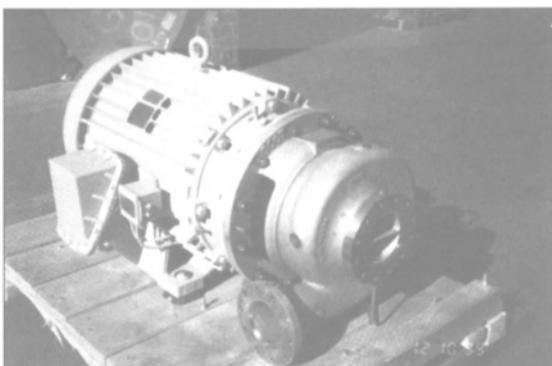
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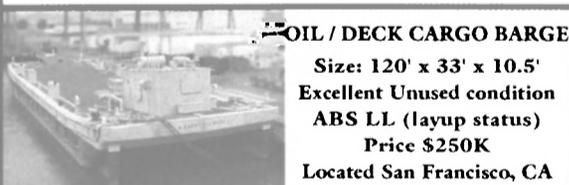
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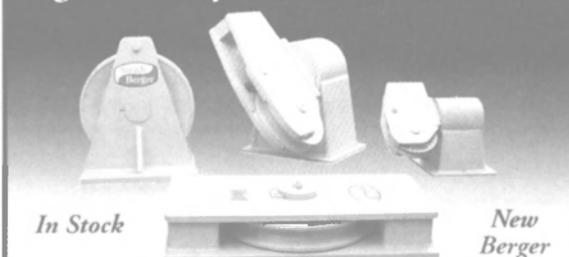


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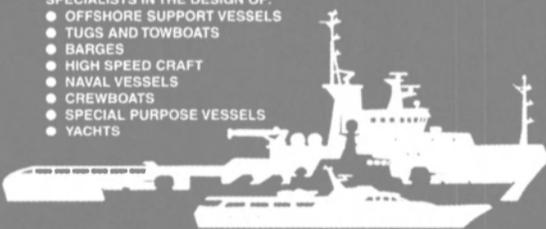
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