

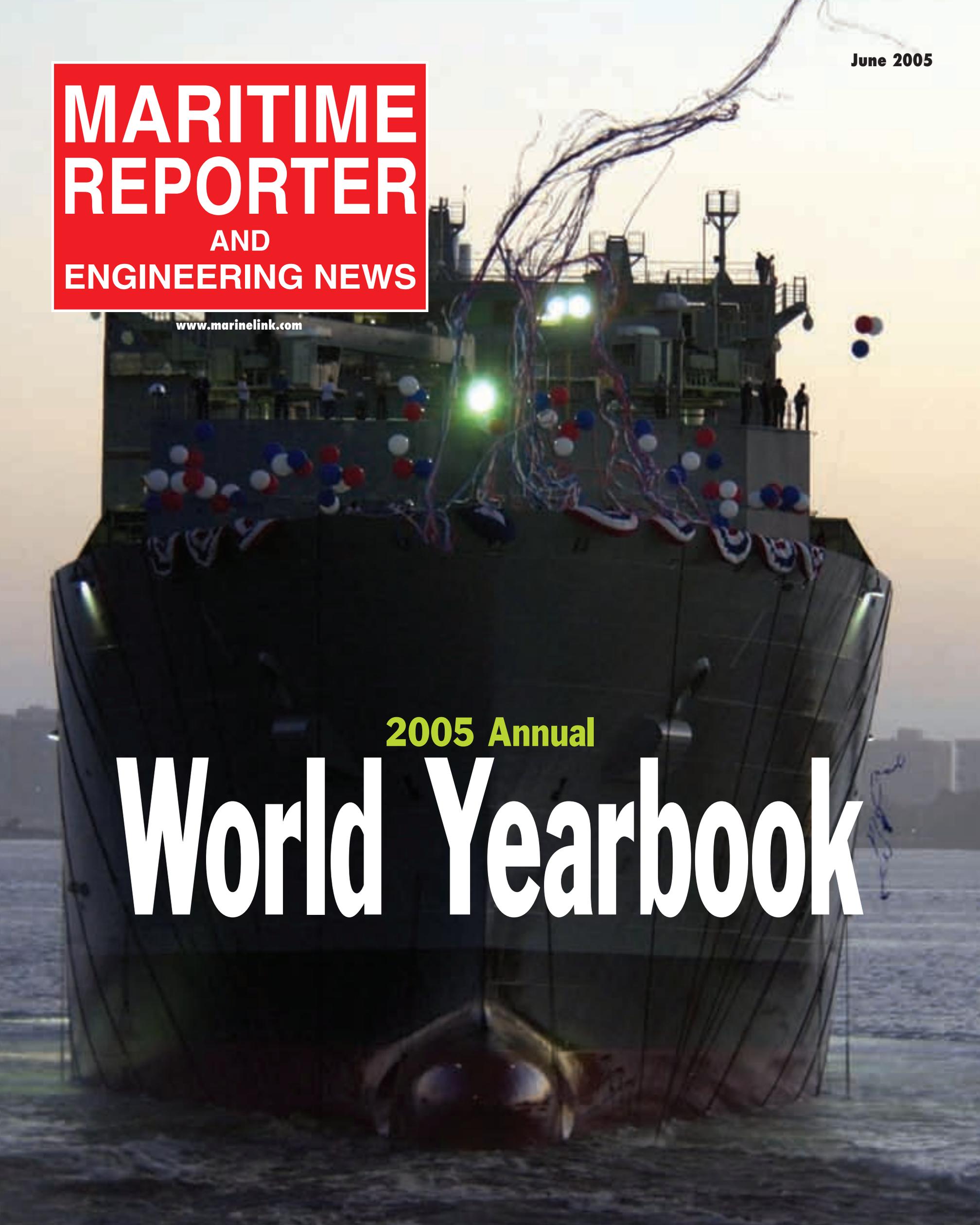
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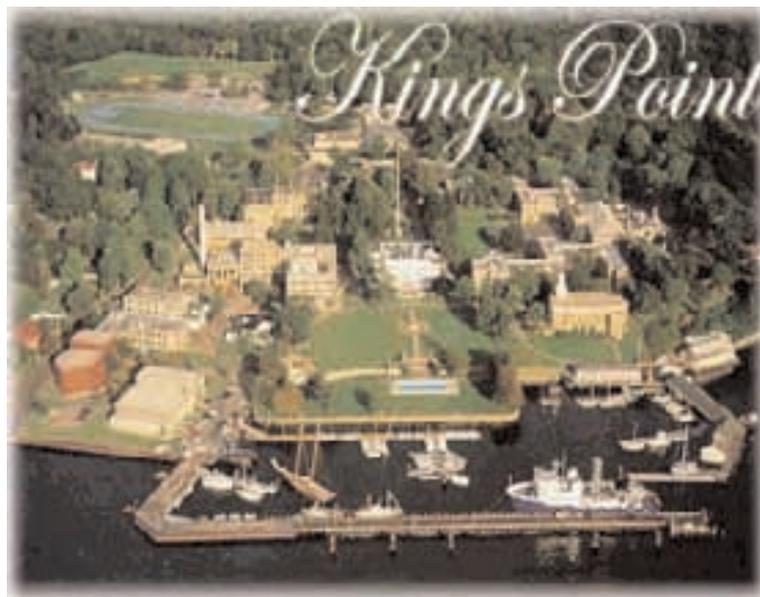
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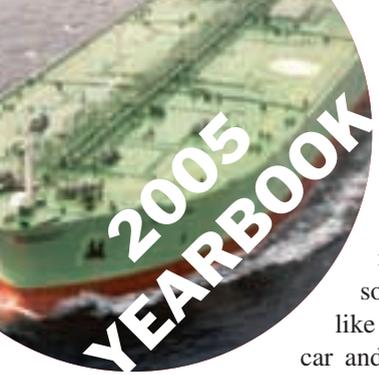
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by his buyer. To put this transaction in more personal terms, it's like buying a new car and getting 80% of the price, or more, for a 10 year old trade-in. One of the byproducts of the shipping cycle is that the construction of new ships to replace those previously sold to eager buyers is, in a sense, subsidized, by the original buyer's money source. If the original purchase was financed by a bank loan, then the bank may be said to be unwillingly subsidizing the new construction; if securities were sold to finance the original purchase then the holders of the securities are filling that role.

As the cycle starts downward, it is interesting to compare the vessel operat-

ing costs of our original buyer and seller. The original seller now has (or will soon have) a new ship, largely paid for by the prior sale of his older ship to our original buyer; the operating efficiency of a new ship and low debt will result in a comparatively low operating cost. On the other hand, the original buyer is burdened by an older, less efficient ship and higher debt, resulting in a comparatively high operating cost.

As freight rates fall, some owners, burdened by those high operating costs will be forced to retrench. And for some of them, ship values that fall in parallel with falling freight rates will mean distress sales, scrapping, and, in the most extreme cases, bankruptcy. Distress sales tend to lower the fleet average operating cost and breakeven charter rate and bankruptcy is a primary reason for the disappearance of weak and overextended shipping companies.



FUZZY OUTLOOK? Given historical precedence and current financial data, the picture is not clear as to whether tanker rates will keep charging upward or start to descend in the the second half of 2005 and beyond

Those effects may be regarded as positive aspects of the dynamics of the shipping cycle.

For shipping cycles prior to the mid 1990s, distress sales and bankruptcy were the province of conventional bank financing and the inability of a borrower to repay a loan. But the recent significant number of shipping company stock offerings has fundamentally changed that relationship. Now, in many cases, it is no longer necessary for a ship owner to borrow money to buy ships. The stockholders have assumed that risk in exchange for the expectation of appreciation in the price of the shipping company stock. The risk from the downside of the shipping cycle has been largely passed from the shipowner to the shipping company stockholder.

This assumption of risk by stockholders is puzzling because it is taking place at the time in the shipping cycle when risk is at its maximum. With freight rates and ship resale prices at historic highs, there is no place for those markets to go, sooner or later, but down, and shipping company revenues, earnings and stock prices will follow.

The cliché "buy low, sell high" has been inverted, and sold to investors in a triumph of modern salesmanship. Logic and history would seem to indicate that the best time to invest in a shipping company is when the shipping cycle is at its low point; that is when the company's potential earning power is at its highest and the associated risk at its lowest. But logic and history seem to have no place in the strategic plans of investors in shipping companies. That was demonstrated convincingly in the late '90s when a number of shipping companies issued junk bonds and subsequently defaulted to great investor anguish. Informed opinion at the time

prophecied that securities markets would be closed to most shipping companies for a very long time. But that turned out to be not the case, and only a few short years later a new set of investors has come forward to take the bait. Perhaps there is an interior cycle within the shipping cycle, the shipping investor cycle which is only a few years long but which brings in new investors, sophisticated in the ways of Wall Street, but naive in terms of the shipping industry. Maybe the traditional bulls and bears should be joined by sheep to be sheared.

About the Author

Sydney P. Levine is the President of Shipping Intelligence, Inc., a New York maritime economic consulting firm. Its activities fall mainly into three areas: First, the publication of the Shipping Monitor; Future Ship Market Trends; and the Ship Resale Value and Time Charter Rate Guide. These publications are based on extensive proprietary databases and analytical models of the ship resale and charter markets. Second, the valuation of ships, both current and past values as well as future values and their probabilities. Shipping Intelligence is a leader in constructing methods for the appraisal of hard to value vessels.

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Editor's Note

As we enter the half-year mark, I sit back with amazement at how another beginning of a year is here and gone in the blink of an eye.

In gathering information and setting the editorial line-up for this edition, it's quite intriguing how the more things change, the more they stay the same. For example, there is still a migration of commercial ship orders leaving European yards for the Far East, however, today much attention is on China and the tremendous strides it has made in recent years against the traditional shipbuilding powers in Japan and Korea.

Domestically, the U.S. Navy continues to downsize - a trend well-entrenched since the late 1980s and the abandonment of the 600-ship navy, with fewer deep-draft oceangoing ships despite an increased reliance on naval power to fulfill war requirements around the globe. But there are numerous exciting and expansive projects within the U.S. military and government, with the building of the new Littoral Combat Ship (LCS) class and the United States Coast Guard's Deepwater Project. Both of these projects are good examples of the migration toward marine technology rather than ship technology. There is an undeniable and unstoppable trend towards "network centric" warfare and defense, whereby ships and boats are an interchangeable cogs in the big picture, a picture which includes many sensors, data processors, aircraft, land based facilities and communication technology.

For owners of all vessels in nearly every corner of the world, from tugboats to tankers, increased emphasis on maritime security and increasing reliance (and regulation) regarding new technology and maritime safety continues to add layers of additional cost, further eroding already thin bottom lines. But these are technologies that undoubtedly add overall operation safety and efficiency, if properly employed.

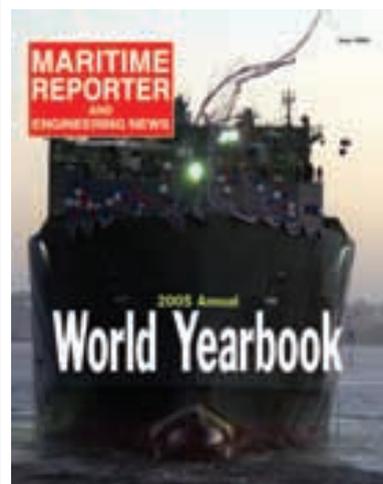
It is human nature, perhaps, to fear and fight change, perhaps preferring to rely on business models tried and true. It is the industry leaders, however, that embrace change for what it is, and continually search for a way to turn a potential negative into commercial advantage.

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On the Cover



On the Cover: The Military Sealift Command (MSC) auxiliary dry cargo carrier USNS Lewis and Clark, (T-AKE 1), is launched into San Diego Harbor after a christening ceremony held at the National Steel and Shipbuilding Company, (NASSCO) in San Diego, Calif.

(U.S. Navy photo by Photographer's Mate 3rd Class **Timothy F. Sosa**)

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Single Hull Phase Out Acceleration Hits Tank Barges

There are studies underway regarding the phase out of single hull tank vessels in U.S. waters from 2015 to 2010, a move which would have dire consequence for many owner/operators while

providing a boon in business for builders. According to a recent report from the Department of Homeland Security and the U.S. Coast Guard, the U.S. tank barge fleet would be most

affected by the accelerated single hull phase out, with approximately 1,650 tank barges - or 38 percent of the total tank barge fleet - losing five years of service life. Overall, approximately

1,700 U.S. and 70 foreign single hull tank vessels would be affected.

After a recent oil spill on the Delaware River involving a single-hulled vessel, Congress asked the Coast Guard for information on the impact of changing the final phase-out date to January 1, 2010.

In its report, the USCG reported that all U.S. Tank Vessels less than 5,000 gt would lose five years of service life, with the vast majority affected being barges. (note: it is already required that all single hull tank vessels of 5,000 gt and greater are phased out by January 1, 2010.)

# of Tank Vessels	GT	Notes
1,648 tank barges	1,829,630 gt	- represents 38% of U.S. tank barge fleet
26 tank ships	11,181 gt	- represents less than 1% of U.S. tank ship fleet

Dependent on specific gross tonnage and date of build, U.S. single hull tank vessels that have a double bottom or double sides., built after January 1, 1980, would lose from one to five years of service life. The impact is detailed in the table below.

OPA90 Phase Out	# Tank Vessels	GT
2011	5 tank ships	123,592 gt
2012	3 tank ships	84,698 gt
2013	1 tank barge	23,913gt
	3 tank ships	62,330 gt
2014	1 tank ship	27,508 gt
2015	1 tank ship	22,138 gt

Depending on specific gross tonnage and date of build, foreign single hull tank vessels that have a double bottom or double sides, built after January 1, 1980, would lose from one to five years of trading life to the U.S. The impact is reflected in the table below.

OPA90 Phase Out	# Tank Vessels	GT
2011-2015	72 tank ships	3,152,217 gt*

*Represents 4% of all foreign tank ships trading to the U.S. in 2004



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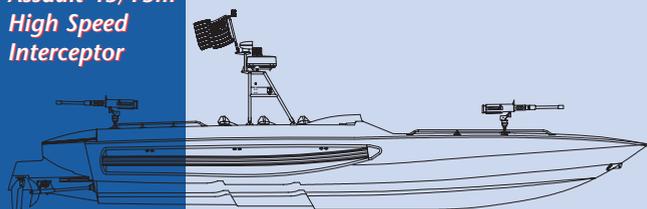


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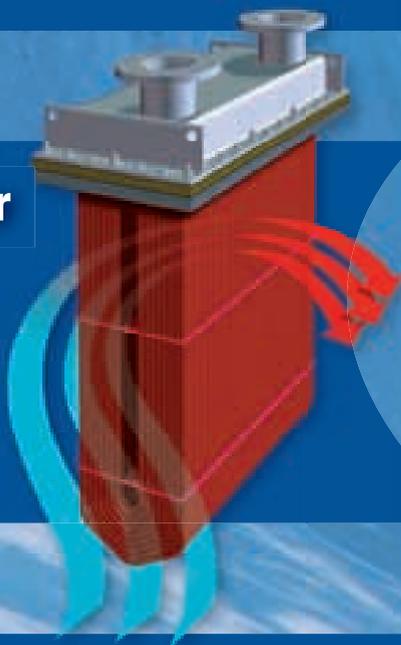


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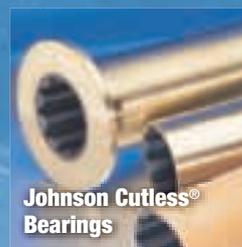
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Alstom Wins Carnival Cruise Contract

The Power Conversion Business of Alstom won a multi-million dollar contract by Fincantieri to supply electric propulsion systems for two new cruise ships, one for Carnival Cruises to be

built at the Marghera yard and one for Costa Crociere at the Sestri Ponente yard in Genoa. Both ships are to be delivered in the first half of 2007 and are the sister ships of Carnival Liberty and Costa Concordia, currently being built at Fincantieri - with an ALSTOM electric propulsion system - and expected to be

delivered in Summer 2005 and Summer 2006 respectively. The new ships will be used for year-round worldwide cruising. The Carnival cruise ship will carry 3,710 passengers and the Costa 3,800 passengers. For each vessel, Alstom will supply two synchronous propulsion motors of 20MW for Carnival and

21MW for Costa and the associated electric drives. Alstom will also provide the propulsion control systems including remote control as well as the harmonic filtering and 11kV distribution systems.

Circle 35 on Reader Service Card

New Emission Reduction Rules Enter Force

International regulations to control harmful emissions from ships' exhausts entered into force on May 19, 2005.

Regulations for the Prevention of Air Pollution from Ships are contained in Annex VI of the MARPOL Convention [1] and were adopted in the 1997 Protocol to that Convention.

The Annex VI regulations set limits on sulfur oxide (SOx) and nitrogen oxide (NOx) emissions from ship exhausts and prohibit deliberate emissions of ozone-depleting substances.

The Annex includes a global cap of 4.5 percent by mass (% m/m) on the sulfur content of fuel oil and calls on IMO to monitor the worldwide average sulfur content of fuel once the Protocol comes into force.

Annex VI contains provisions allowing for special "SOx Emission Control Areas" (SECAs) to be established with more stringent controls on sulfur emissions. In these areas, the sulfur content of fuel oil used onboard ships must not exceed 1.5 percent m/m.

Alternatively, ships must fit an exhaust gas cleaning system or use other methods to limit SOx emissions. The regulation requires such alternative methods to be approved by the Administration (flag State). Draft Guidelines on on-board exhaust gas-SOx cleaning systems have been developed and are expected to be approved by IMO's Marine Environment Protection Committee (MEPC) when it meets for its 53rd session in July 2005.

The Baltic Sea Area is designated as a SECA in the Protocol. However, the regulation allows for a 12-month period from the date of entry into force before the limits in a SECA can be enforced

USCG Details Impact of Single Hull Phase Out

The U.S. Coast Guard has determined that changing the single-hull phase-out date for tank vessels from 2015 to 2010 would have the greatest impact on U.S. tank barges, causing 38 percent of total tank barge fleet to lose five years of service life. Overall, approximately 1,700 U.S. and 70 foreign single-hull tank vessels would be affected and lose some service life in U.S. waters. The Oil Pollution Act of 1990 requires the



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phase-out of all single hull tank vessels less than 5,000 gross tons by January 1, 2015. After a recent oil spill on the Delaware River involving a single-hulled vessel, Congress asked the Coast Guard for information on the impact of changing the final phase-out date to January 1, 2010. In addition to the 1648 single-hulled tank barges, 14 U.S. tank vessels and 72 foreign-flagged tank vessels with double bottoms or double sides would loose from one to five years of service life. This information was provided in a report to Congress on May 12 on the implementation of the Oil Pollution Act of 1990. The full report can be viewed at <http://www.uscg.mil/hq/npfc>.

USCG Warns of Spill Clean Up Fund Depletion

The Oil Spill Liability Trust Fund, which helps fund the cleanup of spills nationwide, is expected to be depleted before fiscal year 2009, according to a U.S. Coast Guard report provided to Congress on May 12.

"A stable source of funding for oil spill clean-up costs and damages is vital in protecting the environment and compen-

sating those who have been damaged by spills," said **Jan Lane**, the director of the National Pollution Funds Center, which administers the fund. "The trust fund makes it possible for cleanup equipment and personnel to be instantly deployed, provides money to compensate claimants for their costs and damages from oil spills and provides money to restore natural resources.

"We are working closely with the administration and Congress to ensure the fund's long-term viability."

The Oil Pollution Act of 1990 established the fund, making it the ultimate insurer for oil spill removal costs and damages when those responsible can not or do not pay. In many incidents, liable responsible parties cannot be located, do not have the ability to pay or have defenses or limits to their liability. Therefore, recoveries from liable parties cannot fully reimburse all removal costs and damages incurred by the fund. The result is the fund spends more than it takes in. Between now and fiscal year 2007, expenditures from the fund are expected to significantly rise as a result of several large spills in the in the past few years.

"Before the creation of the trust fund,

Keppel Singmarine Wins Contracts for Five Vessels

Keppel Singmarine Ltd. won orders for three offshore support vessels (OSVs) and two tugboats for about \$80 million. The vessels will be progressively delivered to their owners up to end 2006. Keppel Singmarine will build one ice-class OSV for anchor handling and supply purposes for new customer, the Russian oil company Lukoil Kaliningradmorneft (LUKOIL). When completed at end 2006, the vessel will be deployed in the Caspian Sea region.

The other two OSVs are for repeat customer Groupe Bourbon (Bourbon). With these two 100-ton bollard pull anchor handling tugs, Keppel Singmarine's orders from Bourbon will add up to a total of seven vessels. Keppel Smit Towage has placed an order for two tugboats, designed by Keppel's Marine Technology Development.

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various federal funds existed to handle cleanup, but there was no mechanism to pay for the restoration of the environment or compensate claimants for their costs and damages," Lane said.

"In addition, the Exxon Valdez incident in 1989 highlighted that there was no fund large enough to handle a spill of that magnitude." Until 1994, there was a five-cent per barrel tax on petroleum produced in or imported to the United

States. Between the tax and the consolidation of the other federal funds, the fund at one time held \$1 billion. At the start of fiscal year 2005, the fund held \$842 million.

Between recurring costs, appropriations for various agencies, and the increasing costs of several major spills, the fund balance will not be sufficient to sustain all of its demands starting around fiscal year 2007.

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SNAMe Seeks Industry Opinion

The Society of Naval Architects and Marine Engineers (SNAMe) M-16 Panel "Modernization of Propulsion Shafting Systems" is conducting a survey to present and analyze experiences and data from ship operators. The survey is being conducted to identify any issues relating to propulsion shafting, propellers, bearings, couplings, seals, and alignment. Results of the survey will be published by the Society to assist the marine community in identifying areas for further research. All interested parties are invited to participate in the survey by linking to the website <http://sname.seaworthysys.com> where the questionnaire is presented. All responses and data sources are anonymous. Responses should be submitted by September 30, 2005.

Bridge Mismanagement Cited in Collision

The Canadian Transportation Safety Board (TSB) issued its report of the investigation into the collision between the bulk carrier Canadian Prospector and the heavy lift ship Stellanova in the St. Lawrence Seaway on October 12, 2002. As the two ships approached each other in the narrow seaway, the Stellanova began to experience bank effect. In an attempt to avoid being sucked into the bank, the pitch of the controllable pitch propeller was first decreased and then increased. The result was that the ship lost maneuverability and swung into the passing Canadian Prospector. The TSB determined that the primary cause of the collision was the failure of the pilot and master of the Stellanova to exercise proper bridge resource management principles.

First LCS Honors Freedom

Secretary of the Navy **Gordon England** has selected the name Freedom for the Navy's first new Littoral Combat Ship (LCS). "These new, fast and capable ships will increase the effectiveness of our naval forces and provide us with an ability to operate in the littoral areas of the world where the enemies of freedom seek to operate and hide" England said. LCS is an innovative combatant designed to counter challenging shallow-water threats in coastal regions, specifically mines, submarines and fast surface craft. LCS ships will be fast, agile, and networked surface combatants and will utilize focused-mission packages that deploy manned and unmanned vehicles to execute a variety of missions. In May 2004, the Department of Defense awarded both Lockheed Martin and General Dynamics - Bath Iron Works, Bath, Maine, separate contract options for final system design with options for detail design and construction of up to two LCS ships. In December 2004, the Department of Navy awarded Lockheed Martin Corp., Maritime Systems Sensors, Moorestown, N.J., a contract for detail design and construction of the first LCS. Lockheed Martin's teammates include Gibbs Cox, Arlington, Va.; Marinette Marine, Marinette, Wis.; and Bollinger Shipyards, Lockport, La. A keel laying ceremony is scheduled for June 2, 2005, at Marinette Marine, Marinette, Wis.

Bids Sought for \$2B Ship Project

Industry throughout Australia has the opportunity to work with the Austal-Raytheon Amphibious Ships Team, which in August 2004 announced its intention to bid for the Australian Defense Force's \$2 billion

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Amphibious Ships Project (JP 2048). JP 2048 involves the construction of two amphibious ships between 200-250 m in length and approximately 25,000 tons displacement.

John Rothwell, Austal's Executive Chairman, said, "A project the size of JP 2048 provides an opportunity for the involvement of many parts of industry

and no single company will be able to deliver on all requirements. Optimal program results will only be delivered from a well-planned collaborative effort involving many segments of Australian industry, including a wide range of SMEs and subcontractors."

To maximize the involvement of Australian industry, Austal and

Raytheon are collaborating with the Industry Capability Network Western Australia (ICNWA), part of the WA Chamber of Commerce and Industry (CCI), to facilitate the collection and assessment of supplier data through the ICNWA's 'Project Connect' web-based technology. ICNWA also provides access to an extensive network of

Australian industry contacts. Australian companies seeking to work with the Austal-Raytheon Amphibious Ships Team on JP 2048 are invited to visit www.projectconnect.com.au and register their interest.

Washington Passes New Oil Spill Measure

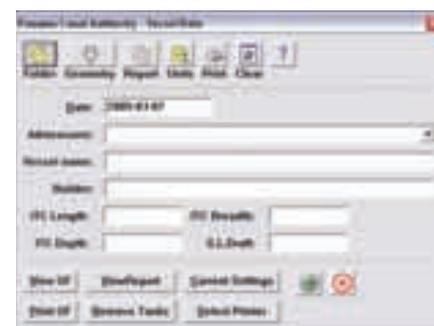
Gov. **Christine Gregoire** on May 6, 2005, signed bills that will establish an Oil Spill Monitoring and Oversight Council to provide independent oversight of the state's oil-spill program and a new Washington Academy of Sciences to advise state government on scientific questions. "We are taking positive action today to ensure that our waters are protected from pollution," Gregoire said at a bill signing ceremony held in Tukwila. "The new advisory council represents a partnership of industry, government and local communities in our efforts to prevent oil spills."

The new 16-member oil-spill council will:

- Provide early consultation with government decision makers regarding the state's oil-spill prevention, preparedness and response programs, and
- Promote opportunities for the public to become involved in oil-spill response activities.

The new academy is expected to be formed by 2007.

Panama Canal Authority Customizes GHS



A longtime user of GHS (General HydroStatics, ship stability software), the Panama Canal Authority took advantage of the flexibility of this software to develop a special interface for use by its Boarding Officers. This was done in conjunction with a training session at the offices of Creative Systems in Port Townsend, Wash., covering advanced modeling techniques. The Panama Canal uses GHS to calculate interior volume of hull and superstructure for assessing the tonnage of ships passing through the canal. It is expected that the training along with the new interface will reduce the time it takes to create vessel models and calculate tonnage.

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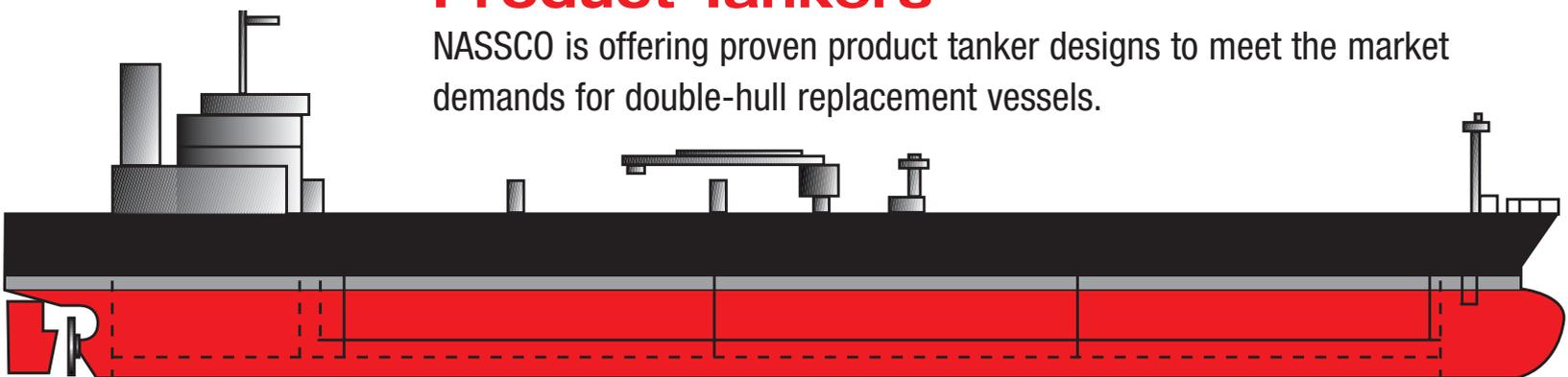
BP Tankers

NASSCO is building four tankers for BP Oil Shipping Company, USA, for the shipment of crude oil from Alaska to U.S. West Coast refineries. These environmentally safe, double-hull, diesel-electric tankers feature the latest navigation, machinery and cargo-control technologies.

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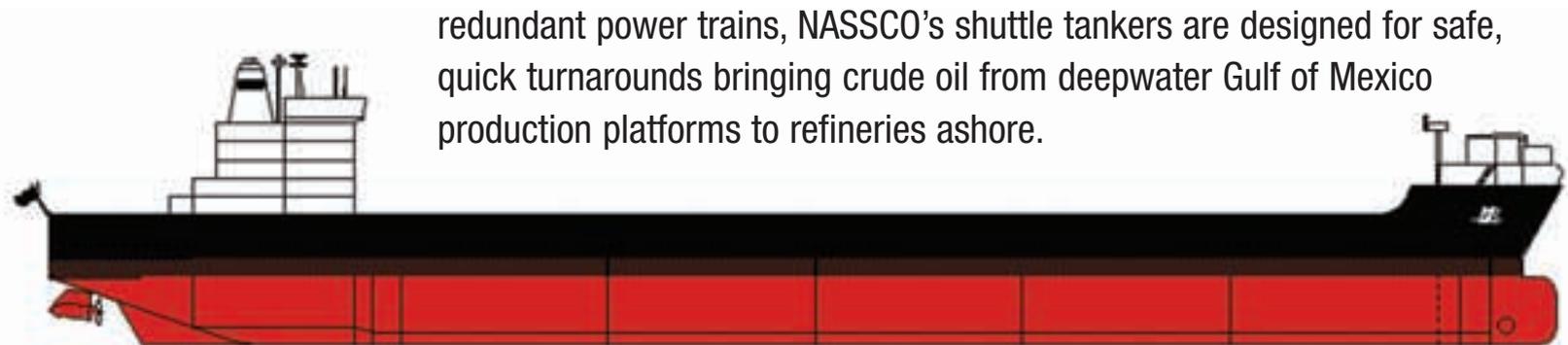
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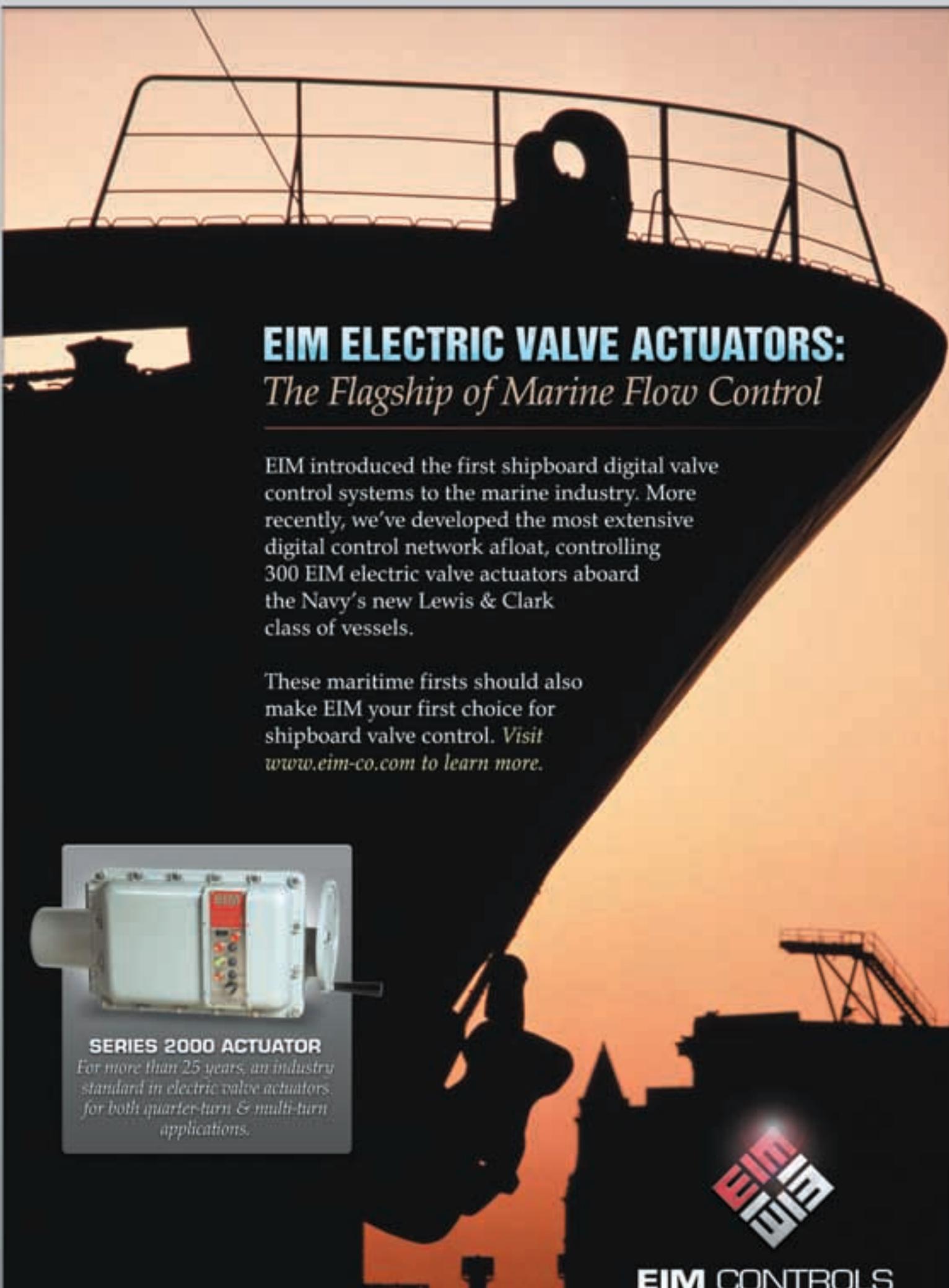
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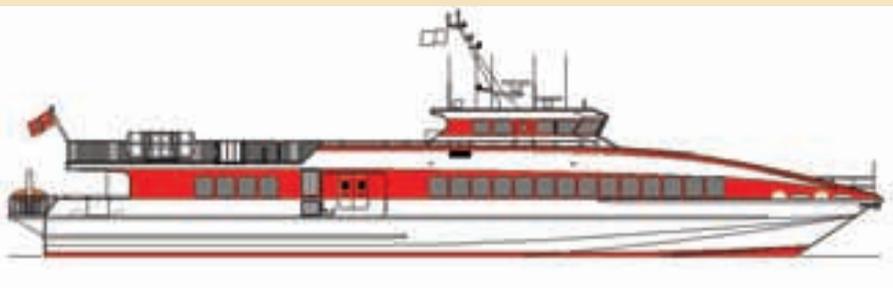
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Fast Ferry Order for Damen

Damen Shipyards Gorinchem won a contract to build a 41-m aluminum monohull fast ferry for the Danish operator, Christiansøfarten A/S, based on the island of Bornholm. The new ferry will service routes between the Danish islands of Bornholm and Christiansø, as well as on the town of Simrishamn in Sweden. The owner, Christiansøfarten, currently services these three routes with conventional coastal ferries. The new vessel will be delivered in March 2006, in time for the beginning of the European summer tourist season, and will be built at Damen Shipyards Singapore. Seating for 245 is arranged inside on the main deck in air-conditioned comfort with heating and cooling. Another 66 seats are fitted externally on the upper deck. Kiosk, toilets and lug-

gage facilities are fitted on the main deck.

The vessel will be powered by three Caterpillar C32 diesel engines driving three fixed pitch propellers via ZF3050 gearboxes. Speed will be 25 knots at 1,000 kW per engine. To be built under the IMO HSC 2000 Category A rules, the vessel will be classed by Bureau Veritas and certified by the Danish Maritime Authority.

Circle 27 on Reader Service Card

Main Particulars	
Length, o.a.	134.5 ft. (41 m)
Beam, o.a.	27.2 ft. (8.3 m)
DWT26 tons
Fuel5547 gal.
Fresh water264 gal.
Waste water198 gal.
Passengers311
Main engines	(3) Caterpillar C32
Auxiliary engines	Caterpillar
Classification	Bureau Veritas
Flag state	Danish Maritime Authority

Philippines Building SWATH Slice Technology for GOM

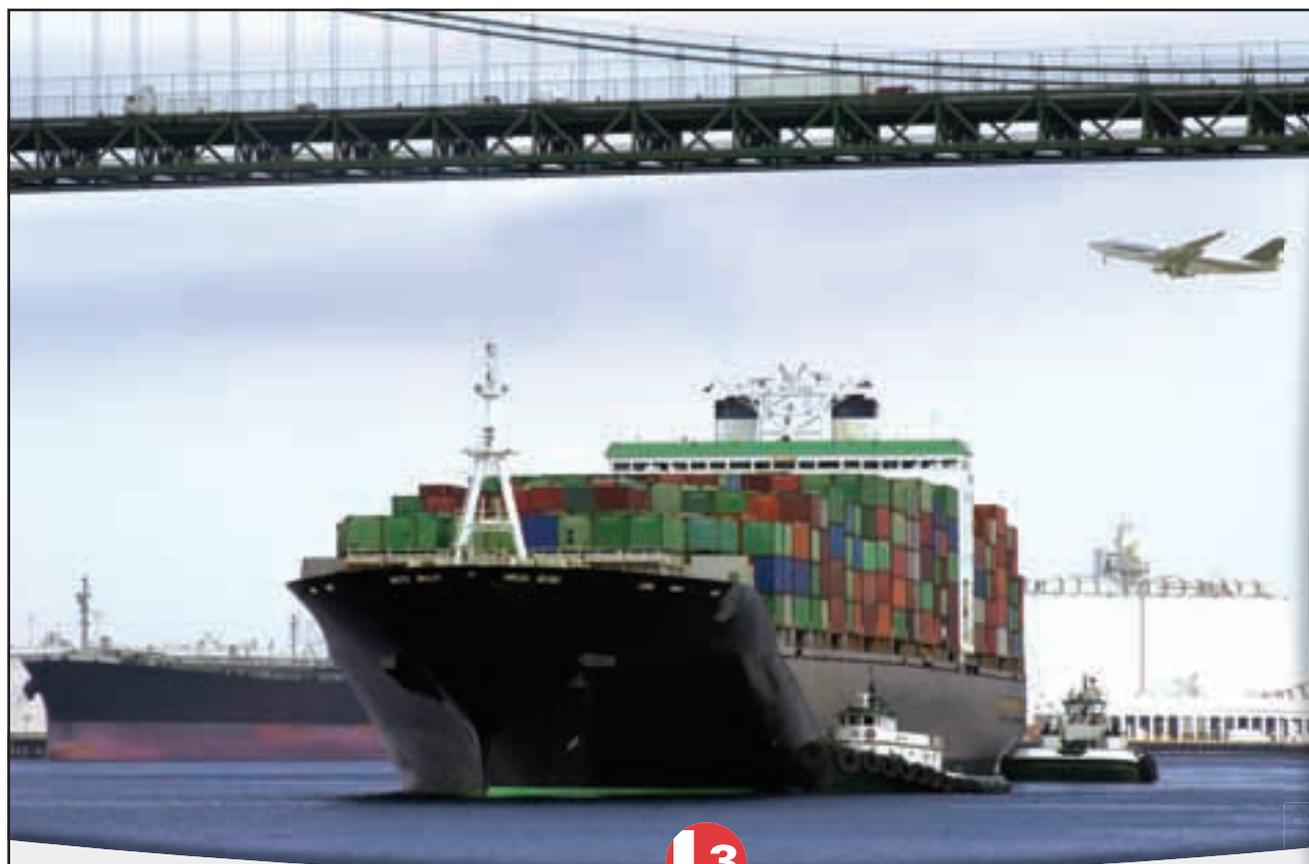
U.S. Design, Philippines Built and Mexican Owned

Lockheed Martin's unique adaptation of a SWATH design —dubbed SLICE — has been sold for commercial application. The SLICE design is, as described in company documentation: "Patented by Lockheed, the fast variant was dubbed Slice, because it slices through the water without making waves. The innovation lies in the arrangement of the Slice's buoyancy — while a standard SWATH has two Coke-bottle-shaped hulls running the full length of the ship, Slice has four shorter, teardrop-shaped pods, which are designed to produce less drag. This structure allows the Slice hull to reduce wave-making resistance at high speeds by up to 35 percent, according to its designers, compared to a SWATH of the same displacement. Slice's short hulls are able to push through the wave "hump" much more quickly. Slice has the same stable ride as a SWATH, but can go faster with the same horsepower." FBMA Marine Inc., the Aboitiz Corporation-owned shipyard based in

Cebu Philippines, has signed a contract to complete the detailed design, construction and supply of two of the Slice technology crew vessels for Mexico's Hotelaria y Servicios Petroleros in the Gulf of Mexico. The 92 x 52.5 ft. (28 x 16 m) vessels will use the Sea Slice hull form to operate at 20 knots in Sea state 3. This vessel required a flexible approach from FBMA Marine Inc and draws upon its experience building high speed aluminum ferries. Delivery schedule for the two vessels is mid 2006.

Power for the vessels will be provided by a pair of Cummins KTA50-M2 engines. Each engine will generate 1,800 hp (1,343 kW) at 1,900 rpm. The engines will turn controllable pitch propellers through reduction gears. The vessels will have tankage for 21.8 tons of fuel and 1,500 liters of potable water. With a crew of six the boat will accommodate 150 passengers and will be contracted to Pemex for duty in the Gulf of Mexico.

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Crowley Dedicates DH Tank Barge

Crowley Marine Services has deployed the first double hull tank barge dedicated to Alaska service. Barge 180-1, which was delivered late last year, will load a cargo of petroleum products in Anchorage early next week. Crowley's tug Sinuk has been assigned to tow the new barge, which is designed to carry both deck

cargo and about 12,000 barrels of refined petroleum products. The vessels' primary mission will be to perform remote site and village deliveries in southwestern and western Alaska.

In addition to being double-hulled, Barge 180-1 is equipped with a dual anchoring system, two independent piping systems for handling multiple grades of

petroleum products, and coated cargo tanks. The deck cargo area features a containment fence, hydraulic crane and portable cargo ramps. The barge also features 1,300 ft. of float hose on a reel and a complement of support equipment including oil spill response resources. A skiff aboard the tug Sinuk supports beach landings.

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Horizon Maritime Fleet Grows

Horizon Maritime of Houston took delivery of the first of a pair of sister ships as part of a fleet expansion program. The new 2000 hp boats will bring the company fleet to six towboats. Designed to each push a pair of 30,000-barrel 300 x 54 x 13-ft. black oil/asphalt barges the new towboats are powered by twin Cummins KTA38 M1 diesels generating 1,000 hp each at 1800 rpm and turning 76 x 58-in. propellers. The boats will make up to the barges with face wires mounted on a pair of Patterson 40-ton electric deck winches. The 76 x 33 x 9.6-ft. towboats have accommodation for a crew of six. They have tankage for 30,000 gallons of fuel, 8,000 gallons of potable water, 4,700 gallons of wash water and 1,700 gallons of lube oil. The hulls for both boats were built at Quality Shipyard in Houma, La., with the first boat, MV Gemini, finished out at Main Iron Works also in Houma. The second boat, MV Argo, is being finished out at Sneed Shipyard in Houston, Texas for a May 20 delivery. The boats were built to a Corning Townsend design.

Circle 25 on Reader Service Card

Pusher Tugs for the Amazon's Barge Trade

Over the last two years, MAN B&W Diesel A/S, Denmark has been successful with a total of 19 engine and propulsion package contracts to Brazilian tugboat owners. Ten medium-speed engines, five of type 6L23/30A-F and five of type 8L23/30A-F, were recently selected for a series of single-screw pusher tugs under construction in Brazil, at the yard of Estaleiro Sao Joao. The vessels were ordered by the owner J.F. de Oliveira Navegacao Ltd, Brazil.

This new MAN B&W Diesel powered series follows another series of six pusher tugs. These vessels are powered by three single-screw, and three twin-screw propulsion packages, type MAN B&W 8L23/30-FKV, ordered by the Brazilian owner Transportes Bertolini Ltda, Manaus.

Both series of tugs will be deployed in the specialized Amazon inland waterways transport system - based on barges. Soya beans, bauxite and trailers from the inland of Brazil and Bolivia are loaded on barges and pushed via the Amazon river system to Santarém and Belém on the Atlantic coast. In Santarém, the barge cargoes of soya beans and bauxite are transferred to overseas trading, ocean-going cargo vessels for the export markets.

The engines for the Oliveira tugs will be operating on Heavy Fuel Oil (IF180) and will be driving FP propellers via reverse/reduction gearboxes.

For the Bertolini tugs, also operating on HFO IF180, complete MAN B&W Alpha Propulsion Systems with CP Propellers and Alphatronic Control Systems were chosen.

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Mix and Match Repower in Japan

In Japan, an interesting repower has created a successful triple-engined high speed ferry. The Elegant No.2 serves a route in the Nagasaki area. A single MTU 12V396 delivers 1979 hp at 1946 rpm through a ZF BWK750 (1.750:1 ratio) marine gear to a Kamewa 56BII water jet. Flanking the water jet engine, a pair of Cummins KTA50-M2 delivering 1875 hp at 1950 rpm to conventional 1.08 x 0.95-m propellers through ZF BWK4640 gears with 1.595:1 ratios. The combined propulsion systems give the 36.25 x 6.8 x 2.8 m, 138 gt vessel, a 35-knot top speed and a 32-knot operating speed at 1750 rpm. This allows the ferry, Elegant No.2, to



complete its run one way between Nagasaki and Sanggoto in 90 minutes. The boat accommodates 230 passengers with a crew of five. The owner is reportedly pleased with both the performance and the cost savings of the installation. The Elegant No.2 was built at the Kumamoto Dock Co., Ltd. to an in house design in 1999 and was returned to the builder for this repower. The engine sale is the first by newly appointed Cummins distributor Komatsu Diesel of Japan.

Circle 30 on Reader Service Card

Harvey Gulf Contracts for New OSV

Harvey Gulf International Marine, Inc., signed a contract with Eastern Shipbuilding Group for the construction of the new generation 280 x 60 ft. Deep Water Offshore Supply Vessels (OSV), to be named Harvey Spirit. The Harvey Gulf International Marine New Generation design incorporates large capacities in a manageable vessel design with a space-efficient design. It has a clear deck dimension of 202 x 52 ft. (10,500 sq. ft.), drilling fluid capacity of 13,500 bbl., 12,000 cu. ft. dry bulk along with its extremely high water and fuel capacities.

Liquid cargo loading and delivery systems aboard the HGIM New Generation include oversize piping systems. The vessels can discharge liquid mud at 1,400 gpm. Operators will be able to make full use of the

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➤ BST – October 24	➤ Tankerman – June 20
➤ PSC (lifeboatman) – November 7	➤ GMDSS – August 1
➤ Advanced Shiphandling – offered twice a month call for details	

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vessel's cargo capability in port areas that limit deeper vessels to operation at less than full capacity, as well as vessels with shallow hulls that cannot work in rough seas, wind and especially currents. Two high horsepower bow thrusters, a stern thruster along with 6,000 bhp controllable pitch main propulsion plant combine to make these vessels very maneuverable at offshore rig and platform locations.

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Smit Curaçao Delivered



A Damen ASD Tug 2810 was recently delivered to SMIT in Rotterdam, bringing the total of vessels built and delivered to SMIT in less than one year up to four. The naming ceremony was performed by **D. Comenencia-Wansing**, the spouse of his Excellency **P.R.J. Comenencia**, Minister Plenipotentiary of The Netherlands Antilles.

Three of the tugs will be allocated to Smit's operations in the Panama Canal, while the Smit Curaçao is being added to the fleet in the Port of Rotterdam. The four Damen ASD tugs 2810 delivered to SMIT are provided with a fore and aft winch, 600-cu.-m. fire fighting capacity

Bordelon Continues Growth in Gulf

September 15, 2005 will see the addition of another in Bordelon Marine's growing fleet of offshore supply vessels. With hefty day rates and diverse requirements in the Gulf of Mexico oil fields, Bordelon has been developing its fleet to provide these vessels that are smaller than the standard OSV, but large enough to meet their clients' needs at more competitive rates than bigger boats charge. Founded in 1979, the company has three 110-ft. utility boats that provide a variety of services from dive tenders to oceanographic surveys and production support. In 2001 the company took delivery of three Cummins-powered 150 x 36-ft. mini-off-shore supply vessels from Bollinger Shipyards. These boats have proven themselves in the Gulf oil industry. Their success has sent Bordelon back to Bollinger and Cummins for a slightly larger 163 x 36 ft. version. The extra 13 feet will allow the new boat, Sarah Bordelon and her sistership Marcelle Bordelon, to be delivered at the end of October 2005, significantly larger capacities while still maintaining the competitive day rates.

Open after deck dimensions on the new vessels will be 115 x 32 ft. compared to 95 x 32 ft. on the mini-supply vessels. The 163-ft. mega-minis will carry up to 506 tons on deck, 57,200 gallons of fuel, 50,400 gallons (1200 barrels) of liquid mud and 64,200 gallons of potable water. They will each be powered, like their predecessors, by a pair of Cummins KTA38-M0 main engines each developing 750 hp at 1800 rpm. As with the highly successful 150-ft vessels, the 163-footers will have two Cummins-powered 99 kW generator sets and Cummins NT855 350 hp bow thruster. In addition to the usual suite of electronic navigational aides the new vessels will be equipped with Beier IVC2000 sets making them DP1 capable.

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and a bollard pull close to 60 tons.

Main engines are Caterpillar, type 3516B with a total power of 3450 bkW driving Rolls Royce rudder propellers, type US 205 with a propeller diameter of 2400 mm.

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Intermarine Launches Fast Patrol Boat

Rodriguez's Intermarine shipyard in Sarzana launched the Bigliani Class VI Series Fast Patrol Boat G123 Salone. The G123 Salone will be formally delivered in approximately eight months and is an evolution of the Bigliani class training vessels, Marino e Pedretti developed for the Italian Navy in 1998.

The boat measures 88.5 ft. (27 m), and is a 100 percent composite vessel capable of speeds to 40 knots.

This latest launch is part of a contract with the Guardia di Finanza for the supply of ten 27-m patrol vessels along with five 35-m patrol boats.

The G123 Salone is the eighth 27-m unit. The first, the second and the third of the 35-m series, the G3 DI Bartolo, G4 Avallone and G5 Oltramonti have been delivered. In addition to this contract, Intermarine in cooperation with the Baglietto shipyard is also building another 14 13.2-m fast interceptor craft (45 knots) for the Guardia di Finanza.

Intermarine has also been awarded a contract by the Italian Navy for the midlife refit of the Lerici Class, mine-hunters previously built by Intermarine.

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Stanford and Castle Point Welcomed



The first two of three Damen ASD Tugs 3211, named Stanford and Castle Point, were officially welcomed by BP Shipping Ltd. at the Tilbury Cruise Terminal (U.K.) on April 22, 2005, 2005. The third vessel, named Corringham, is presently being outfitted by Damen Shipyards Gorinchem and will join the Stanford and Castle Point early July 2005. All three ASD tugs will

be operating at BP's Coryton Refinery on the river Thames, near London. These extremely powerful vessels are classed by Lloyd's Register of Shipping as both Fifi 1 and escort tugs. Main propulsion is provided by MAK 6M25 engines and Rolls Royce azimuth thrusters with controllable pitch propellers.

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Nordana Line Acquires Two Vessels

Nordana Line will increase its cargo capacity in the Mediterranean/Americas trade with the integration of two additional Ro/Ro Multipurpose vessels into its service. MV Marienborg and MV

Charlottenborg will enter the service in June and July. "Our Mediterranean / Americas Ro/Ro multipurpose service has seen a tremendous expansion of activity in the last 18 months, to a point where current vessel frequency and capacity must increase to meet market demand," said **Steen Obst**, President, Nordana Line (USA) Inc. "These vessels will allow us to improve and expand the services we offer in order to meet our customers' current needs and those we project for the future." The addition of these two vessels will increase nominal loading capacity on an annual basis to 22,000 TEUs from the current 14,000 TEUs. The service will now operate five vessels, with the two additions joining the MV Skodsborg, MV Schackenberg, MV Skanderborg. The new vessels can each handle

approximately 1,200 TEUs and have more than 4,000 lane meters of RoRo capacity on multiple decks, which combined with 400 tons quarter ramps and the Nordana fleet of specialized mafi trailers.

Name	Charlottenborg (CBG)
Year Built	1981
DWT	24,230 tons
Length, o.a.	611.8 ft. (186.5 m)
Breadth	105.9 ft. (32.3 m)
Draft	34.7 ft. (10.6 m)
Ramp Capacity	400 tons
TEU	1,187
Lane Meters	3,840
Cars (car decks)	336

Name	Marienborg (MBG)
Year Built	1979
DWT	27,980 tons
LOA	615 ft. (187.7 m)
Breadth	105.9 ft. (32.3 m)
Draft	34.7 ft. (10.6 m)
Ramp Capacity	400 tons
TEU	1,218
Cars (car decks)	360

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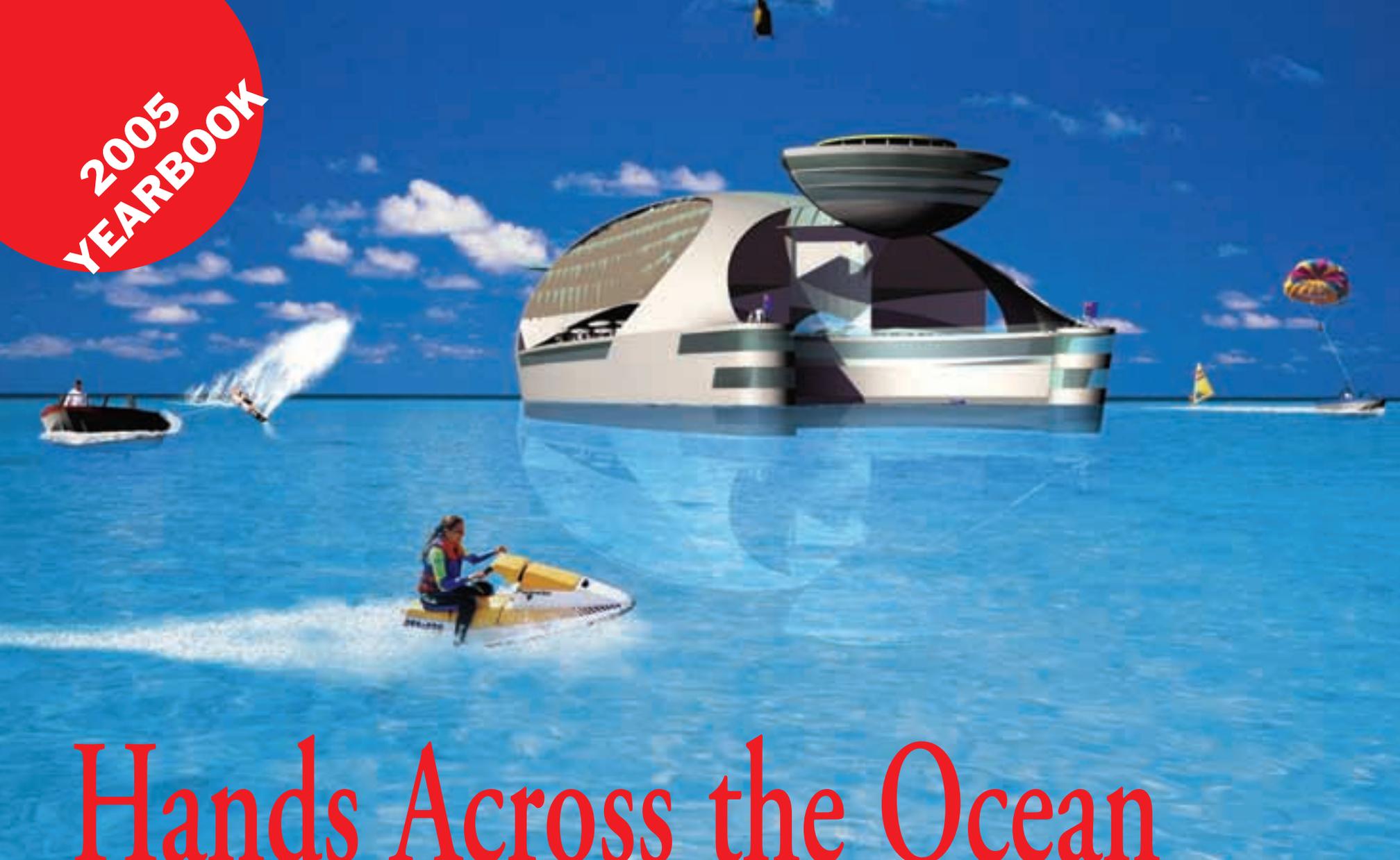
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Hands Across the Ocean

From the great liners to the pocket cruise ship

By Mark Hilferty

The cruise shipping niche is arguably the most glamorous of all maritime sectors, with high value ships growing in grandeur each year. With a rebound in the cruise shipping business on the horizon, noted designer Mark Hilferty took the time to evaluate the evolution of cruise ship design over the last 65 years.

Back in 1939 things were very different from the way they are now, and the use of the great passenger vessels, the liners, was about to change dramatically. Back then technology generally meant heavy engineering, and leisure time was mom, pop and the kids off for a day out. Here in the 21st century where freedom has become the 'new unstoppable global virus' we have all become focused on the concept of the personal variety of that freedom, where choice, mobility and connectivity, especially on the leisure front, are paramount. So with all of this in mind, I embarked on a little journey through time.

1939 was not a good year for many people, especially Europeans, and the historical link between the two continents of Europe and America was about to be reinforced — even if most of the transatlantic traffic was soon to be traveling the other way.

You could say that use of passenger shipping as a popular pastime began back in the mid 19th century, led by P&O. Indeed the word 'cruise' will forever be associated with them, becoming a popular word at the time to describe ocean voyages and short excursions; the English author, William Thackeray, helping to popularize their Mediterranean cruises. However it is only fairly recently that cruising has emerged as a mass holiday option, coincidentally paralleling the demise of the ocean liner and becoming its savior at the same time. The liner, once the majestic and sometimes imperialist representation of national pride for both European and North American nations,

had by 1939 been supplanted by a new kid on the block, the airplane. Ironically the Queen Mary from the very start almost prophesied her own demise by way of a quirky little design detail still to be found on her today. If you look at the cast aluminum motif fixed to the door of what used to be the travel office, you will see a rather beautiful depiction of an airplane representing no doubt the freedom of flight while announcing, almost with a whisper, the arrival of an alternative transatlantic transportation system. The United Kingdom has probably built and operated more maritime legends than any other nation in history, from the first steam powered, propeller-driven (the propeller being 'invented' for the task) iron hulled ship, the SS Great Britain, through to the most famous maritime disaster of them all, the Titanic, and the world's largest and fastest liners created in the declining years of the Empire. Even the world's first cruise ship, Hamburg-America

Line's 'Prinzessin Victoria Luise' was named after Queen Victoria's daughter.

More in terms of a marketing angle than with any sentimental concern for the plight of Britain's shipping industry, it is extraordinary how others are keen to keep the torch burning long after Britain has lost its position as the world's leading maritime power. Take the Queen Mary 2: despite the name, livery, and the fact that she is U.K. registered and provides a scheduled transatlantic service from Southampton to New York, her owner Cunard is not a British company and the vessel was not built in the U.K. Another conundrum in our story is that America no longer builds cruise ships nor liners, and yet is the acknowledged center of the global cruise industry and represents by far the

Pictured Above: Destination Brisbane.
(photo credit: Wow Design/SPACE)

largest consumer market. Yet the U.S. can hardly be said to lack the technological or financial clout necessary to have its own homegrown industry. But as we in Britain have learned first hand, the skills have now been lost and as a consequence the U.S. cannot compete with the mainland European shipyards in terms of price and experience (the last large passenger ship to be built in America was the United States in 1952). As we all know, the American cruise business purchases all of its hardware from mainland Europe: this is a problem shared by both the U.K. and the U.S.

The romance of the liner via its recently invented brand message of 'the classic age of travel' has proven a powerful elicitor of emotion, and the longevity of the myth far exceeds its practical applications. The launch last year of the RMS Queen Mary 2 is the biggest possible confirmation from Cunard of the concept that 'emotion sells'. The largest, tallest, longest, fastest liner of today, weighing in at a mighty 150,000 gt, carrying 2,600 passengers, is a massive statement for any cruise company to make. Its more than notional references to the past go well beyond the name, from the revisitation in the atrium space (see mural from QM2 and QM symbolizing the link between Europe and North America), to the architectural massing of the vessel herself. Inside we are reminded of an historical past, albeit a mythical one, while at the same time the ship is furnished with the latest in onboard technology. Strangely, her funnel pays homage to her older sister, the QE2, although perhaps with some of the practicalities of **James Gardner's** original design being superseded by the sheer iconic symbolism of the thing.

Of course there will always be people with the means to allow them to spend several days at sea traveling from Southampton to New York and vice-versa. As a means of transportation for commercial purposes this cannot be seen as a realistic option these days.

But back in 1939 the Cunard Queens, Mary and Elizabeth, were barely out of their cradles before war commenced with Germany and these fast 'ambassadors' soon played a very different game as troop carriers. In 1940 the Queen Elizabeth, then the world's largest ship, made her secret wartime maiden voyage to New York. This is a human story. Before the emergence of transatlantic air travel, the liner was the only real link between the old and new worlds. It was by this means of conveyance that prior to the declaration of war, Europe's intellectuals escaped Nazi persecution, resulting in the enrichment of American

society and culture. Later on U.S. troops were delivered to Glasgow in, amongst other vessels, the Queen Mary. In the process she established a record for the most passengers ever carried at sea - some 16,683 U.S. soldiers - her speed being her only defense against attack as she was at that time the fastest ship afloat.

With the war finally over, the passenger shipping industry moved towards the modern era, firstly in 1948 with the establishment of the Inter-Government Consultative Organization, which later becoming the more pronounceable IMO (1982). In the same year the Caronia was built by Cunard as the first vessel created specifically for full-time cruise

ing. Early attempts to convert liners into cruise ships was inevitably going to be fraught with technical problems, not least of which was the integration of 1st and 2nd class pas-



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- Duff Hughes, President, The Vane Brothers Company

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senger accommodation into a single tourist class. Even though there were isolated examples of cruise specific newbuildings, converted liners were destined to be the interim solution to providing sufficient cruise ships for this growing market.

These first cruise ships have strong links to the past simply because they began their lives as liners. In particular British cruise passengers became so attached to them that the owners insisted on carrying over into their cruise-specific newbuildings the well loved features of their old liners in order to maintain customer loyalty.

Of course this oft quoted 'Golden Age' may well have existed, but we suspect only on a good day and if you were traveling first class. Yet this is what the modern day cruise ship is trying to emulate for the holiday market. Should it? We suspect this is not too dissimilar from today's trend for ferry companies to invite you to cruise to your destination, rather than just journey there.

Not only were the architectural characteristics of the ocean liner handed down to subsequent cruise ship designs, but also the apparent romance connected with ocean liner travel. So the liner appears not only to have shaped the way we now design cruise ships, but also the way we travel on them and what we expect from a cruising holiday. Of course many designers and architects are notoriously elitist and even arrogant in what they feel makes a good ship. If you look at these vessels from the technological perspective then perhaps we should not be so harsh, they really are, as one senior cruise executive said to me recently, "fabulous bits of kit and provide mass market cruising in a business which has been largely elitist till now". The technological breakthroughs which the industry has forced are many and indeed fabulous but more of that later.

By far the most important route was the transatlantic one between European cities and New York. All the famous operators plied this route and there were prizes to be won for the line which achieved the fastest crossing. America, emerging from World War II relatively unscathed and buoyed by victory, understandably set out to capture the Blue Riband at virtually the 11th hour of the transatlantic liner. In 1952, the United States Line's vessel, United States, relieved the Queen Mary of this coveted prize through lower weight brought about by the extensive use of aluminum. She was described as a 'ship of innovation' and a 'technological marvel' and her recording breaking crossing propelled her 50,000 ton sleek body at an average speed of 35.59 knots - a feat never to be matched by such a scale of vessel. But the

GHOSTS of GLORY PAST ...

The last large passenger ship to be built in America was the SS United States in 1952.

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Building better business

rivalry between Europe and the United States over the recipient of the Blue Riband continues to this day.

It was the Dutch vessels Ryndam and Maasdam, launched in 1951, which revolutionized the marketing philosophy of the North Atlantic route with these two 'tourist' ships carrying 90 percent of tourists-class passengers. By 1957 Cunard had established the largest fleet on the Atlantic, but it was only a year

later when the first regular jet service was established across the North Atlantic. Liner builders persevered in their losing battle, however, with the SS France launched in 1962 the same year that a direct Paris-New York air link was established.

Together with the Canberra (her twin

funnels proving to be a design landmark and one echoed in the Eugenio Costa designed by Nicolo Constanzi), the SS France, and finally the 'iconic' QE2 (herself more a hybrid of cruise ship and liner) these were the last of the big ocean going passenger liners to be built until the QM2 - over 35 years later. The future of such vessels now lay in their adaptation for cruising and all new buildings would henceforth be designed specifically for this burgeoning leisure market.

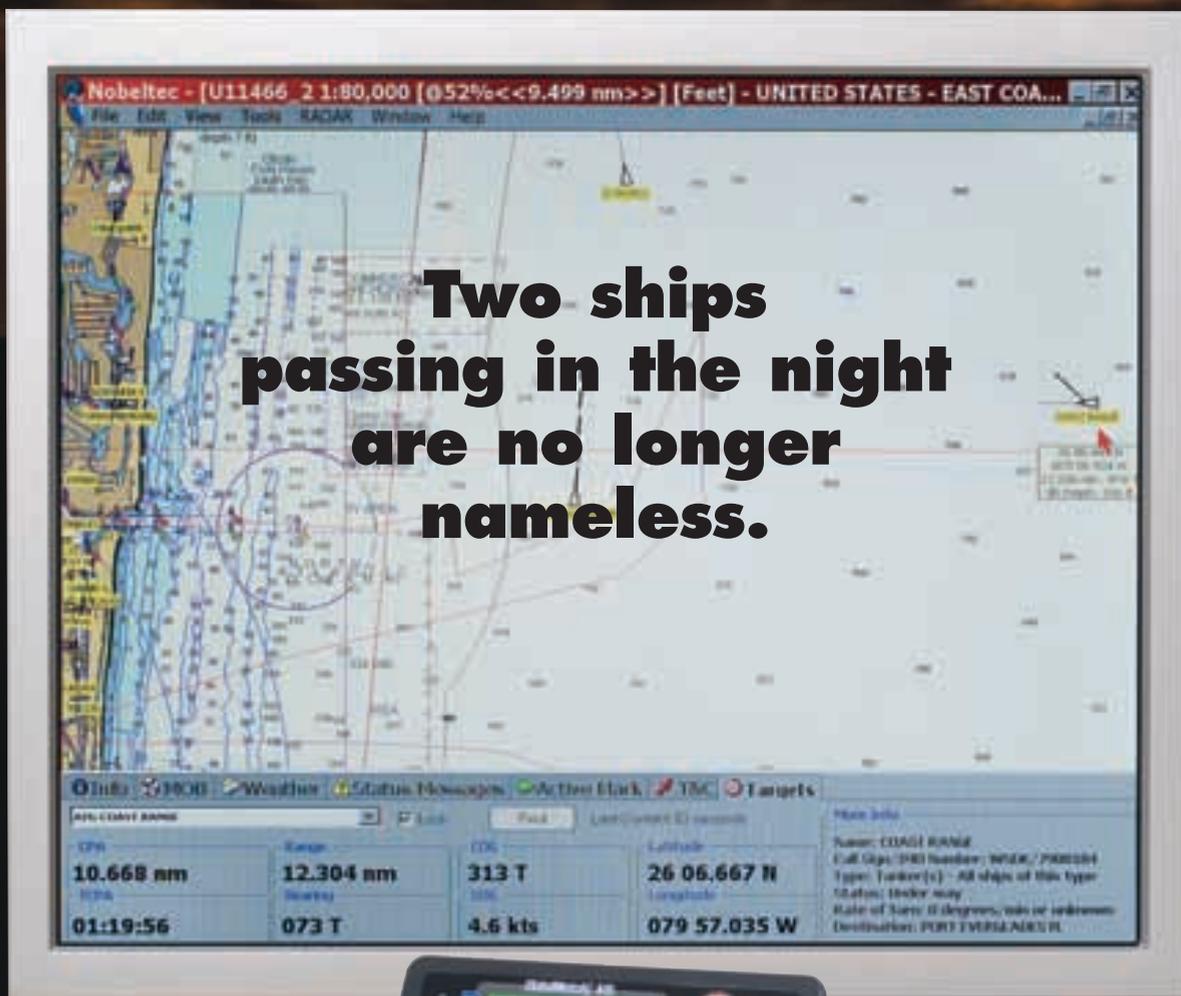
When the designs for the QE2 were exhibited at the Design Centre in London in the early 1960s it was clear to the visitor that she had been conceived as a liner. Her interior concepts and profile had the air, though not the style, of her predecessors the Queens Mary and Elizabeth. However, by the time she was launched in 1967, the airlines had already captured 95 percent of transatlantic travel so if she were to continue as a commercial liner it would have to be under very different circumstances.

"A large cruising liner is the nearest thing so far to a completely man-made total environment. It houses every kind of human concern, work, play health, sickness, birth and death and at its best the scope of its facilities transcends most buildings and many towns." (Kenneth Agnew, 'The Building of the QE2', Architectural Review, 1969)

All these years later she still retains a form of regal elegance which seems to defy time and logic, even the addition of the two (aluminum) penthouse decks during the 1987 refit have not stolen too much of Gardner's original form. His vision and strength of character were both fundamental elements which determined this longevity of spirit and presence. His first encounter with the project are powerfully recalled in his own autobiography, "I climb up the narrow stair to the Cunard drawing office (in Liverpool) to find oak plan chests, high wooden stools and pale-faced draftsmen with a problem. This ship will have no sweeping curves: she is a block of utility flats dumped in the sea, and must ride uncomfortably high to pack in the essential accommodation - more like a piece of floating real estate. A clumsy model, bits borrowed from the old Queen Mary in an attempt to make her look like a ship ... I am itching to have a go."

And have a go he did, and almost half a century after his first look she still graces the Manhattan skyline upon arrival from Southampton during the summer months. Interestingly enough her younger sister, the recently launched QM2 (January 2004), has borrowed

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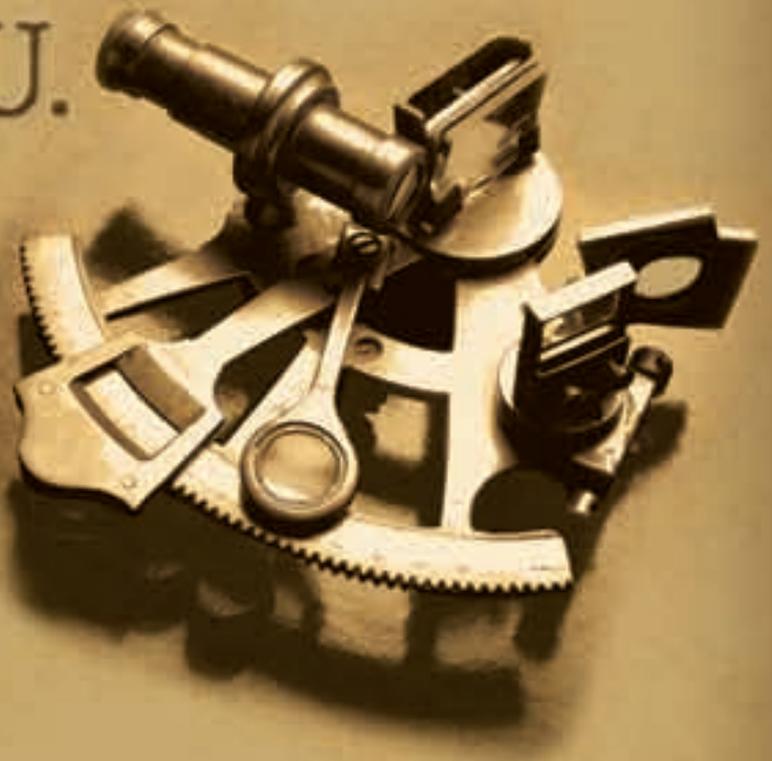
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... TO LEADERS of TOMORROW, including the world's largest (for now) Queen Mary 2. Pictured is a Queen Mary 2 Lifeboat Drill.

heavily from both the 'old Queen Mary' and from the QE2 herself, the result being more of a hybrid than a thoroughbred. But the true power of the QE2 is as an icon and it has been an almost 'religious' search by cruise ship designers and architects to rediscover this mysterious power which has continued ever since.

By 1966 vessels like Norwegian Caribbean Line's Sunward represented the start of the boom period in Florida-based cruising and cruise business, a trend still going strong almost forty years later. For me the modern era really began with Royal Caribbean and the building of Sovereign of the Seas, not just because we were lucky enough to be involved with the project, but more because this was the building of a major vessel with one idea firmly in mind - the cruise experience. Described at the time as a "hotel at sea", her creation was to set the scene for the future. It was almost like the firing of a starting pistol: the race was on and everybody wanted a piece of the action. This 'Klondike' of the cruise building industry was great news for Western European shipyards as the boom in building exceeded all predictions. Sovereign of the Seas broke all the rules, or rather re-invented some of them. The famous atrium, a shipping innovation in its own right, had no precedent, and at the time I recall the debate that raged around Njell Aides' concept. In the end, creativity and market drivers won the day and 'atrium envy' began. No ship could be built without one, and Njell excelled himself as a master in their creation, outperforming his previous creation every time. Since those early days in modern cruising the industry has moved a long way buoyed up not just by the burgeoning number of new large cruise ships rolling off the stocks in European shipyards and arriving on station in Miami or New York but also by the steady increase in passenger numbers globally.

This concludes Part I of a two-part story. Please see the July 2005 edition of Maritime Reporter for Part II.

About the Author

Mark Hilferty is owner and managing director of SPACE the design practice, a consultancy renowned for innovation in marine and other leisure, transport and workplace projects. Trained as a designer, Mark is a



frequent contributor to marine and other business sector events and publications, and a keen advocate of new thinking and technology in the design of work and leisure experiences and spaces.

Navy Christens New Dry Cargo/Ammunition Ship

2005
YEARBOOK



The Military Sealift Command (MSC) auxiliary dry cargo carrier USNS Lewis and Clark, (T-AKE 1), is launched into San Diego Harbor after a christening ceremony held at the National Steel and Shipbuilding Company, (NASSCO) in San Diego, Calif. (U.S. Navy photo by Photographer's Mate 3rd Class Timothy F. Sosa)

The Navy christened the lead ship of a new class of underway replenishment ships, USNS Lewis and Clark, May 21, when it was launched at National Steel and Shipbuilding Company (NASSCO) in San Diego.

The name Lewis and Clark honors the two legendary explorers who jointly led the Corps of Discovery on a visionary expedition that was to become one of American history's greatest adventure stories.

Descendants from the families of Capt. Meriwether Lewis and Lt. William Clark, Jane Lewis Sale



Ship sponsors, Mrs. Jane Lewis Sale Henley and Ms. Lisa Clark, christen the Military Sealift Command (MSC) auxiliary dry cargo carrier USNS Lewis and Clark, (T-AKE 1) (U.S. Navy photo by Photographer's Mate 3rd Class Timothy F. Sosa)

Henley and Lisa Clark, served as sponsors of the ship.

Lewis and Clark is the lead ship in the Navy's new 11-ship T-AKE Class. T-AKE is a new combat logistics force (CLF) vessel intended to replace the current capability of the T-AE 26 Kilauea-class ammunition ships, T-AFS 1 Mars-Class combat stores ships and

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chant ships. They will transfer cargo (ammunition, food, limited quantities of fuel, repair parts, ship store items, and expendable supplies and material) to ships and other naval warfare forces at sea.

Lewis and Clark is 689 ft. (210 m) long, has an overall beam of 105 ft. (32.2 m), a navigational draft of 30 ft. (9 m), and displaces approximately 41,000 tons. Powered by a single-shaft diesel-electric propulsion system, the ship can

reach a speed of 20 knots.

About the T-AKE

The Lewis and Clark-class T-AKE is a new Combat Logistics Force (CLF) Underway Replenishment Naval vessel intended to replace the current capability of the Kilauea-Class (T-AE 26) Ammunition Ship, Mars-Class (T-AFS 1) Combat Stores Ships, and when operating in concert with a Henry J. Kaiser-Class (T-AO 187) Oiler ship, the Sacramento-Class (AOE 1) Fast Combat Support Ship. The T-AKE Program calls for 12 ships and has a budget of approximately \$4 billion. The program resides within the Navy's Program Executive Office, Expeditionary Warfare - Support Ships Boats and Craft Program Office (PEO EXW/PMS 325).

As an auxiliary support ship, T-AKE will directly contribute to the ability of the Navy to maintain a forward presence. In its primary mission role, the T-AKE will provide logistic lift from sources of supply such as friendly ports, or at sea from specially equipped merchant ships by consolidation, and will transfer cargo (ammunition, food, limited quantities of fuel, repair parts, ship store items, and expendable supplies and material) at sea to station ships and other naval warfare forces. In its secondary mission, the T-AKE may be required to operate in concert with a Henry J. Kaiser-Class (T-AO 187) Oiler as a substitute station ship to provide direct logistics support to the ships within a Carrier Battle Group.

The primary goal of the T-AKE program is to provide effective fleet underway replenishment capability at the lowest life cycle cost. To meet that goal, the ship will be designed and constructed to commercial specifications & standards and certified/classed by the American Bureau of Shipping, United States Coast Guard, and other regulatory bodies. The ships will be operated by the Military Sealift Command.

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Lewis and Clark Class Main Particulars

Length689 ft. (210 m)
Beam106 ft. (32.31 m)
Draft29.5 ft. (8.99 m)
Full Load Displacement40,539 long ton
.....(41,187.62 metric tons)
Speed20 knots (23 mph)
Range14,000 nm @ 20 knots
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Last December, Ulstein Verft AS won the contract to convert Solstad's cable-laying vessel Normand Clipper into a pipe-laying and offshore construction vessel. The conversion work was sched-

uled to be finished by the end of May.

"Preparatory work began in December 2004, when the rigging and cable-laying equipment was brought ashore. Bunkers still inside the vessel were removed, and



After conversion, "Normand Clipper" will look quite like her sister "Normand Cutter"

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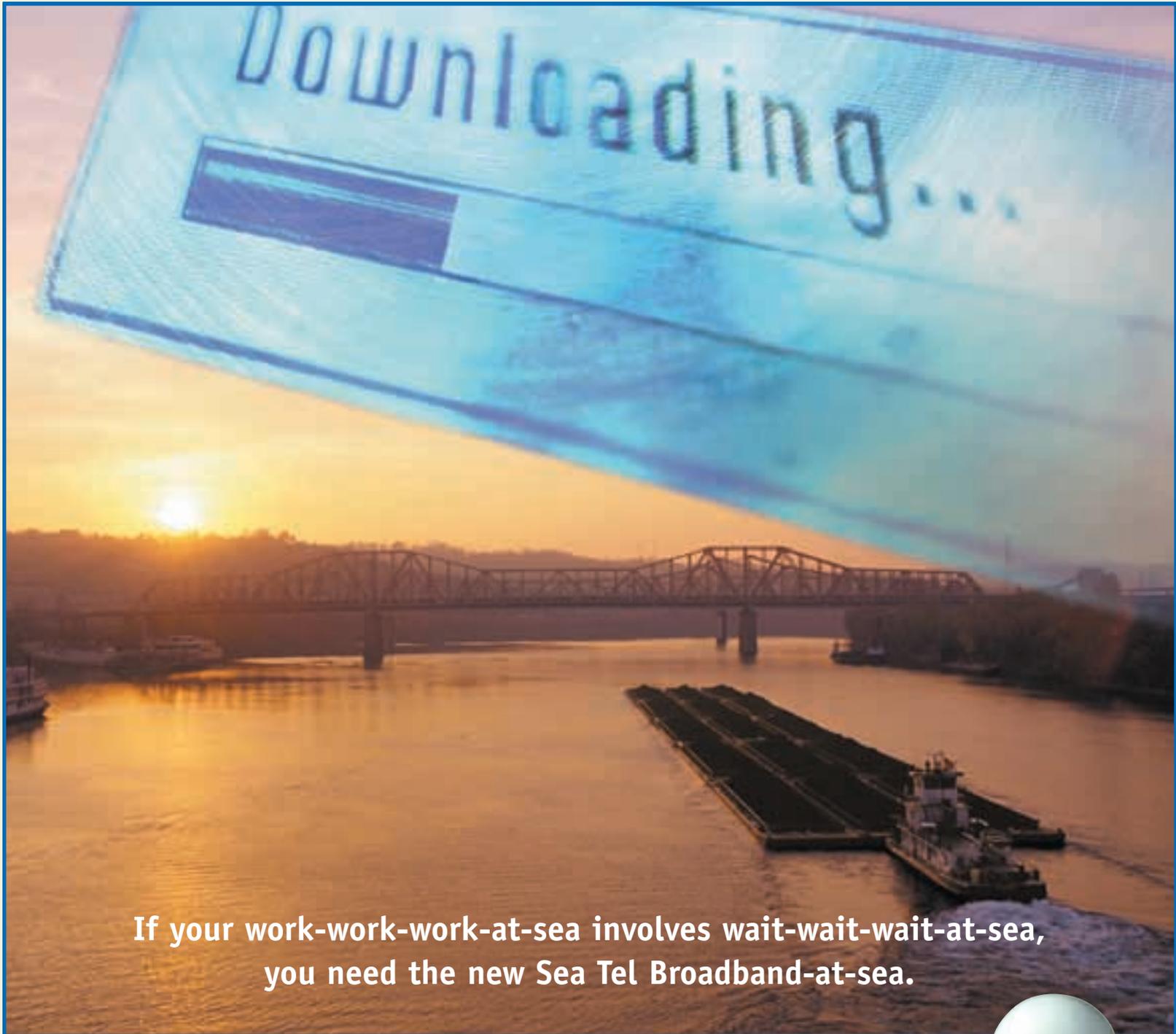
the tanks drained of gas. In January this year, work began to cut away the hangar, remove equipment and build sections, but shipyard workers could not fully begin the work until mid February. By that time", says **Lidvar Lillerovde**, Project Manager at Ulstein Verft, "the vessel had entered dry dock."

"The yard has assigned many workers to the task and there is the ability and determination to deliver on schedule. In addition to this, the charterer has made a number of requests during the conversion process, which have led to minor modifications being carried out - these demands have been tackled on the spot," said Captain **Erling Sandviknes** of Solstad. Normand Clipper will have a 250-ton heave-compensated offshore crane mounted in August. Ulstein Verft will erect the crane pedestal and carry out preparatory work to enable the crane to be mounted on the port side of the vessel. A new transformer and switch-board room, which ensures the power supply for the crane, has also been installed. The 25-ton crane, which used to stand on the port side, has been relocated to the starboard side, and has been upgraded for work down to a depth of 500 m. The vessel used to accommodate a crew of 70. That capacity is adequate for pure pipe-laying assignments, but more hands are needed for the more demanding construction jobs.

"This challenge is met by the upgrading of existing accommodation, and by extending the superstructure towards the stern. We have put in extra cabins, an ROV hangar for remotely controlled mini-submarines, an ROV control room, an office and a conference room. We will now be able to accommodate a crew of 102. We have also fitted new life-boats and davits to comply with the NIS requirements for crews of this size", Lillerovde says.

The vessel has increased its breadth from 23.4 to 27 m by adding sponsoons. "These sponsoons are drawn right up to the wheelhouse midships", says the Project Manager. "The sponsoons extend the deck sideways, accommodating

(Continued on page 40)



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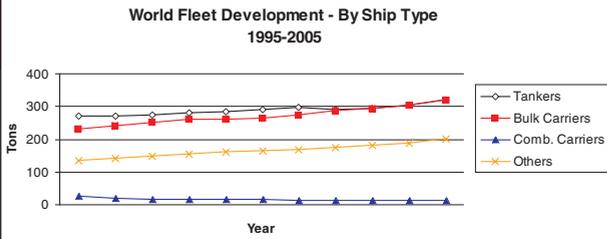


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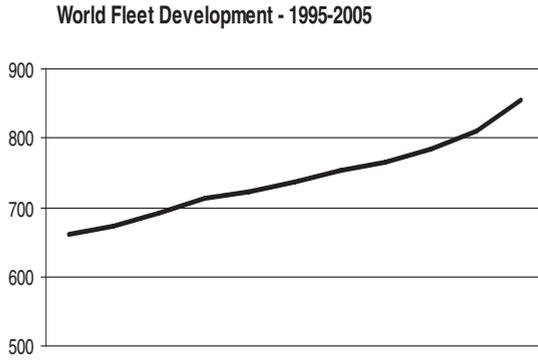
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World Fleet Development - by Type 1995-2005



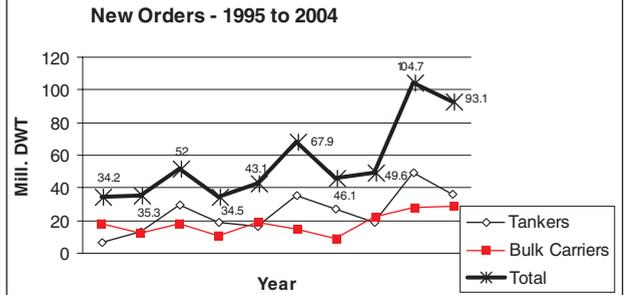
Source: The Platou Report 2005 (www.platou.com)

World Fleet Development 1995-2005



Source: The Platou Report 2005 (www.platou.com)

New Orders - 1995-2004



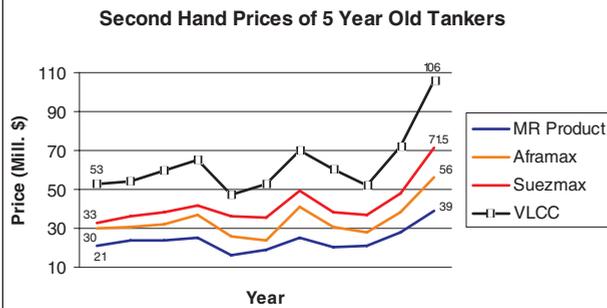
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Tonnage Sold for Scrap, Lost, Other Removals 1995-2005



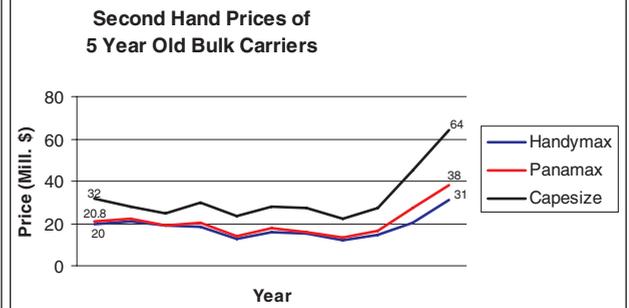
Source: The Platou Report 2005 (www.platou.com)

Second Hand Prices - 5-Year-Old Tankers



Source: The Platou Report 2005 (www.platou.com)

Second Hand Prices - 5-Year-Old Bulk Carriers



Source: The Platou Report 2005 (www.platou.com)

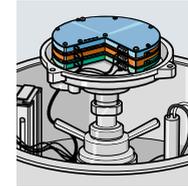
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World Fleet Development

Year	Tankers	Bulk Carrier	Comb. Carriers	Others	Total
1995	270.9	229.9	25.9	134.8	661.5
1996	270.5	241.3	20.7	140.9	673.4
1997	275.2	250	17.3	149.1	691.5
1998	279.5	260.7	16.9	155.3	712.4
1999	285.2	260.4	16.1	160.9	722.6
2000	289.5	264.8	15.2	166.7	736.2
2001	296.4	274	14.6	169.3	754.3
2002	290	287.4	13.8	174.7	765.9
2003	294.2	295	12.6	181.2	783
2004	305.2	303.3	12.2	189.6	810.3
2005	322.1	320.8	11.7	200.5	855

Source: The Platou Report 2005 (www.platou.com)

Tonnage Sold For Scrapping, Lost & Other Removals

Mill. DWT		Year		
Year	Tankers	Bulk Carriers	Total	Year
1995	10.9	2.6	15.7	1995
1996	6.8	8.5	17.9	1996
1997	3.7	7.9	16.4	1997
1998	7	11.8	23.1	1998
1999	16.4	9.1	30.3	1999
2000	14.1	4.4	22.1	2000
2001	19.7	7.2	31.7	2001
2002	19.3	6	30.4	2002
2003	18.9	3.5	25.9	2003
2004	10.3	0.8	12.6	2004

Source: The Platou Report 2005 (www.platou.com)

New Orders

Mill. DWT			
Start	Tankers	Bulk Carriers	Total
1995	6.2	17.7	34.2
1996	13.5	12.7	35.3
1997	29.5	17.9	52
1998	18.8	10.4	34.5
1999	16.3	18.5	43.1
2000	35.7	14.5	67.9
2001	26.9	8.7	46.1
2002	19.3	21.9	49.6
2003	49.3	27.9	104.7
2004	36.2	28.8	93.1

Source: The Platou Report 2005 (www.platou.com)

Second Hand Prices of 5-Year-Old Tankers

Mill \$					
Start	MR Product	Aframax	Suezmax	VLCC	Start
1995	21	30	33	53	1995
1996	24	31	36	54	1996
1997	24	32	38	60	1997
1998	25	37	42	65	1998
1999	16	26	36	47	1999
2000	19	24	35.5	53	2000
2001	25.5	41	49	70	2001
2002	20.5	31	38	60.5	2002
2003	21	28	37	52	2003
2004	28	38	48	72	2004
2005	39	56	71.5	106	2005

Source: The Platou Report 2005 (www.platou.com)

Second Hand Prices of 5-Year-Old Bulk Carriers

Mill \$				
Start	Handymax	Panamax	Capesize	Start
1995	20	20.8	32	1995
1996	21	22	28	1996
1997	19	19	25	1997
1998	18.5	20.5	30	1998
1999	13	14	23.5	1999
2000	16	17.5	28	2000
2001	15.5	16	27	2001
2002	12.2	13.4	22	2002
2003	14.8	16.5	27.5	2003
2004	20.5	27.5	45	2004
2005	31	38	64	2005

Source: The Platou Report 2005 (www.platou.com)

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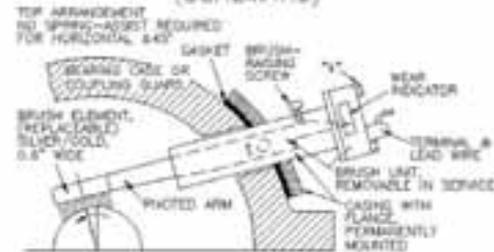
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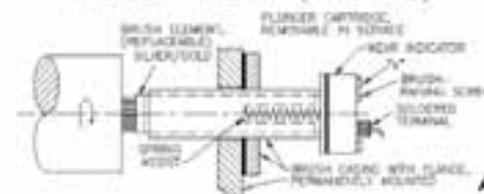
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Normand Clipper in April.

We have halved the distance between ribs and strengthened several decks. While the deck could previously support 3 tons per square meter, it is now able to support 10 tons per square meter," said Lillerovde.



(Continued from page 36)

Upgrading of DP2

bulky deck equipment such as pipe carousel, but they also compensate for the readjustment of weight that is required when the largest crane is swung over the ship's side. As a consequence of the sideways extension of the vessel, new crane base, ROV module and living modules, the added weight of new steel in the hull is estimated at approximately 1300 tons".

"For the vessel being capable of carrying a full load of pipes and equipment for pipe-laying and construction work, the working deck had to be reinforced.

"A moon pool has been installed in the deck to enable equipment to be lowered down for subsea operations. For such assignments, the vessel must have strong motors and propellers, as well as a dynamic positioning system (DP) that guarantees the vessel's positional stability, regardless of weather or conditions at sea. The vessel was already equipped with a DP2 system, but this has been upgraded with new reference equipment and other features. In order to manage construction and pipe-laying assignments, the bridge has been rearranged;

the DP desks on the bridge have been moved aft, and new manoeuvring desks have been fitted in aft for complete control. With future demands from authori-

ties in mind, we have also mounted a Voyage Data Recorder (VDR) on the bridge, which processes signals, through 70 different cables, from all machinery onboard," he says. The converted Normand Clipper is due to leave Ulstein Verft in the end of May this year, bound for Newcastle, where the vessel will report for duty on four assignments for Technip Offshore.

"We will take on board two ROVs and four drums for umbilicals and flexi pipes," Captain Sandviknes says. The umbilicals are cables that provide subsea and other installations with among other hydraulic, fiber optic and electric power. Flexi pipes are designed to conduct gas and oil between installations on the sea bed. "Three of the assignments are inside the English sector, and involve laying umbilicals and flexi pipes. The key project is the laying of the principal umbilical from Melkøya off Hammerfest, Norway, and out to the Snøkvit oil field. We will have a 20-m diameter carousel mounted for this assignment, around which we will wrap the umbilical. This assignment will last just under a month and a half."

These assignments will come to an end around mid August. The vessel will then head for Kristiansand, Norway, where National Oilwell will deliver and mount the fully integrated 250-ton crane.

"The crane will undergo testing, after which we will probably begin another assignment which will take us up to the 1st of November. As of that date, we will have a 180-day contract with the Australian company, Clough Ltd. We will take onboard complete deck equipment, i.e. eight flexi-pipe rails and new ROVs. Thereafter, we head for the East coast of India to lay flexi pipes. The agreement with Clough Ltd. contains an option to extend the agreement for up to five more years, in direct continuation of the fixed period," Sandviknes says.

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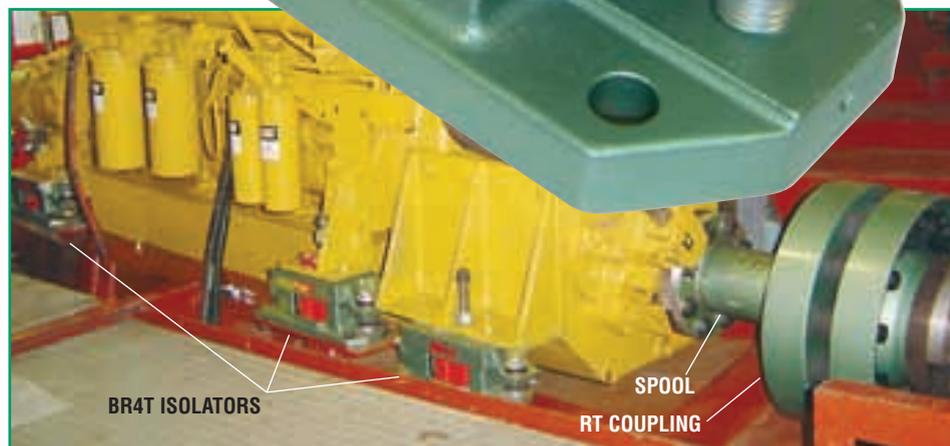
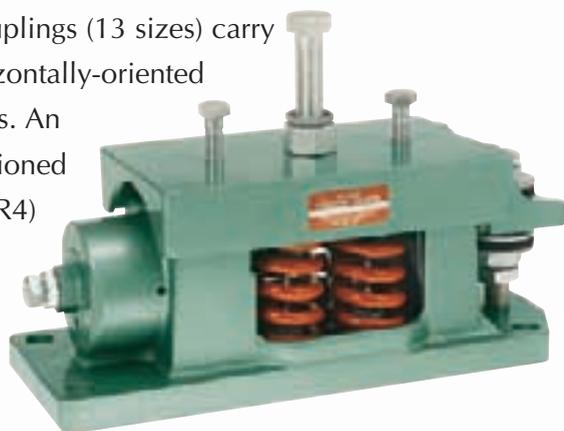
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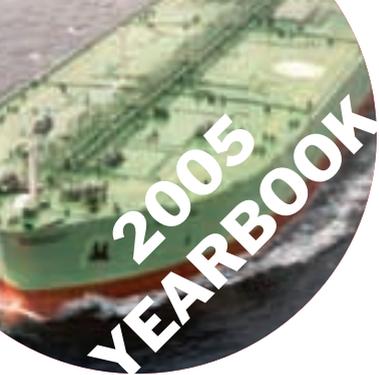
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By Sydney P. Levine, President
Shipping Intelligence Inc.

The ocean shipping business has been cyclical for as long as anyone can remember. Some cycles are longer, some shorter, some deeper and some shallower. But regardless of the status at any time, those markets do fluctuate. And the fluctuations are between easily recognized limits. Oversimplifying grossly, when charter rates fall too far, ships will be scrapped until demand and supply return to an equilibrium that allows for at least marginally profitable operation. On the up side, if charter rates rise too high, more ships will be built and eventually rates will fall.

Be that as it may, when a cycle is at its hottest, some individuals decide that "this time it's different"; they believe that the present state of the market will continue on into the indefinite future. They hold this belief in spite of all logic and past history.

Consider the following indicators of the heat of the tanker and dry bulker markets.

In May of 2003 a capesize bulker was chartered for 2 years at the daily rate of \$19,250. The very next day, the ship was relet for 1 (option 2) years at the rate of \$21,500 per day. Six days later the ship was relet once again for 6 to 8 months at the daily rate of \$27,500. And finally, at the conclusion of the 6 to 8 month charter the ship was relet one more time for 15 to 17 months at the extraordinary rate of \$55,800 per day. In only 6 to 8 months, the earning power of this vessel had increased by an astonishing 290%.

The ship sale and purchase market, clearly influenced by the booming charter market performed similarly.

In June of 2003 a 10 year old capesize bulker was sold for \$13 million. In January 2005 the same ship, now 12 years old, changed hands for \$40 million. Just one year earlier, 40 million dollars would have bought a 4 year old capesize bulker. And, perhaps even more extraordinary, there have been recent sales of 20 year old capesize bulkers for almost 40 million dollars.

In addition, the depreciation curve relating the values of similar ships of different ages has been all but repealed, validating the shipbroker's adage that "strong markets make old ships new". In

In June of 2003, a 10 year old Capesize bulker was sold for \$13 million. In January 2005 the same ship, now 12 years old, changed hands for \$40 million

the first quarter of 2004, a 12 year old VLCC sold for less than 40% of the price of a 2 year old VLCC, a price consistent with past sales history. In the first quarter of 2005, a 12 year old VLCC sold for more than 60% of the price of a 2 year old VLCC. This compression of the price spectrum accompanied a large absolute increase in ship prices. The 2 year old VLCC price increased about 60% from the first quarter of 2004 to the first quarter of 2005.

These buyers and sellers of ships have been placing bets on future freight rates and ship values. But since they clearly hold contradictory views of the developing ship markets they can't both be right.

Buyers of ships, often old ships at elevated prices, believe that the current very high freight rates will continue into the indefinite future, at least until the ship purchases have been amortized, and hopefully far beyond. They expect to make their money by operating their ships in a very strong and sustained charter market.

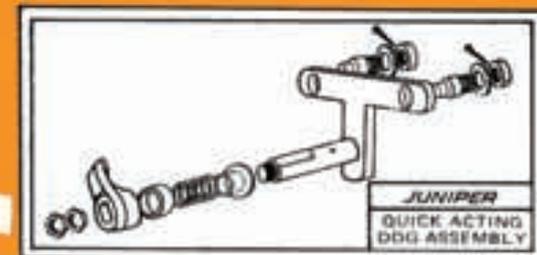
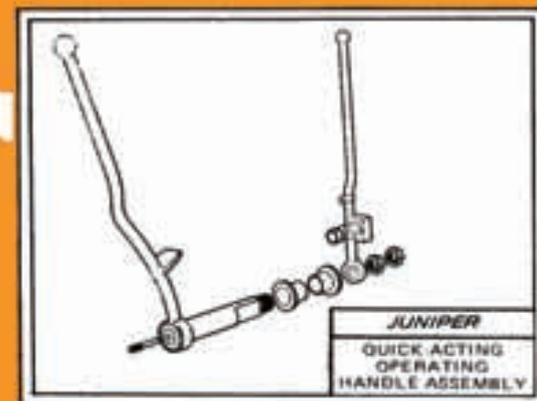
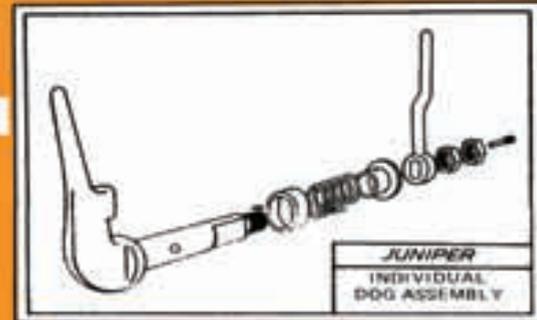
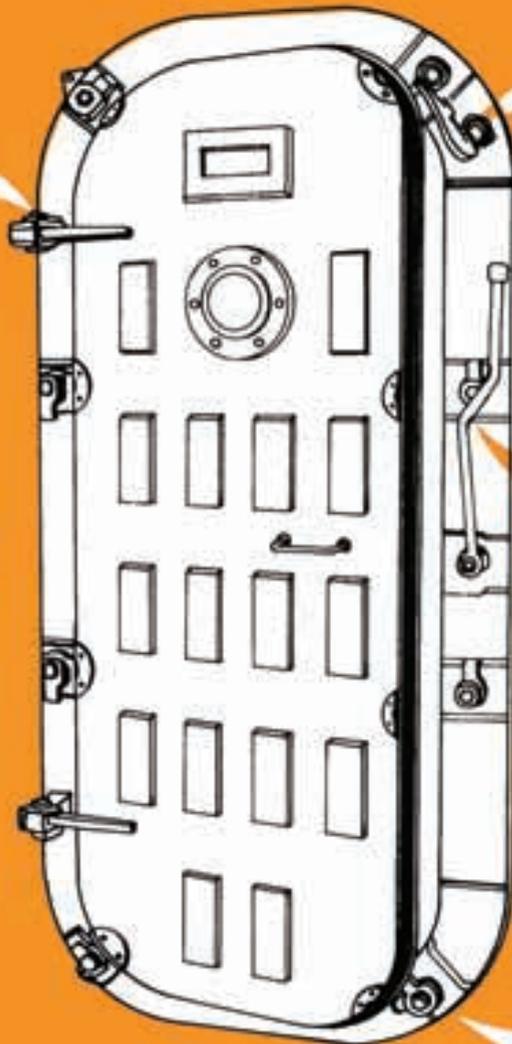
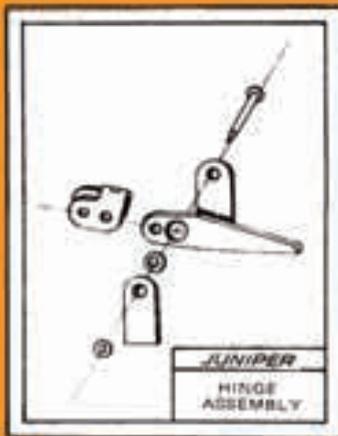
Conversely, the sellers of those ships believe that those freight rates are a temporary aberration. They expect to make their money by selling ships for more than their real worth, or as it is known in the business by exercising "the asset play".

Dedicated cycle watchers believe that eventually the sellers will be proved right; ships being built and on order will exert increasing downward pressure on freight rates and cause the speculative bubble to burst. Perceptive buyers will have liquidated or locked in their profitable positions prior to this downturn, but not all buyers will have the discipline and foresight to do that. At that point, our buyer and seller will face radically different situations.

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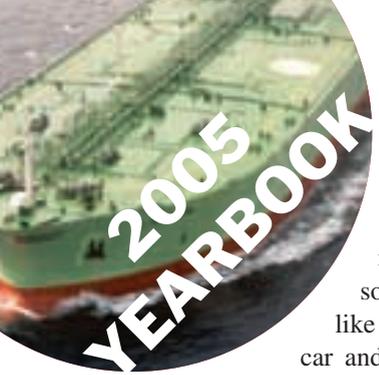
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by his buyer. To put this transaction in more personal terms, it's like buying a new car and getting 80% of the price, or more, for a 10 year old trade-in. One of the byproducts of the shipping cycle is that the construction of new ships to replace those previously sold to eager buyers is, in a sense, subsidized, by the original buyer's money source. If the original purchase was financed by a bank loan, then the bank may be said to be unwillingly subsidizing the new construction; if securities were sold to finance the original purchase then the holders of the securities are filling that role.

As the cycle starts downward, it is interesting to compare the vessel operat-

ing costs of our original buyer and seller. The original seller now has (or will soon have) a new ship, largely paid for by the prior sale of his older ship to our original buyer; the operating efficiency of a new ship and low debt will result in a comparatively low operating cost. On the other hand, the original buyer is burdened by an older, less efficient ship and higher debt, resulting in a comparatively high operating cost.

As freight rates fall, some owners, burdened by those high operating costs will be forced to retrench. And for some of them, ship values that fall in parallel with falling freight rates will mean distress sales, scrapping, and, in the most extreme cases, bankruptcy. Distress sales tend to lower the fleet average operating cost and breakeven charter rate and bankruptcy is a primary reason for the disappearance of weak and overextended shipping companies.

FUZZY OUTLOOK? Given historical precedence and current financial data, the picture is not clear as to whether tanker rates will keep charging upward or start to descend in the the second half of 2005 and beyond



Those effects may be regarded as positive aspects of the dynamics of the shipping cycle.

For shipping cycles prior to the mid 1990s, distress sales and bankruptcy were the province of conventional bank financing and the inability of a borrower to repay a loan. But the recent significant number of shipping company stock offerings has fundamentally changed that relationship. Now, in many cases, it is no longer necessary for a ship owner to borrow money to buy ships. The stockholders have assumed that risk in exchange for the expectation of appreciation in the price of the shipping company stock. The risk from the downside of the shipping cycle has been largely passed from the shipowner to the shipping company stockholder.

This assumption of risk by stockholders is puzzling because it is taking place at the time in the shipping cycle when risk is at its maximum. With freight rates and ship resale prices at historic highs, there is no place for those markets to go, sooner or later, but down, and shipping company revenues, earnings and stock prices will follow.

The cliché "buy low, sell high" has been inverted, and sold to investors in a triumph of modern salesmanship. Logic and history would seem to indicate that the best time to invest in a shipping company is when the shipping cycle is at its low point; that is when the company's potential earning power is at its highest and the associated risk at its lowest. But logic and history seem to have no place in the strategic plans of investors in shipping companies. That was demonstrated convincingly in the late '90s when a number of shipping companies issued junk bonds and subsequently defaulted to great investor anguish. Informed opinion at the time

prophecied that securities markets would be closed to most shipping companies for a very long time. But that turned out to be not the case, and only a few short years later a new set of investors has come forward to take the bait. Perhaps there is an interior cycle within the shipping cycle, the shipping investor cycle which is only a few years long but which brings in new investors, sophisticated in the ways of Wall Street, but naive in terms of the shipping industry. Maybe the traditional bulls and bears should be joined by sheep to be sheared.

About the Author
Sydney P. Levine is the President of Shipping Intelligence, Inc., a New York maritime economic consulting firm. Its activities fall mainly into three areas: First, the publication of the Shipping Monitor; Future Ship Market Trends; and the Ship Resale Value and Time Charter Rate Guide. These publications are based on extensive proprietary databases and analytical models of the ship resale and charter markets. Second, the valuation of ships, both current and past values as well as future values and their probabilities. Shipping Intelligence is a leader in constructing methods for the appraisal of hard to value vessels.

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Northrop Grumman Appoints Gunter, Mulherin

Northrop Grumman's Newport News sector named **Robert L. Gunter**, 48, sector vice president, operations and **Matthew J. Mulherin**, 45, sector vice president, programs. As vice president



Robert L. Gunter



Matthew J. Mulherin

of operations, Gunter will be responsible for manufacturing, planning, resource management, sourcing, supply chain management, logistics and supplier quality, and facilities and waterfront services for the Newport News sector. He will also take on the role of president for Newport News Industrial Corp., a business unit that markets specialized marine and industrial products and supplies out- age services for the power generation industry. Prior to this appointment, Gunter served as vice president for aircraft carrier programs and vice president of engineering. As vice president of programs, Mulherin will be responsible for executive oversight for shipbuilding programs at Northrop Grumman Newport News to include the CVN 21 and CVN 77 aircraft carrier programs, carrier overhaul and the Virginia-class submarine program. He is also responsible for planning and production control for these programs. Mulherin began his career at Newport News in 1981 as a nuclear test engineer. He most recently served as vice president for the CVN 21 program.

EMMF Launches Deliveries in Istanbul

ExxonMobil Marine Fuels (EMMF) has started delivering Marine Gas Oil (DMA) in Istanbul, Turkey. Operations, which began in March 2005, are carried out from the Cekmece terminal in Ambarli, which is about two hours from Kumkapi, the main anchorage area of Istanbul. The product is delivered by a contracted barge, Kucukkoy, which has a capacity of 220 tons, and is operated by EB Petrol Ltd.

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MADCON Completes Projects

MADCON Corp. has completed structural repairs to a collapsed well in the South Marsh Island area using its

patented repair techniques. The project successfully restored the well and caisson so that the well could be brought back on line. The company has also completed structural underwater repairs to platforms in the High Island area, and completed a pipe line jetting project on over 16,800 ft. of pipe with over 120

crossings.

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LR Approves GE Gas Turbine for LNG Ships

Lloyd's Register has issued an Approval in Principle of GE Energy's LM2500-based, gas turbine propulsion

system for use on liquefied natural gas (LNG) ships.

Gas turbine propulsion systems have been widely used on naval and cruise ships, but are new to LNG vessels, and GE is confident that system will be embraced by the market.

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Shipbuilding and IMO's New "Goal Based Standards" Approach

by William N. France

Goal Based Standards (GBS) portend nothing less than a paradigm shift in the industry approach to ship design and construction.

In November 2003 at the 23rd session of its Assembly, IMO adopted Resolution A.944(23) approving a six-year "Strategic Plan" for the organization, the first such plan ever adopted. The Plan is a far ranging document articulating three strategic efforts: to enhance the status and effectiveness of IMO as the primary international forum for technical matters affecting international shipping; to develop and maintain

a comprehensive framework for safe, secure, efficient and environmentally sound shipping; and, to improve the safety, security and environmental records of shipping while enhancing the industry's profile in the eyes of society. These efforts are aimed at enabling IMO to achieve the objectives of its Mission Statement, namely:

to promote safe, secure, environmentally sound, efficient and sustainable shipping through co-operation ... by

adopting the highest practicable standards of maritime safety and security, by efficiency of navigation, and by the prevention and control of pollution from ships, as well as through consideration of the related legal matters and effective implementation of IMO's instruments with a view to their universal and uniform application.

Tucked away under its second strategic effort is the undertaking that: "IMO

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will establish goal-based standards for the design and construction of new ships."

According to IMO's Maritime Safety Committee ("MSC") Chair, **Tom Allan**, speaking on the subject at the recent Connecticut Maritime Association conference, goal based standards, or "GBS" in the increasingly visible acronym, should reflect "broad, over-arching safety, environmental and/or security standards that ships will be required to meet during their lifecycles" and provide the "foundation of the future development of international regulatory standards" for the design and construction of new ships. GBS should also be "clear, demonstrable, verifiable, long standing,

implementable and achievable, irrespective of ship design and technology; and specific enough in order not to be open to differing interpretations," according to the MSC working group.

Allan candidly admitted that progress to date in developing GBS had to be considered preliminary not only because of divergent views of a number of delegations but also because some questioned whether there was even a common understanding of the term. The concept does not lend itself to ready definition. One attempt at clarification states that GBS are neither prescriptive nor proscriptive; rather the stated goal may be achieved by any number of effective means. For instance, rather than specifying the dimensions, materials and strengths of the railing at the edge of a cliff, the goal based approach to safety turns the process around. The underlying goal-people should not fall

off the cliff-first needs to be clearly articulated; then the goal may be approached utilizing risk-based tools to identify the effective solutions, only one of which is a fence. Rules and regulations are still required, but instead of circumscribing solutions they arise from a rational approach at reaching the goal of established levels of safety.

For hundreds of years, the shipbuilding industry has relied on practical experience as promulgated in sometimes widely varying national and classification society rules, regulations, codes and standards. GBS portend nothing less than a paradigm shift in the industry approach to ship design and construction. It is claimed that shipyards will no longer be able to peddle lower steel weights by building to one class society's rules rather than another's. Engineers will be unable to specify scantlings that vary significantly for

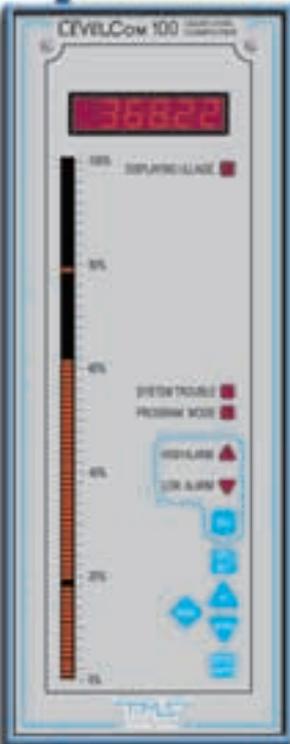
similar vessels to be built for the same service. In fact, designers and shipyards will be brought more completely within the IMO regulatory framework than ever before.

While the hope is that ship design and construction will become more uniform it is also likely that it will become more complex as well. The real question is whether this ambitious approach can be realized in practical standards and an accepted and workable methodology.

The IMO has delegated development of GBS to the MSC which has had several meetings since the November 2003 Assembly. Some progress has been made in fleshing out a framework for GBS. Prior to the most recent MSC meeting in May 2005, it was provisionally agreed that a basic five-tier system would be utilized. The first tier, applicable to all vessels, established the following working goals:

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Ships are to be designed and constructed for a specified design life to be safe and environmentally friendly when properly operated and maintained under the envisaged operating and environmental conditions in intact and foreseeable damage conditions throughout their lives.

Significantly, at this early stage, these goals have been limited to new ship structural construction standards although basic principles are intended to apply to any development of future GBS for other vessel components such as machinery, equipment, electrical systems and fire protection. It is even envisaged that vessel criteria, like stability and structural and watertight integrity, and operational standards, like training and watch-keeping standards for seafarers, will be the subject of goal-based regimes.

Five separately stated definitions further elaborated on those goals. Thus, "specified design life" is the nominal period that the ship is assumed to be exposed to operating and/or environmental conditions and is to be used for selecting appropriate ship design parameters. "Safe and environmentally friendly" means the ship will have adequate

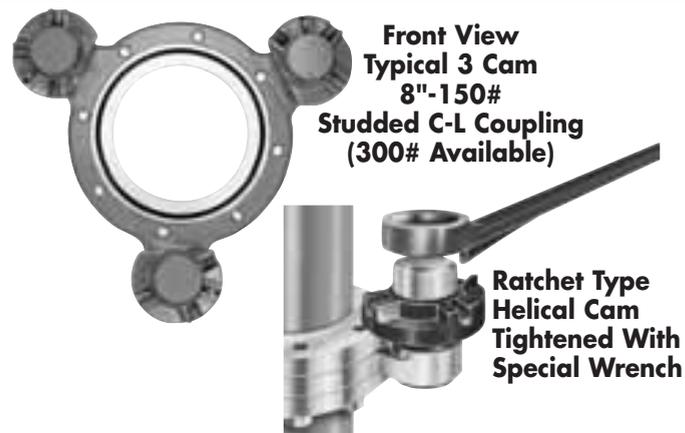
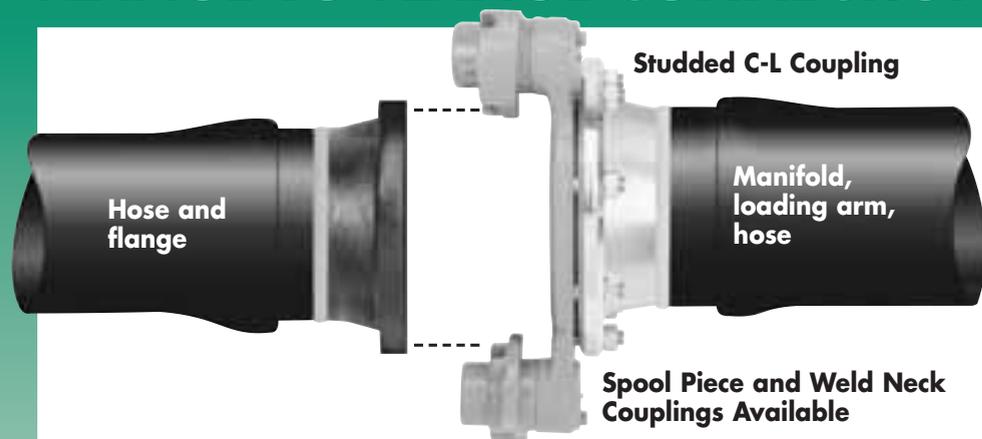
operational strength, integrity and stability to minimize the risk of loss or pollution in the event of structural failures. In addition, the ship is to be constructed of materials environmentally acceptable for dismantling and recycling. "Safety" also requires the arrangement of ship structure to provide safe access for inspection and maintenance. "Envisaged operating and environmental conditions" are to be defined by the vessel's operating area throughout its life. And, "foreseeable damage conditions", according to one delegation, should reflect collision, grounding, flooding or other damage conditions reasonably expected for the type of vessel under consideration.

Functional requirements to meet these goals appear at the Tier II level. It is anticipated that articulation of goals and their corresponding functional requirements will be an iterative process leading to refinements in both tiers. There has also been general agreement to limit the functional requirements to bulk carrier and tanker structures for the time being. The intention is to expand the functional requirements to all vessels once sufficient experience has been gained from working within this more



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limited scope. Even so, this narrowed focus was sufficient to identify a number of crucial issues for consideration

by the MSC working group during the committee meeting of 10-20 May. The draft report of the GBS working group has just become available and describes in detail the current status of this project. While the basic principles of GBS have been reaffirmed, methodology was the subject of some debate. There appear to be two schools of thought: the first,

strongly argued by Germany, Denmark and Norway, among others, is that GBS functional requirements should derive from fully risk-based analyses.

This requires establishing minimum levels of acceptable risks, say for loss of life, health and pollution, and then assessing by various risk analysis methodologies the probabilities of their

occurrence in the vessel's operating environment for various failure modes with alternate structural arrangements. Under such an approach, a ship's "design life", for example, is not a meaningful expression because so long as the level of safety of the ship exceeds the minimum safety level established by IMO the ship may remain in service. And, with proper operation, repair and maintenance the actual service life can be quite a long time.

The other approach, characterizing much of design criteria to date, is "deterministic" which, to continue the example, would assign a numerical value to "design life" and rely on currently understood design criteria to specify a structure that should function for that period of time. The working group appears to have reached majority agreement that, in the short term, Tier II functional requirements will be expressed as numerical standards with further consideration of risk-based methodology postponed until the next session. That will provide those delegations supporting the risk-based approach an opportunity to submit more detailed presentations. Both Greece and the United States expressed a pragmatic approach: because the data sets needed for a fully risk-based methodology were enormous and the efforts for their analysis and calibration to current standards would require years, the more prescriptive approach should be followed in order to achieve practical standards for tankers and bulk carriers in the short term. It was also noted that the designs of bulk carriers and oil tankers has reached maturity and standardization following decades of trial and error. Accordingly, prescriptive design criteria based upon such experience "cannot be unrelated" to that based on risk analysis.

As a practical result, the working group agreed on a 25 year "design life" for oil tankers and bulk carriers engaged in unrestricted service under the Tier II functional requirements. The scope of these standards was also clarified; they are restricted to oil tankers, pure chemical tankers are not included. Further, oil tankers and bulk carriers not operating in unrestricted service are also excluded.

In a similar vein concerning the Tier I goals, ambiguities inherent in the words "envisaged" and "foreseeable" modifying operating and environmental conditions and damage conditions was removed by substituting the word "specified" since it was the intention that IMO would specify those limits. The group agreed that it would be unreasonable, for instance, to expect ships to be designed to withstand more severe damage conditions than those already specified in

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As to environmental conditions, a North Atlantic functional requirement was thought appropriate especially since bulk carriers and oil tankers in unrestricted service were being considered.

Concerning fatigue life, which previously was agreed to be longer than design life in order to protect against the uncertainties in calculating fatigue life and to provide a factor of safety, the working group agreed that it did not need to be longer than design life. Using the North Atlantic as a design environment was considered conservative since ships do not generally trade exclusively in those waters and the factor of safety issue was already included in structural strength functional requirements.

The working group clarified that functional requirements for "structure" did not include requirements for superstructures or accommodations; they were limited to hull structures. Structural strength functional requirements are to include safety margins for design parameters whose calculation involves uncertainty, including "loads, structural modeling, fatigue, corrosion, material imperfections, construction workmanship errors, buckling and residual strength." In addition, ships must be able to withstand not only the environmental conditions anticipated for the design life but also a complete range of appropriate loading conditions: fully, partially and alternate-hold loaded, multi-port and ballast and occasional overloading during cargo operations. The loading condition requirement is aimed those shipyards or designers who restrict the required loading manuals to a few or even unrealistic loading conditions. Structural strength is also to be assessed against specific modes of failure: buckling, yielding and fatigue. Ultimate strength calculations are to be made for the hull girder and plates and stiffeners. Residual structural strength is to be sufficient to withstand the damage conditions specified in SOLAS. And "ships should be of redundant design and construction so that localized damage of any one member will not lead to immediate, consequential failure of other structural members leading to loss of structural and watertight integrity of the ship."

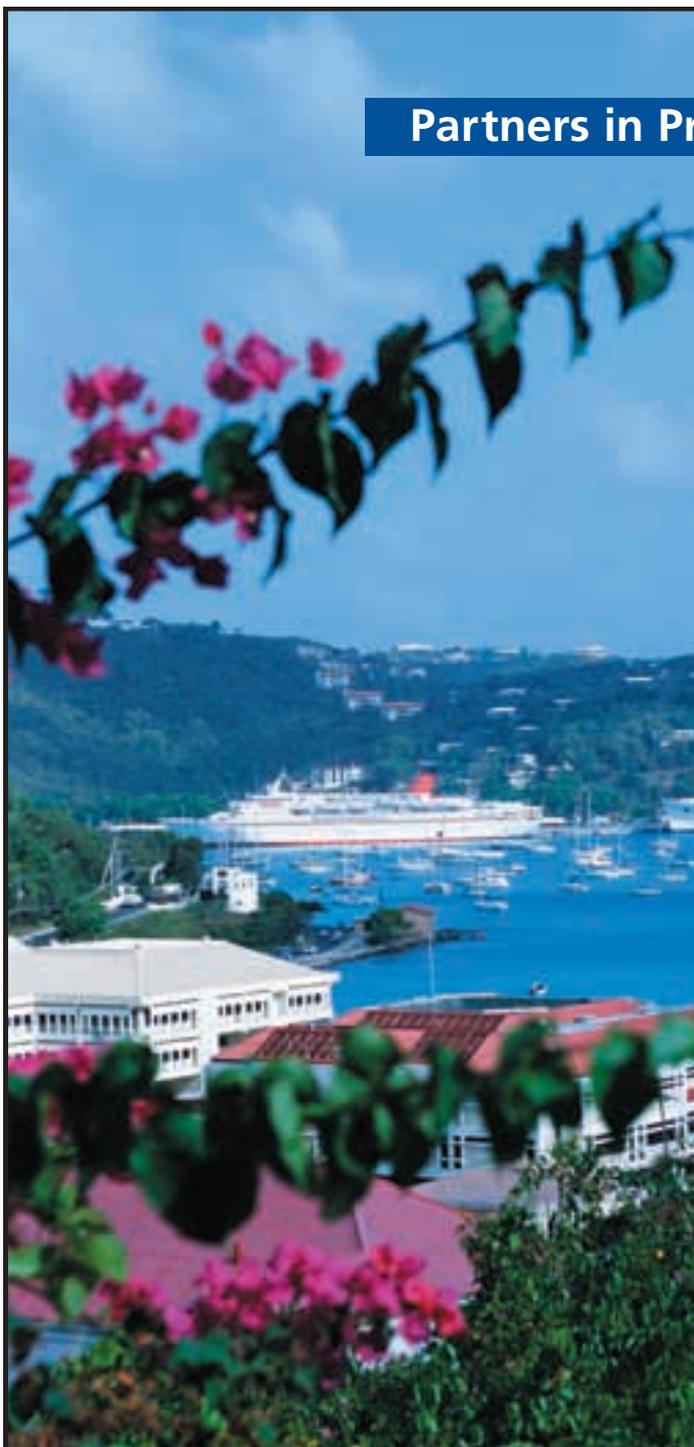
A new functional requirement was added to the earlier draft for adequate watertight and weathertight integrity for the intended service and for adequate strength and redundancy of associated hull opening securing devices.

Measures to protect against corrosion are required to ensure that structural strength scantling requirements are maintained throughout the ship design

life. Sub-functional requirements are specified for coatings and the corrosion allowance, or addition. These had been controversial in earlier meetings. In its submission for the December 2004 MSC meeting, Greece severely criticized a position advanced by European shipyards to the effect that a return to

"robust ship types with a safety concept based on increased scantlings" was undesirable considering the commercial success of modern new-building, fully optimized ship structures-that is, ships that minimize lightship weight while maximizing payload. Greece argued that it was exactly the concept of an opti-

mized ship design-light construction and inadequate coating protection-that must be avoided since it had resulted



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in the early failures of ships causing unacceptable pollution and loss of life. "It could even be said that this optimization is no more than

built-in design obsolescence." The current functional requirement is that the corrosion addition or allowance be sufficient for the specified design life. However, no percentage is specified; rather, the addition is to be determined based on "exposure to corrosive agents and atmospheres and whether the structure is protected by a corrosion pre-

vention system." The addition of the last qualifying phrase is significant because at least one delegation had earlier proposed that the design life corrosion addition should be based upon bare steel and therefore independent of any coating; the coating or any other corrosion prevention system, if applied, should serve as a safety margin. A corrosion addition

sufficient for the design life and independent of corrosion protection would have been quite novel in an industry notorious for designing and building to minimum standards.

It is now quite unclear how the current functional requirement will account for coating systems that will undoubtedly have design lives (and most certainly service lives) much shorter than the 25 year design life. Further, the coating life functional requirement no longer specifies a design life and reads as not much more than a general exhortation that surface preparation and coating maintenance shall be in accordance with manufacturers' specifications.

There is a functional requirement for design transparency: the process should be reliable, controlled and sufficiently transparent to confirm the safety of the new, as-built ship, consistent with protection of intellectual property rights. Similarly, construction should be in accordance with controlled and transparent quality production standards, also consistent with intellectual property rights. However, the working group rejected a proposal by Japan to include a footnote that IMO would develop construction quality guidelines. A construction survey plan is to contain requirements to ensure compliance of construction with classification rules and GBS.

The working group also rejected a proposal by Japan that IMO develop standards for ship maintenance, limiting the functional requirement to design and construction to facilitate ease of maintenance.

The working group was unable to consider Tier III verification and compliance criteria. These are intended to be methods, practices and procedures, to confirm that classification societies' prescriptive rules accord with Tiers I and II, that the designs of individual ships meet class rules and that their construction enables them to satisfy class rules throughout their design lives. This verification is to be "credible, transparent and auditable."

Tiers IV and V will be the detailed class requirements and the codes of practice for construction, maintenance and operation, respectively. At this time, MSC intends that these nuts and bolts standards should be developed by class or other recognized organizations.

Plainly the serious additional complexity arises with Tier III's verification requirements, especially the requirement that the Tier IV and V rules and regulations comply with the Tier I and II goals. Most important is the question of who will perform those verifications? Is it a role for Classification Societies who, as a practical matter, are obliged to verify that design and construction com-

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plies with their own rules? Some IMO voices say absolutely not; class cannot both establish detailed codes and verify their compliance with functional requirements and goals.

The only other extant stakeholders even remotely qualified for this task are flag states, and then only a few have the necessary skills and expertise. Most rely on classification societies to discharge their international duties. Moreover, flag states are not organized as a group to perform such a task in any event.

Another possibility is that the International Association of Classification Societies ("IACS"), as a body distinct from its members, could undertake the verification task. IACS has just completed a lengthy project of formulating common structural rules for tankers and bulk carriers, a most worthwhile and positive step for the entire industry. The process has considered both prescriptive and risk-based methodologies. IACS' efforts have been transparent and closely followed and will surely serve as a guide to MSC's further efforts with GBS.

Related to the question of who will perform the verification tasks is the question of coordinating the evolution of GBS with existing agencies. In particular, the European Union and its European Maritime Safety Agency ("EMSA") established after the ERIKA casualty. The EU's objectives in establishing EMSA are almost identical to IMO's mission statement at the outset of

this article. In order for IMO's GBS effort to have any hope of success, it will need the full support and cooperation of all organizations and agencies with overlapping jurisdictions. It is surely a positive development that the Working Group chair is from the U.S. Coast Guard.

It will also be most important that risk-

based methodologies be incorporated into GBS development as soon as practicable. There is a tendency in approaching an ambitious project like this to simply restate what has gone before, because it is familiar. The outcome of the next MSC meeting in December will better reveal the direction that IMO and MSC will follow.

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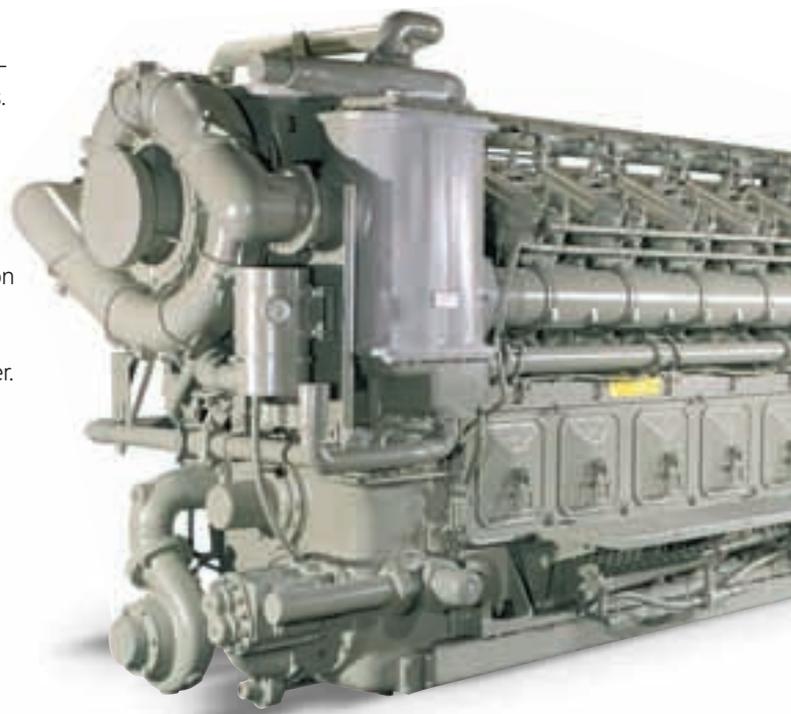
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William N. France is a senior partner of Healy & Baillie, LLP, a New York law firm with a focus in maritime law, as well as a licensed professional engineer with a degree in naval architecture and marine engineering.

Crossing the Boundary Lines

By Dennis Bryant, Senior Counsel,
Holland & Knight LLP



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Not long after the rules of the nautical road were standardized in the latter portion of the nineteenth century, it was recognized that there needed to be a clearly defined boundary between where masters of ships should adhere to the International Regulations for Prevention of Collisions at Sea (COLREGS) and where the U.S. Inland Navigation Rules were applicable. Congress met the challenge in 1895 when it enacted the Boundary Line Act, giving the U.S. Coast Guard (originally the Secretary of the Treasury) authority to establish "appropriate identifiable demarcation lines dividing the high seas from harbors, rivers, and other inland waters of the United States, for the purpose of determining the applicability" of the navigation rules. The boundary or demarcation line for U.S. coastal waters was duly established and appears on U.S. nautical charts. Note - until 1980, the United States had three sets of internal navigation rules. In 1980, Congress subsumed the Western Rivers rules and the Great Lakes rules into the Inland Rules. The COLREGS Demarcation Lines are defined at Title 33, Code of Federal Regulations (CFR) Part 80.

Over time, the value of concept of a boundary line was recognized for purposes other than just the rules of the nautical road. In 1980, Congress officially authorized the U.S. Coast Guard to "establish appropriate identifiable lines dividing inland waters of the United States from the high seas" for other purposes. Wasting no time, in 1981, the Coast Guard promulgated its Boundary Line regulations - now located at Title 46, CFR Part 7.

The new boundary lines are used to delineate the application of: the statute establishing the length of towlines (33 USC 152); the load line statute (46 USC 5102); the seagoing barge statute (46 USC 2101(32)); the seagoing motor vessel statute (46 USC 2101(33)); the statute regarding small freight vessels operating in Washington and southeast Alaska (46 USC 3302(d)(1)(A) and (B)); the Officers' Competency Convention Act (46 USC 8304); the statute regarding fire-retardant material on U.S. passenger vessels (46 USC

3503); and the statute regarding safety standards for U.S. fishing industry vessels (46 USC 4502(b)(1)(A)). The Coast Guard also uses the boundary line to determine the application of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW Convention) (46 CFR 15.1101). The boundary line may also apply with regard to determination of whether a vessel is "seagoing" as that term is used in the Limitation of Liability Act (46 USC App. 183 and 188). The boundary line regulation previously applied to the Vessel Bridge-to-Bridge Radiotelephone Act (33 USC 1203), but since 2002 that statute has become applicable to vessels operating within the 12-nautical mile U.S. territorial sea.

At first blush, the two sets of regulations appear to be the same - and in many respects they are. Except as otherwise described in either the COLREGS demarcation line regulations or the boundary line regulations, the lines follow the general trend of the seaward, high water shorelines and lines continuing the general trend of the shoreline across entrances to bays, inlets and rivers. There are, though, various small differences, related directly to why the Coast Guard sought a separate authority for the second set of rules. For example, in 1985, the Coast Guard moved the boundary line several hundred yards offshore at Bakers Haulover Inlet, Florida to enable inland dredges to work the harbor inlet and approaches without having to undergo inspection for certification. The cost and man-hours necessary to prepare for and accomplish the inspection were not considered justified by the agency considering the short distance from the inlet entrance that the dredges would be operating.

While there may have been collisions that were caused, at least in part, by confusion over whether the international or inland rules of the nautical road applied, it has proven difficult to locate any reported litigation on this point. Generally, the boundary or demarcation line is mentioned only in passing in the reported cases.

One case, though, containing an extended discussion of the demarcation line is the Louisiana Boundary Case decided by the U.S. Supreme Court in 1969. The state of Louisiana brought suit against the federal government, arguing that it was entitled to exclusive possession of and power over (including the power to tax oil and gas wells) over certain lands underlying the Gulf of Mexico. The submerged lands in

question were more than three geographical miles from the coast. Among other things, Louisiana argued that the demarcation line, as established by the Commandant of the Coast Guard, defined the coast of the United States and that Louisiana was entitled to exclusive possession of all submerged lands off its coast up to three miles seaward of the demarcation line (referred to by the Court as the Inland Water Line). The Court went through an extended analysis of the history and purpose of the demarcation line, holding that its purpose was limited to application of the rules of the nautical road. Justice Black filed a vigorous dissent, stating in part that use in this case of the demarcation line as established by the Commandant of the Coast Guard "will put a stop to eternal litigation and help relieve this Court of the heavy burden repeatedly brought upon us to make decisions none of us have the time or competence to make."

Whether the U.S. Supreme Court has the time or competence to decide boundary line controversies is beyond the scope of this brief discussion. Fortunately, though, application of the COLREGS demarcation line and the boundary line has, at least for now, been limited to specific purposes. Mariners must continue, though, to fully understand when they cross the boundary lines and the implications thereof.



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

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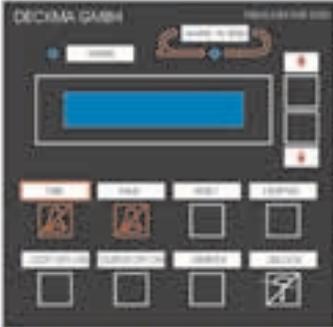
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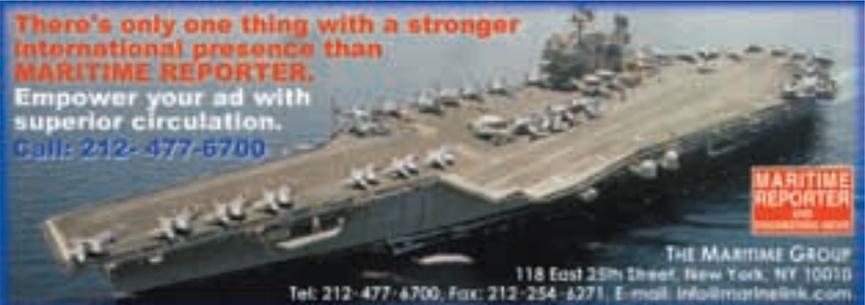
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Cooper Receives LR Type Approval for Bearings

Cooper Bearings Group said that full Lloyds Type Approval has been granted for five years for all Cooper split to the shaft marine propulsion bearings up to 600mm (24 in.) group sizes. The

approval covers 01 and 02 Series bearings BCP (bearing, cartridge and pedestal) BCF (bearing, cartridge and flange housing for bulkheads) and Z-Line (bearing, cartridge and pedestal). In Cooper nomenclature, the 01 Series are medium duty bearings and the 02

Series are heavy duty. In the marine sector, Cooper bearings are typically specified for propulsion shafting or waterjet drives, although the products can be used on winches and fans or where a bearing is in a trapped position. The split to the shaft construction of the

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Parker Signs Agreement

Parker Hannifin signed a co-marketing agreement with Mercury Computer Systems of Chelmsford, Mass., a provider of high-performance embedded digital and signal image processing computer systems for real-time defense applications. The co-marketing agreement lays the groundwork for an ongoing relationship between Mercury and Parker's Advanced Cooling Systems (ACS) business unit, part of the Parker Aerospace Group. Parker ACS provides liquid cooling system solutions that offer customers flexibility and choice in design, mechanical and fluid system packaging, and field maintenance capabilities.

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MAN B&W Diesel Expands Team

MAN B&W Diesel AG of Augsburg is expanding its Executive Board. The company's Supervisory Board appointed **Tage Reinert** as a member of the Executive Board responsible for controlling. The 48 year-old Dane will take up this position in the MAN B&W Diesel Group by September 1, 2005 at the latest. The other members of the company's Executive Board include the Chairman of the Executive Board of MAN AG, **Håkan Samuelsson**, who serves as working chairman, **Fritz Pape** as deputy chairman, **Dr. Stefan Spindler**, **Dr. Peter Sunn Pedersen** and **Dr. Stephan Timmermann**.

ChevronTexaco Changes Name

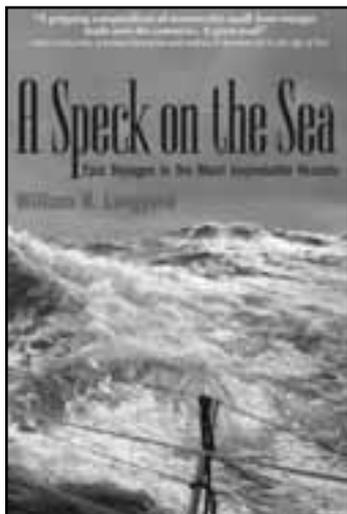
ChevronTexaco is changing its name to Chevron Corporation, effective immediately. In addition to its new name,



Chevron Corporation unveiled a new visual image — a refreshed and redesigned version of the red and blue Chevron logo. The company will continue to expand and support its global retail business through its powerful portfolio of retail brands — Texaco, Chevron and Caltex, all of which are leaders in key markets worldwide. The company will retain its broad portfolio of products and lubricant brands. The company also will retain its stock ticker symbol, CVX, which trades on the New York Stock Exchange.

Set Sail on an Epic Voyage

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A Speck on the Sea
Epic Voyages of the Most Improbable Vessels
By William H. Longyard

Reviewed by Edward Lundquist

Most mariners can appreciate a good ending to a bad voyage. Many of us have been in heavy weather and felt our ship just wasn't big enough. I can recall being in stormy seas aboard a U.S. Navy ocean-going fleet tug and thinking my ship was just too tiny for those big waves.

Compared to the craft that **William Longyard** tells us about in his book, "A Speck of on the Sea," my 195-ft. tug is a giant. This compendium is itself an epic voyage into the world of epic voyages: journeys of daring, desperation, danger and drama. These are heroic stories about great ocean adventures accomplished in the most unusual and smallest craft imaginable. Some incredible tales result from necessity or calamity, such as a shipwreck or a plane crash. Longyard sheds light on legends, offering evidence that kayaking Inuits were the original long-distance solo-voyagers who sailed as far as Europe. We get the whole story of cast-off Captain

William Bligh, set adrift near the Friendly Islands by the unfriendly crewmembers of HMS Bounty in 1789. He didn't set out to perform an amazing feat in a small boat. But despite the unanticipated consequences, Bligh and his shipmates traveled 4,000 westward to Kupang, Timor with just one casualty, a sailor killed very early in the voyage in an altercation with the Tongans. Naval aviators **Harold Dixon**, **Anthony Pastula** and **Gene Aldrich** ditched their Douglass Devastator in the drink in the South Pacific early in World War II. They survived their crash and crawled into a small inflatable rubber raft to discover their boat contained no water or food or even a signaling device. Their survival gear consisted of a .45 pistol, a whistle and rubber repair kit for the boat. They had no success shooting birds or catching fish with their makeshift hook (fabricated from a spring mechanism from an ammo clip); but they did have some

modest success spear- ing fish and birds, with a spear fashioned from a small knife. Any landfall would be welcome after being adrift for 34 days, but they were just as concerned about making landfall on a Japanese-held island as they were about food and water. They finally came ashore at the isolated Pukapuka, in the isolated Danger Islands, part of the isolated Cook Islands. Let's just say they were isolated, but safe! And they had traveled a distance of more than a thousand miles from where they went down! Some of these voyages were planned with a larger purpose, and some with really no purpose at all. The most unusual voyages were intentional journeys by unusual mariners seeking fame, fortune, fun, or something not even they could fathom.

Some adventurers are driven by an idea. American boat builder O. K. Ingersoll set out to build a better lifeboat, and sailed his

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26-foot square-rigged "Ingersoll's Improved Metallic Lifeboat," named the Red, White & Blue, from New Jersey to England in 35 days. In 1874, another American, Paul Boyton set out to demonstrate the effectiveness of a novel lifesaving outfit called the Merriman Inflatable Immersion Suit, by jumping over the side of a steamship Queen 30 miles off the Irish coast in a fierce storm. During

the night, 56 ships were lost around the British Isles. Not, however, Boyton, who remained safe and sound inside his buoyant suit. He paddled ashore, then continued paddling another ten miles to Cork, where the Irish-born Boyton was hailed as a hero. He liked the role of hero, because he later paddled in his

Merriman suit across the English Channel, the Straits of Gibraltar and Messina, down the Hudson, Mississippi and Missouri Rivers. John MacGregor is said to have practically invented the sport of canoeing or kayaking (two very different sports). He conducted some epic voyages in his small craft for a greater purpose: that of saving souls by handing out religious tracts from his canoe. He called it "Muscular Christianity," and he wrote about it in his 1866 book, "A Thousand Miles in the Rob Roy Canoe." He built 21-foot yawl-rigged catboat and sailed it alone across the English Channel and up the Seine to Paris, and later kayaked around the Holy Land and conducted other such voyages for the acclaim and adventure, and the chance to convert non-believers.

Few commercial fishing boats are smaller than a dory. For Danish-born Alfred Johnson, a Grand banks dory man out of Cape Ann, Massachusetts, his small flat-bottomed dory was a perfectly good boat to sail across the Atlantic. Doing so, he thought, would bring his some favorable attention at the upcoming 1876 Centennial Exhibition in Philadelphia. He decked over a dory, built a small hatch to sit in, fitted the boat with a tiller, modified it to carry stores, and named his craft the Centennial. He took a compass, some charts and supplies for the trip. Despite being battered by a gale, losing part of the hatch combing, taking on a great deal of water, actually rolling over at one point, and losing his stove and spoiling much of his stores, he still made it. He had one sail left, and dead-reckoned himself toward the Irish coast. Several ships came along side, offering him some food and water, and gave him his bearings. On Aug. 12, he arrived at Abercastle in Wales, and then continued on to Liverpool. If he was seeking fame, he had missed out on the Centennial Exposition. But he had earned fame as being the first solo Atlantic crossing in a small boat. Thomas Crapo would find fame. But to achieve it, he would need to sail the Atlantic in a smaller boat (establishing a pattern that continues to this day). For Crapo that meant doing what Johnson did, but with a boat half the size. His motivation was money. His dory, New Bedford, was just 19-feet, seven inches long. Crapo's wife, Joanna, insisted on going along, but to make his feat meaningful he forbade his wife from helping in any way. If he thought her presence might diminish his own accomplishment, having his young bride on the voyage contributed to the publicity value. The couple sailed on May 28, 1877. The 1,100 mile voyage was difficult. It took a toll on both of them, particularly Joanna. Although not

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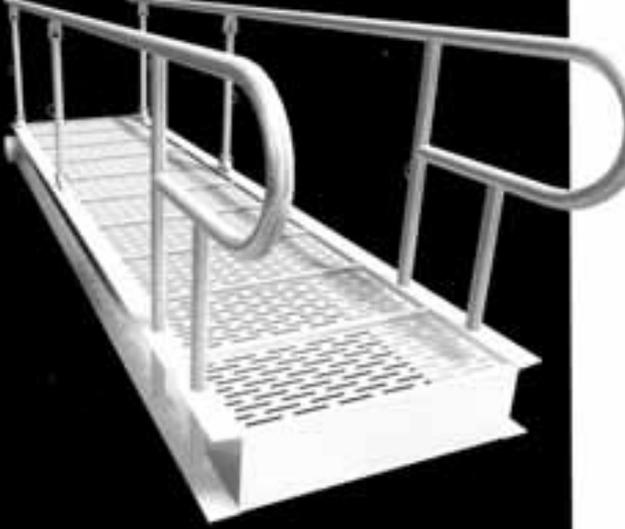
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allowed to help, she did serve as a lookout and contributed to the safe conclusion of the trip in crowded sea lanes. On July 21 they arrived at Penzance. There boat became a popular attraction around Europe and they earned a large sum of money. According to Longyard, **Joanna Crapo** was the first woman to sail across an ocean in a small boat. Later, Thomas would try to duplicate his glorious voyage in 1899, sailing from New Bedford to Cuba. Joanna was not with him on this trip. His body washed up in South Carolina after a fierce storm.

What could be smaller? How about a 19-and-a-half-foot "folding kayak?" This well-engineered craft, built by German **Franziskus Romer**, was complete with foot-operated bilge pump, inflatable gasbags and sponsons. Romer even had the foresight to conduct sea trials before embarking on an impetuous voyage. On June 3, 1938, he set out from the Canary Islands to the Antilles, a 3,000-mile journey. After 58 days at sea, fighting fatigue, hunger and sharks, Romer arrived at St. Thomas in the Virgin Islands. He was hailed as the new Lindberg. After recovering his strength, Romer decided to sail the rest of the way to New York, but was lost in a force-12 hurricane shortly after departing St. Thomas.

How about driving across the Atlantic? Australian **Ben Carlin** bought an Army surplus amphibious GP-A (General Purpose - Amphibious) craft at government auction, modified it with a "cabin" and large fuel tank, "waterproofed" the underside with neoprene rubber, recruited his wife, Elinore, as first mate, and in 1950, after months of fits and starts, left Halifax for the Azores. Carlin named his improbable craft Half Safe. It took 32 demanding and difficult days to reach the Azores, at about three knots, but after replenishing and some voyage repairs they continued to Cape Juby in the Azores. Elinore had seen enough, and divorced Carlin.(that's hysterical!) Ben enjoyed the experience, and set out to cross from Hong Kong to Japan, this time with another friend. In 1957, with yet another mate, he crossed from Japan to Anchorage, island hopping along the way, then drove to Montreal. The irascible Carlin couldn't get along with his partner, a journalist, on this trip either.

Floridian Hugo Vihlen wanted to cross the Atlantic in the smallest craft ever. In

1968, after several failed starts, Vihlen took his six-foot-long boat, April Fool, from Morocco and traveled the 4,480 miles in 69 days.

There is a common thread among the adventurers and their feats. If not necessity, then what would motivate a mariner to dodge severe storms in a decked-over dinghy while drugged on Dexedrine.

What could persuade a person to pilot a puny pleasure craft with precious and paltry provisions; dealing with demons, dementia, deprivation, despair, doubt, for a variety of motivations to demonstrate that they could do something no one else could possibly imagine? Fame? Fortune? Faith?

Or perhaps nothing better to do? This

collection of maritime memoirs and sea-going sagas is an adventure in and of itself.

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About the Author

Captain **Edward Lundquist**, U.S. Navy (Ret.) is a senior technical director with the Center for Security Strategies and Operations, Anteon Corporation, Washington, D.C.

UK: Still a Maritime Force

As celebrations begin commemorating its former naval glories and maritime heritage, Maritime Reporter reports on how the UK maritime industry is enjoying a shipbuilding and repairing renaissance and contemplating new market opportunities.

England expects that every man will do his duty and attend a series of events around Britain to commemorate the bicentenary of the Battle of Trafalgar and the death of Admiral Lord Nelson. Yacht races round the Isle of Wight; a Festival of the Sea; and an International Fleet Review involving ships from 35 nations — making up the largest ever multinational gathering of ships in history — are amongst a raft of events taking place throughout Britain this summer to demonstrate the country's heritage as a great seafaring nation and one-time world's greatest shipbuilders.

Of course, British shipbuilding is likely to never again enjoy the kind of order book that

results in an annual output of 2.5 million tons, as it did when it peaked in 1920, but it is entering a renaissance period in which 25-30 vessels are built annually and a reputation for sound repair and conversion work generates up to \$3.6 billion per year.

One view is that the U.K. shipbuilding industry has now realized that it's much better off concentrating on the vessels it can build and investing in better marketing strategies so that it can compete more effectively with the Northern European yards. This became apparent five years ago when the U.K. government supported a benchmarking exercise from which it was concluded that the shipbuilding industry can compete effectively without any vast increase in capital investment or new technology.

A yacht being built at Pendennis in the UK.



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UK Shipbuilding Masterclass

These conclusions manifested in MasterClass, a continuous business improvement initiative introduced by the Shipbuilders and Shiprepairers Association to assess "from top-to-toe" a shipyard's technology, processes and management and policy strategies. It built upon the established business improvement schemes within the aerospace and automotive industries.

Indeed, between 2001 and 2004, over 60 MasterClasses were undertaken in UK shipyards, boatyards, suppliers and subcontractors, delivering an average productivity improvement of 26% and leaving each company with a long-term improvement plan and the wherewithal to tackle continuous improvement year on year. Some of the companies that benefited from this scheme included Buckie Shipyard, Solar Solve, A&P Falmouth and VT Shipbuilding.

The MasterClass initiative came to an end last year after the UK Department of Trade and Industry changed the way in which it offers support to the industry. But despite this, the SSA intends to soon launch a similar concept, with, it is hoped, equally successful results.

The overall effect that this level of commitment has had on the UK maritime industry is indicative in the number of military contracts on the horizon. There is the CVF program, of course, and the A&P Group has been invited to bid for work on the Future Carrier which includes the building of super blocks to be constructed at the A&P dry docks at Hebburn, Southampton and Birkenhead. VT Group has been awarded a contract by the Ministry of Defence for the construction of a new 80 m Offshore Patrol Vessel (Helicopter) for the Royal Navy, while the Type 45 Destroyer program is progressing at BAE Systems' facility on the Clyde.

The UK market is dominated by the few big yards, like VT Shipbuilding, BAE Systems, DML and A&P, successfully engaged in the large ship market, but predominantly the industry is made up of smaller yards involved in niche markets such as designing and building high precision specialist and one-off vessels. The primary market being fishing vessels, survey ships, dredgers, OSVs, ferries, research vessels, tugs, short sea mini bulkers, fast ferries, military vessels and, increasingly, superyachts.

Superyacht Ambitions

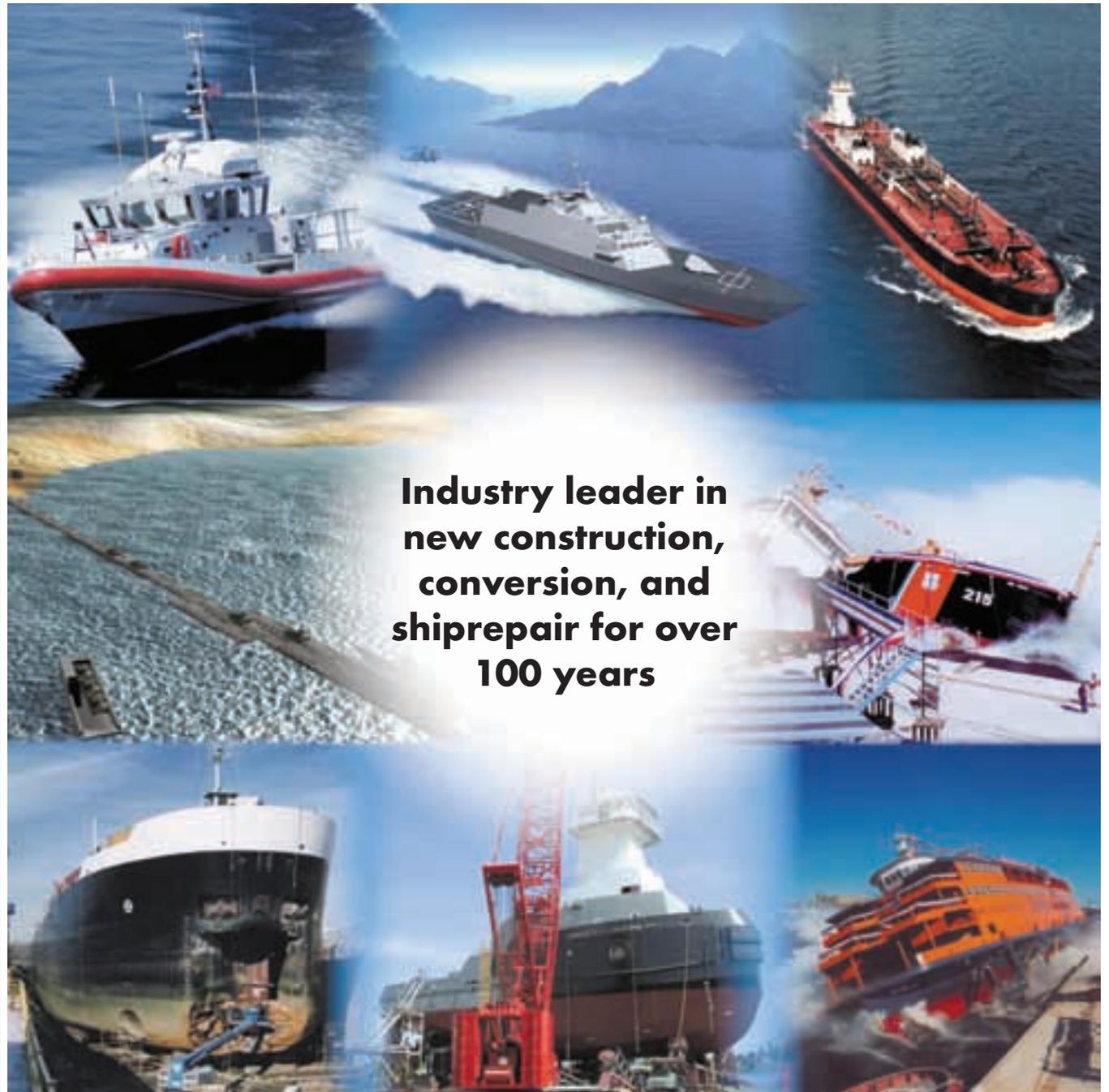
There is a synergy between the latter two says **Tom Dougherty**, director of the Shipbuilders and Shiprepairers Association, who believes established naval builders such as VT, BAE and

Babcock could soon join the likes of Pendennis and DML in building these luxury vessels. "Superyacht projects", he says, "are vessels that the shipbuilders of frigates, fast support craft and other military ships can quite easily turn their hands to because superyachts are also high specification, high-speed

craft that need to be built to the owner's exact requirements."

In fact, the SSA is currently trying to secure EU funding to lead a three-year \$4.5 million research project into optimizing shipyard processes for the specialist building requirements of superyachts in order to boost this market in the

UK. SSA assistant director **Karl Ward** divulged that the Association is working very closely with 11 part-



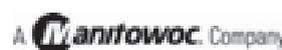
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ners, including those from Greece, Spain, Italy and Poland — of which the latter could send a shiver down the collective spine of traditional builders as steel can be produced cheaper there than the likes of Italy can import it.

The application for funding closes in September but the SSA hopes to have notification by the following March. "The project will look at market trends, build materials and what specialist skills are required [for this kind of work]," said Ward.

Repair Business

On the repair and conversion side, the UK has gained a solid reputation in this sector and purely in terms of turnover is now second only to Germany having seen an increasing trend year-on-year from for the past five years. From 2000 to 2003, turnover increased by 25% to \$512.6 million. The reasons for this increase as Ward remarked is because the big groups like A&P have been involved in some "fairly exciting" conversions. Ward said: "One of the reasons why repair yards are doing so well here is that there is always a market for incidental repairs but we also have very specialist skills available so we can do the added value conversions like the lengthening in 2003 of the !GARIEP, a De Beers diamond mining vessel by A&P Tyne, for example."

This major lengthening project was awarded to A&P Tyne Ltd. in August 2002, following intensive global competition. The repair yard utilised state of the art laser mapping technology before craftsmen performed the actual cutting and rejoining of the vessel.

"Any time a vessel like that is off-line it means a huge loss in costs so A&P turned it around in record time. A good indication of the yard's skills is that the owner brought the ship all the way from West Africa when there are yards out there to a European yard and A&P won that contract. It's testament to their skill in repair and conversion," he said.

Ship Recycling

Repair yards could also be best placed to benefit from new initiatives that could see the UK becoming a center of excellence for environmentally-safe ship decommissioning, recycling and scrapping — an area of research in which the SSA is also heavily involved.

As part of a wider \$9.8 million EU-funded project, the SSA is looking at the feasibility of a European ship recycling market and what kind of dedicated facilities and technologies would be required for established yards to undertake this kind of work. Tom Dougherty, SSA director, said "Ship recycling is a viable market and the UK Department for

Environment, Food and Rural Affairs (Defra) is looking seriously at the statutory requirements that will allow UK yards to get involved in this area in a sensible way."

A Defra Working Group has already been established to assess the capability of UK yards of handling the ship recycling process and to establish what kind of materials are involved, what pollutants are usually found onboard and

what capabilities marine and other industries have in dealing with the disposal of these materials in an environmentally-friendly way.

In an unrelated initiative, Haslar-based marine solutions provider QinetiQ has already developed a computer-based 'Green Passport' program that can detail hazardous materials commonly found within a vessel.

Based on guidelines developed by the

International Maritime Organization for documenting hazardous materials on merchant ships and detailed consultation with numerous classification societies and coastal authorities, QinetiQ's program can track and detail

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The UK lengthened the IGARIEP, a De Beers diamond mining vessel by A&P Tyne, in 2003.



the hazardous contents of a vessel from design through to disposal.

Equipment Suppliers

UK marine equipment suppliers, however, have experienced tough times over the last few years "but have emerged lean and hungry generally producing innovative and high tech products at competitive prices which the world's shipbuilding yards are prepared to procure and place on their makers lists", claims **John Southerden**, director of the British Marine Equipment Association (BMEA), emphasizing that some 70% of newbuild value can be in equipment alone. Marine equipment producers in the UK have had to embark on major export drives to survive and Southerden estimates that the majority of UK OEMs export up to 80% of their products, which encourages competitiveness and react favourably to quotes and delivery times with dispatch to keep ahead of the game. UK companies are establishing a very good image worldwide in respect of after sales service through long established agency networks and this can reduce the "through life" costs which shipowners, operators and managers face throughout the life of the ship. They also keep ahead of the competition by ensuring their products are class type approved by the leading classification societies, said Southerden. BMEA plays a major role in facilitating Government grants through U.K. Trade and Investment to ensure UK marine equipment suppliers are able to explore new export markets as well as further develop those where they have a foothold. "We have recently taken marine companies to Poland, Turkey, and China on outward trade missions to the shipyards, design centres and to meet shipowners," said Southerden, whose Association is able to arrange for firms to meet shipyard procurement teams on a one to one basis, matching the type of product with the actual buyer.

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Southerden said that Samsung Heavy Industries had shown him a list of its U.K. suppliers, which "embraced the majority of our members", while the Procurement Director at DSME in charge of their massive newbuild programs, singled out Hamworthy's unique and innovative boil-off gas reliquefaction system for LNG propulsion units." In December, last year the UK-based fluid systems supplier won orders and a letter of intent totaling \$87.6 million to supply eight LNG Reliquefaction Systems (RS) to the world's largest LNG carriers — and the first to use low-speed diesel propulsion engines — being built in Korea by Daewoo Shipbuilding and Marine Engineering (DSME). At the time of writing, Hamworthy has also announced firm orders for four more liquid natural gas reliquefaction systems plus an option for one further shipset from Samsung Heavy Industries (SHI). The systems will be deliverable to SHI over the period mid 2006 to mid 2007. However, due to commercial sensitivities Hamworthy was unable to disclose to Maritime Reporter the value of the contract. These LNG tankers will be part of the fleet that will carry LNG from the expanding QatarGas II field. The new orders bring the total number of confirmed Hamworthy LNG-RS on order to 12 shipsets. Kelvyn Derrick, Chief Executive, Hamworthy plc said: "They reflect a growing trend for oil companies to seek the long term cost savings provided by slow speed diesel propulsion with LNG-RS.

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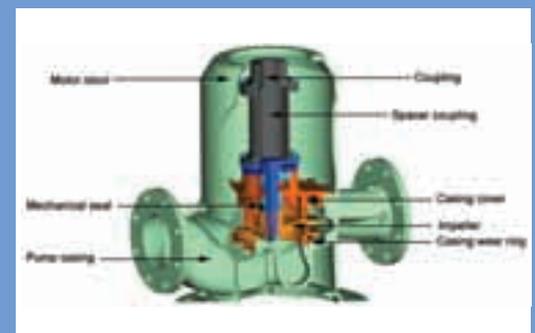
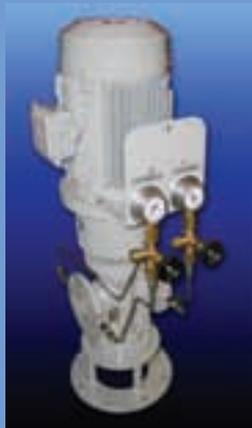
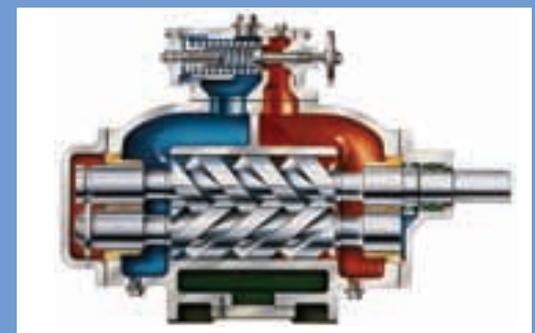
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SeaWave Onboard M/V Chenega

Derecktor Shipyards, builder of the Alaskan Maritime Highway's newest high-speed ferry, selected the SeaWave Integrator as the voice, weather and email communications provider during the sea trials and delivery of the 235 ft. (72 m) M/V Chenega. The SeaWave system enables Alaska's Department of

Transportation and Public Facilities and other interested parties to track the voyage using SeaWave's STAR (ship tracking and reporting) vessel tracking software. This is the second time in as many years that Derecktor Shipyards has selected SeaWave to provide communications services to support the delivery of a high-speed ferry built for Alaska Marine Highway System (AMHS).

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Harris Teams with ANS

Harris Electric has teamed with Aleut Northwest Services (ANS) to pursue future government business. Harris Electric is Seattle's largest Marine electrical and electronic services and hardware provider, and is seeking to expand its marine division into federal and military contracts. Aleut Northwest Services, an Alaska Native Corporation with years of government contracting

experience, is seeking to expand its presence in the Oregon, Washington and Alaska regions, specifically focusing on the field of marine electrical and electronic service and supply.

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Lynch Promoted At MSI

Marine Safety International (MSI) promoted Captain Edward T. Lynch, USN (Ret.) to Director, MSI — Newport. As Director, Captain



Lynch will have overall responsibility for the simulator based training and operational research carried out at this Center, located in the Aquidneck Corporate Park in Middletown, Rhode Island. Captain Lynch joined the company in 1987 as an instructor. He takes the place of Fred Bronaugh who is moving to a management position in marketing. Before joining MarineSafety, Captain Lynch had a distinguished career in the U.S. Navy.

GMPCS Places Order for Broadband Terminals

GMPCS Personal Communications placed an initial order with Hughes Network Systems for 1,000 HNS 9201 broadband satellite IP terminals for use with Inmarsat's Broadband Global Area Network (BGAN) mobile satellite service. The deal with Hughes makes GMPCS the first satellite communications service provider to place an order for the terminals that will usher in the new global broadband service anticipated to begin in late 2005.

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EMMF Appoints Wescoat

ExxonMobil Marine Fuels (EMMF) has appointed Andy Wescoat as Director, Global Marine Fuels, replacing Jaime Spellings, who held the position since November 2002. A native of New Jersey, Wescoat earned a degree in mechanical engineering from the Massachusetts Institute of Technology. He joined ExxonMobil in 1987 and has held a variety of positions of increasing responsibility over his 17-year career with the company.

CP Ships Reports Strong 1Q; Name New Chairman

CP Ships Limited announced unaudited operating income of \$29 million for the first quarter 2005, more than double first quarter 2004. Net income was \$15 million against \$3 million. The Board of CP Ships Limited also announced that



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it intends to appoint **Nigel Rich** as non-executive Chairman. It also confirmed that **Ray Miles** will continue to exercise overall executive responsibility as acting CEO until the appointment of a new CEO.

CP Ships Acquires Borg

CP Ships Limited has acquired Borg International Freight Services Inc. Based in Montreal, Borg specializes in ocean and air freight forwarding and employs 22 people. Its annual gross revenue in 2004 was \$14 million. Borg's owner and founder **Richard Azoulay** is assuming a management role within the CP Ships logistics organization.

AMOS Software Group Sold



Left to right: **Giampiero Soncini** (CEO), **Nicola Scopsi** (Legal Advisor on the Purchasing team), **Stefano Foti** (CFO) and **Paul Ashton** (VP, Northern Europe)

The AMOS software division of Xantic has been acquired from the Dutch telephone group, KPN, by an international group of investors, including members of the previous management. The contract was signed in Amsterdam on May 4, 2005, after negotiations of less than a month. The buyout was led by **Giampiero Soncini** who said, "We are very happy that AMOS is back with the management that grew the company and understand the AMOS software and the need to develop it and support for the shipowners and managers around the world." Soncini will be the company's new CEO, supported by **Stefano Foti** as CFO. The company will revert to the original name of SpecTec, which is already widely known. The management team includes Soncini and **Paul Ashton** who rejoin the organization as well as **Mike Becker**, **Lionel John**, **Gosta Algelin** and **Gunnar Hilsen**. The company has almost 180 personnel and an annual turnover of \$20 million.

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Saab TransponderTech Wins CCG Order

Saab TransponderTech won a major order to supply shipboard Automatic Identification Systems (AIS) to the Canadian Coast Guard. Under the con-

tract, Saab's licensed integrator/reseller ICAN Ltd will supply 105 Saab R4 AIS transponders for installation on a wide range of ice breakers, buoy tenders, fisheries patrol vessels and search-and-rescue cutters.

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JRC Sales Up 15%

Japan Radio Company Ltd. announced a 15 percent increase in sales for the FY '04, continuing the sales trend that started in the first quarter of the year. JRC Seattle saw orders across the product line and in every boating segment for

customers in the U.S., Canada and Central and South America. "We noticed a significant increase of qualified visitors at the boat shows in Ft Lauderdale and Miami this last year" said National Sales Manager, **Buddy Morgan**.

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Nigel Cleave • Dobson



Steve Corkhill • A. Weir



Peter Cremers • Anglo Eastern



A. Droussiotis • Hanseatic



Shipmanagers Speak on Coming Challenges

What core issues are currently challenging shipmanagers?

Bajpae: Undoubtedly, the seafarers' shortage, which is likely to exceed the prediction of 46,000 qualified officers by 2010, made by the BIMCO/ISF Manpower Survey in 2000.

Cleave: The criminalization of seafarers is top of the list and will no doubt stop the recruitment of excellent personnel wishing to enter our industry.

Cremers: One of the core issues remains to be the competitive pressure on management fees to stay low in spite of the increasing requirements shipmanagers are forced to work under and the healthy state of the shipping market in general.

Evitt: There is only one core issue and that is being able to sustain profitability from the provision of management services in a highly competitive market environment while investing in the resources required to overcome these key issues. Ship managers have spent the last decade trying to wring out efficiencies from a tired business model that has now reached the point of diminished returns — the model has to change.

Rajvanshy: MARPOL violations by crew have severe repercussions and the responsibility for avoiding such violations lies with the ship manager.

What action is your company taking in dealing with these issues?

Bajpae: Eurasia has streamlined its cadetship program for maintaining 80% reserve in all ranks on the basis of projected fleet growth over a three-year period. This is a long-term measure. In the short-term crew sources have been established in a broader base, spanning all major crewing markets in Eastern Europe and Asia.

Cremers: Anglo-Eastern are dealing

The Shipmanagement Q&A Cast

Name	Title	Company	Website
Rajaish Bajpae	President and Group MD	Eurasia Group	www.eurasiagroup.com
Nigel Cleave	Managing Director	Dobson Fleet Mgmt	www.dobsonshipman.com
Steve Corkhill	Managing Director	Andrew Weir Ship Mgmt	www.aws.co.uk
Peter Cremers	CEO	Anglo-Eastern Group	www.angloeasterngroup.com
Andreas Droussiotis	Managing Director	Hanseatic Shipping Co.	www.hanseatic.com.cy
Alastair Evitt	Managing Director	Meridian Marine Mgmt	www.meridian-marine.net
Roberto Giorgi	CEO	V.Ships Shipmanagement	www.vships.com
Rob Grool	Managing Director	Wallem Group	www.wallem.com
Capt. Simon Pressly	Managing Director	Dorchester Maritime Ltd.	www.dml.co.im
Kishore Rajvanshy	Managing Director	Fleet Management Ltd.	www.fleetship.com
Claus Thornberg	Managing Director	TESMA AS	www.tesma.net

with this by expanding their fleet / business to increase the flow of income. Anglo-Eastern are also pushing to increase their cadet numbers by pressuring owners to help in making cadet berths available onboard their vessels.

Pressly: Supporting all our current employees; intensifying training of existing officers; recruiting and training large numbers of cadets (about 100/year) and lobbying governments through shipowners' organizations.

Thornberg: TESMA has decided to reconstruct its entire Safety, Quality & Environmental Management System (SQEMS) to comply with the Tanker Management Self Assessment structure.

How can the ship management sector improve services?

Cleave: On-line web site reporting will continue to grow as the industry tackles all the latest legislative issues.

What are the key issues as a result of the ISPS Code?

Bajpae: While the benefits of implementation of ISPS Code have remained illusive, the implementation process has been riddled with lack of will at inter-governmental level, and misinterpretations of the word and spirit of the Code

by various stake holders, including the enforcement agencies. The shipmanagement sector has been caught in this saga of disparate dictums. The Code has been developed in a hurry, without taking into account its impact on normal and safe operation of ships, without review of safe manning rules to provide additional manning for compliance with shipboard

Corkhill: The feedback from the fleet is that properly managed security has allowed shipboard staff to have full control of their vessels. They can manage shore labor more effectively and there is a reduced risk of theft and stowaways, which are endemic in a number of areas our vessels operate.

Grool: The disappointment that once again ships are singled out as guilty until proven innocent. Ships are made responsible for public security when they cannot possibly be in the high risk. Again a deterioration of the quality of life for the seafarers through shore leave restrictions and being labeled as security risks.

Rajvanshy: At present the desired infrastructure in ports is not enough and will probably take some more time for the Code to be truly effective.

How important is it that shipmanagement develops its standard Key Performance Indicators?

Corkhill: While KPIs to compare services are an important tool for owners to differentiate between ship managers, the diversity of services and standards demanded make them extremely difficult for individual ship managers to develop and even more difficult to compare themselves with others in the industry and therefore improve the levels of service offered.

Cremers: If the shipmanagement sector takes the initiative, then the KPIs will be developed by the people who have the practical experience. This will create both a pragmatic and workable system to judge performance.

Droussiotis: It is extremely important to have these factors [PKIs] developed by the ones who do know the business. If it is left in the hands of others then not only the purpose will not be served, but the industry will suffer to the contrary as again politics, and to a great extent ignorance, will destroy the objective.

Evitt: The whole marine industry, not just the ship management industry, should be developing standard safety and environmental related KPI's. These



KPI's should be developed as tools to be used by individual companies, or organizations and not as sticks with which to beat them. As one Owner commented 'a percent dividend paid on management fee is a 'drop in the ocean' in comparison with real measurable and sustainable operation efficiency and cost control'.

Rajvanshy: I do believe it will be a good initiative for the shipmanagement sector to develop its own standard KPI's soon; or else the regulators will thrust these upon them. Oil majors have already developed some KPI's. The OCIMF publication Tanker Management and Self Assessment gives an extensive list of KPI's for best practice by vessel operators.

Thornberg: It is imperative for buyers and sellers of transport to have an objective and common set of criteria on which basis suppliers (owners and managers) are delivering their services.

How has the Company changed over recent years and what does the future hold?

Bajpae: We have moved towards management by standards, in the future we will move to become a standard.

Cleave: With 2005 having started off particularly well, the first quarter saw the company secure the full technical management of 18 vessels alone, not counting crew managed vessels and, as a result, we have employed an additional 25 office staff.

Cremers: Anglo-Eastern has been expanding the number of centers from where shipmanagement services are offered in line with the requirement of various tonnage tax regimes.

Pressly: We have become far more client focused with the development of client teams supported by high quality and experienced specialists in various fields such as design, cryogenics and electrics.

Rajvanshy: Our company has seen unparalleled growth since inception. We

have grown to 100 ships in 10 years.

Is the Company likely to grow, and if so how?

Corkhill: KPIs are the driving force behind AWS, but not to the detriment of the quality of service offered. The future for AWS is in providing to like-minded, service-orientated owners a bespoke

service, which by its very nature means a higher customer/manager interface.

Evitt: Meridian will continue to grow in a controlled manner with a focus on niche blue water sectors and continued expansion in the offshore sector.

Grool: Our e-procurement system is the

only complete, tested and proven e-procurement system available, and our web-based ship condition reporting tool is gaining interest from public and private organizations.

Rajvanshy: We are looking to expand into the LNG ship management sector. This is the next frontier for us.

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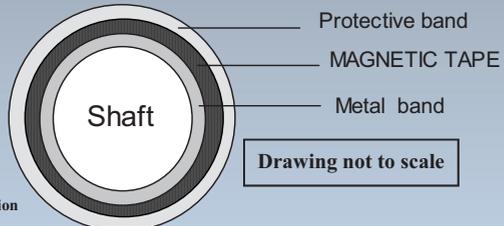
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Thornberg: TESMA has set up business in Edinburgh, Scotland. The initial fleet will consist of Gibson Gas Tankers' (acquired by the Eitzen Group in late 2004) managed vessels as well as 5-6 vessels being transferred from TESMA Denmark to TESMA UK. TESMA is also planning the opening of operations elsewhere during 2005/6.

How are ship managers able to add value to their services?

Bajpae: Adoption of an 'Expect More' culture... continuous and innovative efforts to expand the frontiers of quality are the keys to consistently exceed customer expectations.

Evitt: Ship managers, like any other industry, must identify the benefits that they can bring to their client.

Grool: By being more efficient. And being satisfied with small profits. This is no glossy-brochure-talk, but the only way we can survive.

Thornberg: The challenge is to achieve an outcome where asset value is protected while earning maximum profit (meaning no incidents and being cost-competitive).

Are current training methods and facilities capable of meeting industry demands?

Bajpae: Most definitely there is a wide and gaping gap in demand and supply, as well as in new legislations and new technology and training to develop the necessary competencies. Demands are

seldom predicted and training facilities are rarely aligned to predictions. New technologies and new legislations are seldom approved with proper thought to the development of necessary competencies. The shipping industry is faced with an unprecedented shortage of seafarers. No thought is given to developing the skills for manning the world LNG tonnage, which will more than double with the new buildings on order.

How important to your company is the US market?

Bajpae: The importance of the U.S. market has increased dramatically following the lifting of all roadblocks with MarAd and the U.S. Courts' ruling that companies fully held by overseas concerns can be considered as U.S. citizen companies. This ruling has opened the Jones Act companies and tonnage to competition by foreign management

companies

Evitt: The U.S. market is paramount in Meridian's future plans, we see Houston as being a critical cluster of offshore industries and we are actively pursuing development in this region.

Rajvanshy: We will eventually be looking at having a presence in the U.S. The likely location of our office there will be in Houston where we intend to start with a small office that can monitor the vessels calling in that region.

Thornberg: We do not have any U.S. based ship owners as customers; however, vessels in our fleet are frequently calling in the U.S. Consequently, the U.S. is important — also seen in the light that several regulatory aspects are driven by this nation.



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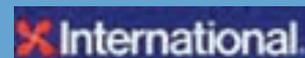
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NYK Lines Wins Heyerdahl Award 2005

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The Heyerdahl Award honors the spirit of the Norwegian explorer **Dr. Thor Heyerdahl** and inspire the world maritime community to innovative actions to protect the environment.

"NYK Line demonstrates a commitment to ceaselessly improving its environmental performance. I am proud to award the Japanese company this year's Heyerdahl Award," said Brende.

NYK is also actively participating in



Borge Brende and Takao Kusakari.

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"NYK Line demonstrates a commitment to ceaselessly improving its environmental performance. I am proud to award the Japanese company this year's Heyerdahl Award," said Brende.

NYK is also actively participating in



Borge Brende and Takao Kusakari.

the development and implementation of a number of innovative technological solutions and operational procedures contributing to reducing the environmental impact of the operation of their fleet that go beyond regulatory require-

ments," Brende continued. "Japan and Norway are both active participants in the IMO where they both give high priority to environmentally friendly and quality-based shipping," the Minster concludes.

Founded in 1885, the Japanese company is one of the world's leading shipping companies. NYK Line (Nippon Yusen Kaisha) is awarded for their outstanding commitment to continuously improve their environment performance beyond

what is required by rules and regulations.

Bollinger Promotes St. Germain

Bollinger Shipyards, Inc., has promoted Andrew St. Germain to the position of Vice President, Chief Financial Officer and Treasurer, according to Donald "Boysie"



Bollinger, Chairman and CEO of the Lockport, La. headquartered shipbuilding and repair company. St. Germain joined Bollinger in 2003 as corporate controller.

He holds a B.S. in Accounting from Louisiana State University, is a Certified Public Accountant and Certified Internal Auditor.

His responsibilities include the company's treasury, accounting, income tax, tax incentives, risk management, and legal functions.

Schottel Mourns Gragen Death

Uwe Gragen, Dipl.-Ing., sales and project manager for Schottel GmbH & Co., and responsible for worldwide sales of propulsion systems for tugboats and ocean-going vessels,



has died. Gragen passed away unexpectedly on the evening of May 13, 2005 after returning home from work.

He leaves behind a wife and three children. Born on August 21, 1943 in Königsberg, he undertook his apprenticeship from 1960 to 1963 at the Stülcken shipyard in Hamburg, a city in which he was to remain to study naval architecture. From 1966 to 1971 he worked as project engineer at Orenstein & Koppel in Lübeck.

Gragen had placed his considerable expertise as a naval architect at the disposal of Schottel since October 1, 1971, to start with in the former engineering offices, later in key positions in sales.

With his product and market knowledge, he earned a reputation with customers as a thoroughly competent and dependable business partner. He served owners, shipyards and design bureaus with his able advice and assistance, and his practical ideas found their way into many product innovations.

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Wärtsilä Signs Global Customer Agreement

Wärtsilä Deutschland GmbH and Reederei Blue Star GmbH in Hamburg, Germany, signed a Global Customer Agreement to cover a substantial part of the maintenance and operation support of a number of ships in the Blue Star fleet. Wärtsilä will provide regular inspections, all maintenance planning and work, all spare parts, along with operation support and regular reporting for the main engines, generating sets and all relevant ancillary systems in the ships' engine rooms. Wärtsilä is also responsible for contract management and global coordination of these activities. Initially, the agreement covers a series of nine 2,550 TEU Blue Star container vessels. Delivered from Korea in 2003-2004, the vessels are each powered by a seven-cylinder Sulzer RTA72U-B main engine of 21.5 MW output, and four diesel generating sets with a combined output of 6.5 MW. The initial ships' machinery covered by this agreement has an aggregate power of 252 MW.

Circle 10 on Reader Service Card

GE to Supply for Japanese Destroyers



GE Transportation's marine gas turbine business will supply Ishikawajima-Harima Heavy Industries, Co. Ltd. (IHI) with four GE LM2500 aeroderivative gas turbines. The engines will power the first of a new class of Japan Maritime Self-Defense Force's (JMSDF) helicopter-carrying destroyers.

The first vessel will be known as the 16DDH, and it is anticipated that at least one additional DDH destroyer will be built in the coming years.

The 13,500-ton DDH destroyer will use two propulsion trains, each consist-

ing of two LM2500s in a COmbined Gas turbine And Gas turbine configuration (COGAG), driving a propeller through a gearbox. The engines will each provide 25,000 shp. GE will supply the LM2500 gas turbine kits to be assembled by IHI at its Mizuho and Kure plants in Japan. The 16DDH will be commissioned in 1Q 2009.

Circle 13 on Reader Service Card

New Mooring Lines for the Navy

The Navy is procuring the Spectra-based ropes for new ships and to replace existing lines on vessels from Whitehill Manufacturing Corp., based in Chester, Pa. Whitehill recently developed the new rope using Spectra fiber to further improve the strength, durability and safety of the lines. Spectra fiber is, hydrophobic-meaning it will not absorb moisture or deteriorate in water.

In the past, injuries caused by breaking or recoiling ropes were of critical concern to the Navy. The new rope is a custom-designed four-strand rope produced

by Whitehill. This rope was engineered with one strand slightly shorter than the others, causing it to break first when the rope was about to fail, dissipating energy and alerting sailors.

Circle 14 on Reader Service Card

Donjon Marine Assists USS America Tow Out

Donjon Marine Co. provided towing and logistical support through its U.S. Navy Salvage and Related services contract, in the towing out to sea of the Navy's USS America, the third Kitty Hawk-class attack aircraft carrier on April 19. The Navy will conduct tests on the carrier, commissioned in 1965, for a number of weeks and then the ship will be sunk. Donjon coordinated the movement of the USS America from its lay berth located in the Philadelphia Naval Yard, through the Delaware River to the open ocean where the vessel was towed by Donjon's 7,000-hp Atlantic Salvor and 8,000-hp Powhatan to the Project site.

Circle 15 on Reader Service Card

MAS Industries Opens New Facility

MAS Industries opened a new facility in Jefferson Parish to support the Littoral Combat Ship (LCS) program, among other business opportunities. The new facility is 70,000 sq. ft. and will be used for manufacturing and distribution. MAS Industries received a contract from Marinette Marine, part of the Lockheed Martin LCS team, to provide state-of-the-art aluminum panels, high-temperature insulation, and water jet cutting for the first two LCSs, designated Flight 0. The design calls for an aluminum superstructure built on a steel hull. LCS will provide the Navy with a new type of surface combatant, designed to dominate coastal waters. The facility also supports a new partnership between MAS Industries and Friction Stir Link for friction stir joining. This partnership enables the capability to join pieces of aluminum up to 1.5 in. thick, with width and length limited only by transportation width restrictions.

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KVH Doubles Speeds for Tracphone F77

KVH Industries, Inc., has reportedly doubled the high-speed data rates for the Tracphone F77, an Inmarsat Fleet-compatible marine satellite communications system. Tracphone F77 customers can now receive high-speed 128 Kbps

Internet and data service.

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QCI Marine Wins Contract

QCI Marine Offshore LLC, has been awarded by Signal International the accommodations and inside electrical work on Etesco's Millennium vessel.

The project, to be built at Signal's Pascagoula yard, includes the build out of five levels of accommodations. The Etesco Millennium, under contract to Petrobras, will house 272 persons, complete with dual cinemas and swimming pool and will provide offshore platform construction and repair facilities. After completion of the work in early 2006,

the vessel will travel to Brazil for use in the Campos Basin.

Circle 18 on Reader Service Card

Barry Joins Davis Consulting

Christopher Barry, a mechanical engineer and naval architect with experience in ship design, stability and structural analysis and offshore civil engineering has joined Davis Consulting Group (DCG) marine engineers, a division of Davis & Company, Ltd., as a consultant. His addition brings to seven professionals on the company's nationwide team of marine surveyors and naval architects that specialize in the areas of engineering and design and accident reconstruction, fire and explosion cause and origin, forensic engineering and commercial vessel surveying.

StratosMAS: Broadband Wireless Advance for GOM

Stratos Global Corp. launched StratosMAX, a new broadband wireless access (BWA) network that is touted as maximizing the performance, flexibility and scalability of remote voice and data communications in the Gulf of Mexico. According to the company, four offshore energy companies operating in the GOM have signed up for StratosMAX, which uses the latest developments in WiMAX broadband wireless technology with Stratos' network backbone infrastructure.

StratosMAX is designed to provide offshore drilling and production companies with a secure and reliable platform for delivering up to 2 Mbps of capacity to support a full range of IP-based data applications, as well as multiple voice lines for telephone connectivity.

Circle 19 on Reader Service Card

X-Craft Crew Completes Training

The crew of the Navy's experimental X-Craft, dubbed Sea Fighter, completed the initial phase of training in High Speed Craft Operations at Marine Safety International's Norfolk Center in March. This initial phase included high speed Radar (ARPA), Electronic Navigation (ECDIS), Bridge Resource Management (BRM) and Safety and Operations training, and was conducted in association with Kingston Marine Consultants. Follow-on phases will include four weeks of training on board the X-Craft, both in port and underway, leading to a High Speed Craft Type Rating certification for the vessel and the crew.

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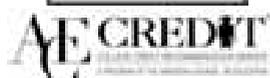
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Circle 255 on Reader Service Card

Propulsion Update

Caterpillar C4.4 Marine Genset

The C4.4 marine genset from Caterpillar Marine Power Systems is designed to give operators a low total cost of ownership. The genset also limits noise and vibration while generating power for a wide range of needs, including heavy load applications. Improved fuel economy is achieved throughout the C4.4 genset's entire speed range and is facilitated by a greater degree of timing control in the combustion process. The C4.4 genset features an integral oil cooler inside the cylinder block, so that no external hoses or pipe work are required. Long service intervals of 500 hours also contribute to reduced maintenance needs.

Anti-vibration mounts connected to the engine drip tray and a steel base are designed to provide significant noise and vibration reduction. Adding an optional sound-attenuated enclosure (available in the second quarter of 2005) can further reduce noise. A standard electronically governed fuel injection pump is designed to provide the genset with superior load acceptance. When loads change, the unit maintains power and delivers it smoothly for uninterrupted operation of connected components. For example, lights operated by a C4.4 genset do not flicker when genset load demands increase.

The C4.4 genset features an in-line, four-stroke diesel engine with a crossflow cylinder head. It has a 4.4-liter (269 cu. in.) displacement and is available in naturally aspirated, turbocharged and turbocharged aftercooled options. In addition, the genset meets EPA Tier 2 emission standards at its 1800 rpm ratings and Central Commission for Navigation of the Rhine (CCNR) standards at its 1500 rpm ratings.

Circle 51 on Reader Service Card

Genset Modeled After
Cat 3054, 3056 Units



Table 1. C4.4 Genset Ratings and Fuel Consumption

Genset Ratings						
	ekW at 0.8 pf	KV-A	Aspiration	rpm	U.S. gph	L/h
60 Hertz	44.0	55.0	NA	1800	3.4	13
60 Hertz	58.0	72.0	T	1800	4.46	16.9
60 Hertz	78.0	98.0	TA	1800	5.8	22
50 Hertz	38.0	47.0	NA	1500	2.9	11
50 Hertz	51.0	64.0	T	1500	3.9	14.8
50 Hertz	71.0	88.75	TA	1500	4.9	18.6
50 Hertz	86.0	107.0	TA	1500	6.5	24.6

ekW - electrical kilowatts
T - turbocharged
L/h - liters per hour
TA - turbocharged aftercooled
NA - naturally aspirated
U.S. gph - U.S. gallons per hour
pf - power factor

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Circle 318 on Reader Service Card

New Products

MX-2100: Portable Programmable Gas Detector 1

MX-2100 features new interchangeable, precalibrated smart sensors. It can monitor up to five gases simultaneously, plus the user can select from 31 preprogrammed combustible gases or choose from several others in a supplemental file. In addition to combustible gases and vapors, interchangeable smart sensors are available for CO, H₂S, O₂, CO₂, NO, NO₂, NH₃, Cl₂, HCl, HCN, H₂, SO₂ and other toxic gases.

Circle 37 on Reader Service Card



High-Pressure Switches 2

Danfoss launched a new range of high-pressure switches, supplementing the MBC 5100 pressure switch family. The new members of the MBC-5100 family for high pressure measurement are designed with a completely new piston to convert the pressure. This is designed to open up new dimensions in high-pressure measurement.

Circle 38 on Reader Service Card



Jabsco's Offers New Pumps 3

Jabsco announced the PAR-Max 1.9 and 2.9 series; a three chamber diaphragm pump that is designed to provide smooth flow without requiring an accumulator tank for 2+ and 3+ fixtures. The performance characteristics of these pumps match the needs of the typical vessel with a shower, water heater, and multiple sinks and toilets.

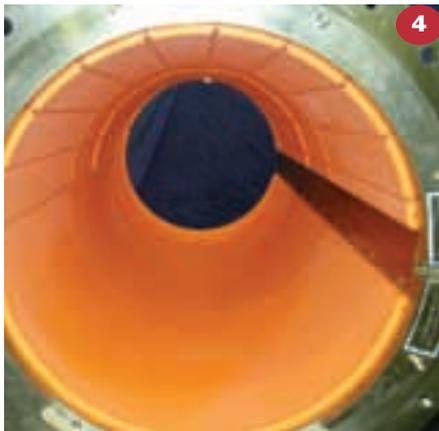
Circle 39 on Reader Service Card



New Enviro Technologies 3

Hyde Marine offers several new environmental technologies. Hyde offers UV disinfection systems for many shipboard applications including; BWT, drinking water, treated sewage and gray water effluent, swimming pools and spas, air duct disinfection, and disinfection of virtually any water based waste stream. Hyde also introduced several new shipboard environmental technologies. The JMAR BioSentry monitor for microorganisms in drinking water and other water systems. The Glosten Ballast Management System (GBMS) automates compliance with non-indigenous species water quality regulations.

Circle 40 on Reader Service Card



Iveco Engine Certification 4

Iveco Motors of North America announced EPA Tier II off-highway certification for the Sofim HPI 2.3L diesel engine. The Sofim HPI 2.3L is a 4-cylinder diesel engine, with a power rating of 114 hp at 3,900 rpm and weighs 463 pounds.

Circle 41 on Reader Service Card

Water Lubricated Prop Shaft Bearings for Cruise Ship 4

Princess Cruises specified Thordon water lubricated COMPAC propeller shaft bearing systems for two new Grand Class cruise ships (Hull No's 6131 and 6132) being built at Fincantieri Cantieri Navali Italiani SpA for 2007 and 2008 delivery. Thordon Bearings is supplying its unique COMPAC Single Key Design Bearings for the 116,000 GRT twin screw newbuild vessel.

Circle 42 on Reader Service Card



ESAB Debuts Jesse James Multimaster 260 5

ESAB Welding and Cutting Products launched the Jesse James MultiMaster 260, part of the new Jesse James Signature Series line of equipment. In addition to the MultiMaster 260, the ini-



tial line includes the Jesse James PowerCut 650, and the Jesse James PUROX MetalMaster oxyfuel outfit. The MultiMaster 260 multipurpose welding machine offers welding for MIG, DC TIG and stick electrode welding, combined with exceptional simplicity of set-up and operation.

Circle 43 on Reader Service Card

Self Contained Jet Drive Proves Effective 6

Sword Marine Technology offers its self-contained engine and waterjet package: the JetPac. Recently it was used to power a 23-ft. Zodiac SRO 700 to what the drive manufacturer termed "outstanding results." At 2,600 rpm, and on plane, the JetPac pushed the boat to about 20 mph. At 3,000 rpm, speed increased to over 25.5 mph at a fuel burn rate of six mpg.

Circle 1 on Reader Service Card

Self-Priming, High Capacity Pumps from Viking 7

Viking Pump offers high capacity pumps for terminals and tank farms. Self-priming, with suction lift capability, they can be mounted above the liquid level for unloading barges and tankers, used for both loading and unloading or line stripping. Terminal applications include petroleum products, vegetable oils, animal fats and oils, chemicals, asphalt, molasses, alcohols, fertilizers and many other bulk liquids.

Circle 44 on Reader Service Card

Compact Boring Bar 4500 8

Climax Portable Machine Tools, a provider of machining solutions, introduces the BB4500 Boring Machine for line boring repairs on heavy construction and mining equipment. The new tool suitable for boring maintenance on bridges, ships, and turbines. The BB4500 is designed for pneumatic, hydraulic, or electric power and provides two bolt exchange of motors.

Circle 45 on Reader Service Card

Norsafe launches Rescubee 9

Norsafe launched Rescubee, an evacuation system specifically designed for passenger ferries and cruise ships. Rescubee with capacity of 330, follows to replace conventional davit launched lifeboats onboard ferries and cruise ships. The Norsafe Rescubee lifeboat has been designed to act as a safe area, reduce congestion and deploy rapidly. And because the Rescubee is an integrated part of the ship superstructure, placed into the fire bulkhead between rescue zones, passengers can make their way to the lifeboats from up to six decks in parallel. This configuration also reduces the deck space occupied by lifeboats up to 30 percent, the manufacturer said.

Circle 46 on Reader Service Card

Two New Pumps from Allweiler 9

Allweiler AG introduced its new main-engine lube oil pump in two-stage design. Allmarine Melo is designed to be an efficient, robust, and reliable centrifugal pump. Also introduced Alltrimm, a new anti-heeling inline propeller pump with unique technology, with increased capacity.

In Allmarine Melo, all wearing parts are arranged to make them accessible without requiring disassembly of the pump. The pump is available in a variety of sizes with a maximum capacity of 1500 cu. m./hr. and a maximum oil temperature of 100°C. The new two-stage design enables pressures of up to 10 bar. The Alltrimm pump is an inline propeller pump with reversible

hydraulics. The company counts the pumps fewer wearable parts, as well as its electrically-actuated, low-load flow reversal and low mass moment of inertia for very short start-up times, as advantages. The new versions with enhanced motor power increase capacity to 1200 cu. m./hr. and pump heads to 20 m.

Circle 47 on Reader Service Card

Jotamastic Smart Pack

Jotun has developed Jotamastic Smart Pack, designed specifically for use with brushes and rollers. Jotamastic Smart Pack was devised to deliver special flow characteristics that allow the paint to provide an even, thick paint film. Jotamastic Smart Pack is a further development in the Jotamastic range from Jotun utilizing modern technology in the Epoxy Mastic field. As with all Jotamastic products, Jotamastic Smart Pack is surface tolerant and has penetration properties that enable good adhesion and long life even on low levels of surface preparation. Jotamastic Smart Pack contains a hydrocarbon resin that aids the penetration, improves resistance to moisture and improves the flexibility of the coating all adding together to provide the performance that one would expect from a product in the Jotamastic Range. Since Smart Pack is designed for small areas it comes in small packaging and has a simple mixing ratio

Circle 48 on Reader Service Card

Ballast Water Treatment

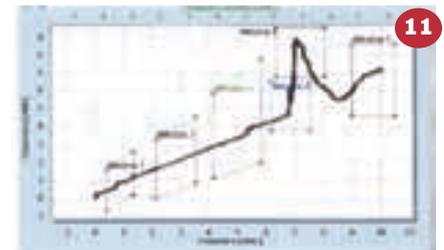
10

NEI Treatment Systems' patented Venturi Oxygen Stripping system was invented to address the ballast water issue. This technology has recently been proven in shipboard trials to meet the IMO Ballast Water Performance Standard. "It was a real challenge to develop a non-toxic treatment method that can handle thousands of cubic meters per hour of ballast water flow", says Peter McNulty, NEI's President. "This shipboard system is the culmination of years of research and development. We're pleased to see that it works reliably, irrespective of sediment and organic load, or salinity, or temperature. And, since it's a deoxygenation method it reduces ballast tank corrosion, which can save millions of dollars over the life of a vessel."

Venturi Oxygen Stripping is a deoxygenation technology that rapidly removes 95 percent of dissolved oxygen from ballast water. This is accomplished by mixing very-low-oxygen inert



10



11

gas through a parallel network of venturi injectors into the ballast piping as ballast is drawn into the vessel. Aquatic organisms cannot survive in these conditions. In addition, since the oxygen is removed, corrosion of ballast tank steel is virtually arrested. Upon discharge the process reverses itself.

Circle 49 on Reader Service Card

New Module for Press-Fit

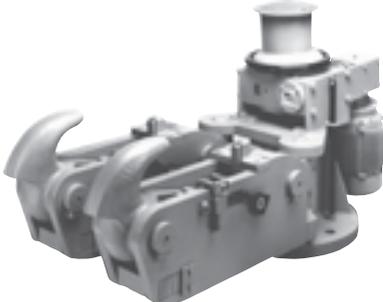
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HBM introduced the next generation of press-fit evaluation plug-in modules: ML85B. The module is compatible with its predecessor, and is designed for evaluating press-fit and fitting processes using the tolerance window method. The ML85B can be used with any MGCplus single-channel amplifier and enables: the ratio of

torque to angle of rotation to be monitored. Any physical quantity such as force, displacement, torque, or angle of rotation can be processed. Nine oblique or rectangular windows are provided for the evaluation process and each can be evaluated using four methods: Course of the curve; Fmax ; Fmin; and Average force value

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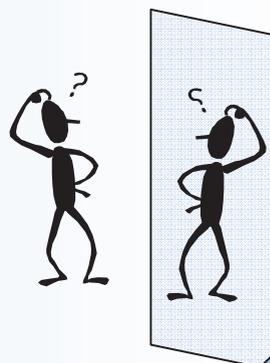
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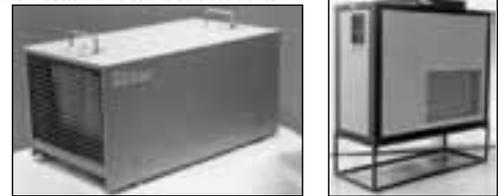
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Duramax Marine LLC, 17990 Great Lakes Parkway, Hiram, OH 44234, 440-834-5400, 440-834-4950, Contact: Richard Spangler

Marine Fenders International, Inc., 909 Mahar Avenue, Wilmington, CA 90744, 310-834-7037, 310-834-7825, jerry.thermos@mpowercom.net, Contact: Jerry Thermos

Maritime International, Inc., 204 Ida Rd., Brossard, LA 70518
Schuyler Rubber Co., 16901 Woodard Rd., Woodinville,

Tranter PHE, Inc. PO Box 2289, Wichita Falls, TX 76307
Tranter, Inc., P.O. Box 2289, Wichita Falls, TX 76307, 940-723-7125, 400-723-1131, www.tranterphe.com

HEAT TREATING SERVICES & SUPPLIES
Mannings USA, 200 Richards Ave, P.O. Box 896, Dover, NJ 07802-0896, 973-537-1576, 973-537-1581, sales@manningusa.com, Contact: Daniel Ciarliariello, www.manningusa.com

HEAVY FUEL TREATMENT

Algae X International, P.O. Box 4011, Fort Myers Beach, FL 33932

HIGH SPEED FERRY BUILDERS

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

HMI CONTROLS DISPLAY

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

HOISTS

Coastal Marine Equipment, 20995 Coastal Parkway, Gulfport, MS 39503-9517, 228-832-7655, 228-832-7675, sales@coastalmarineequipment.com, Contact: Ralph Waguespack, www.coastalmarineequipment.com

HORNS/WHISTLES

Airchime Manufacturing Co., 5478 267th St., Gloucester Industrial Estate., Langley, BC V4W 3S8, Canada
Kahlenberg Brothers Co., P.O. Box 358, Two Rivers, WI 54241

HOSES/HOSE FITTINGS

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

HVAC

Jameson Metal Marine Sales, Inc, 4710 Northwest 2nd. Ave., Boca Raton, FL 33431

HYDRAULIC SYSTEMS

Anchor Lamina, 38565 Country Club Drive, Farmington Hills, MI 48331

INFRARED IMAGING EQUIPMENT

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

INSPECTION EQUIPMENT

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

INSULATION

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

Jameson Metal Marine Sales, Inc., 4710 Northwest 2nd Ave., Boca Raton, FL 33431
Lit Industries, 516 Costner School Rd., Bessemer City, NC 28016-9801

JOINER PANELS/FURNITURE

Thermax Marine-Panel Specialists, Inc., 3115 Range Rd., Temple, TX 76501, 254-774-9800, 254-774-7222, thermax@panelspec.com, Contact: John Hutchinson, www.thermaxmarine.com

JOINER- WATERTIGHT DOOR-PANELING-CEILING SYSTEM

Walz & 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 Tanglewilde, Suite 260, Houston, TX 77063

LIFEBOAT TESTING

Imes Inc., 5139 Brook Street Suite E, Mont Claire, CA
Water Weights, Inc., 5139 Brook St., Ste E, Mont Claire, CA 91763

LIFEBOATS/DAVITS

Umoe Schat-Harding, Inc., 912 Hwy 90 East, New Iberia, LA 70560

LIFEBOATS/RAFTS

DBC Marine Safety Systems, 101-3760 Jacombs Rd., Richmond, BC V6V 6T3, Canada
Viking Life Saving Equipment, 1400 NW159th Street Suite 101, Miami, FL 33169
Willard Marine Inc., 1250 N. Grove St., Anaheim, CA 92806
Wolong International, 151 Chin Swee Road #03-14, Manhattan House, 169876, Singapore

LIFESAIVING EQUIPMENT

C.M. Hammar AB, August Barks Gatan 15, 421 32 Vastra Frolunda, Sweden
Stearns Manufacturing Company, P.O. Box 1498, St. Cloud, MN
Umoe Schat-Harding, Inc., 912 Hwy 90 East, New Iberia, LA 70560

Viking Life Saving Equipment, 1400 NW159th Street Suite 101, Miami, FL 33169

LIFT EQUIPMENT TESTING

Water Weights, Inc., 5139 Brook St., Ste E, Mont Claire, CA 91763

LIGHTING PRODUCTS

Phoenix Products Co., Inc., 8711 West Port Avenue, Milwaukee, WI 53224

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, maritimeas@charter.net

LINE & NET CUTTERS

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

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

Schottel GMBH & Co. KG, Mainzer Str 99, D-56322-Spary/Rhine, Germany

MARINE DECKING & FLOORING

Lonseal Flooring, 928 East 238th Street, Carson, CA 90745

MARINE ELECTRONICS

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

Comark Marine, 93 West Street, Medfield, MA 02052, 800-280-8522, 508-359-2267, sales@comarkcorp.com

Hatteland Display, Bogstadviein, 19., N-0355 Oslo, Norway
Jotron Electronics, Box 85, NO-3280T Jodalynng Norge, Norway

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

Reson Inc., 100 Lopez Road, Goleta, CA 93117

Saab Marine Electronics, Box 13045, 402 5Goteborg, Sweden

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

Reson Inc., 100 Lopez Road, Goleta, CA 93117

Saab Marine Electronics, Box 13045, 402 5Goteborg, Sweden

MARINE ENGINEERING

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

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

MARINE EQUIPMENT

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 HARDWARE

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

MARINE MANAGEMENT

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

MARINE POWER PLANT SYSTEMS

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

MARINE SERVICES

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

MARITIME TRAINING & SCHOOLS

Maine Maritime Academy, MMA, Castine, ME 04420-5000
Marine Safety International, Marine Terminal, Laguardia Airport, NY 11371

MONITORING SYSTEMS

American Vulkan, 2525 Dundee Rd, Winter Haven, FL 33884

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

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

Michael J. Erland, 7001 Flewlynn Rd, Ottawa, Ontario K2S 1B6, Canada

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

Reson Inc., 100 Lopez Road, Goleta, CA 93117

MOORAGE FACILITY

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

MOTOR PROTECTION

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

NAMEPLATES AND PLACARDS

Horizons ISG, 18531 South Miles Road, Cleveland, OH

NAV/COMM EQUIPMENT

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

Chartco, New North Road, Hainault, Ilford Essex 166 2UR, UK

Electronic Marine Systems, 800 Ferndale 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, mchp@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

Aker Marine, 1818 CORNWALL AVE, VANCOUVER, BC V6J 1C7, Canada

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 Rd., 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

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

JMS Naval Architects & Salvage Engineers, 1084 Shennecossett Rd., Groton, CT 06340, 860-448-4850, 860-448-4857, jms@jmsnet.com, Contact: Blake Powell, VP, www.jmsnet.com

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

John W. Gilbert Associates, 75 Terry Drive, Suite 200, Hingham, MA 02043

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

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

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

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

Robert Allan Ltd., 1639 W. 2nd Avenue Ste 230, Vancouver, BC, Canada

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

Vizag marine Consultants, 8913 Riverview Park Drive, Raleigh, NC 27613

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

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

OIL SPILL RESPONSE

Donjon Marine, 1250 Liberty Avenue, Hillside, NJ 07205

Marine Spill Response Corporation, 220 Spring Street, Suite 500, Herndon, VA 20170

OIL/WATER SEPARATORS

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

MMC International, 60 Inip Dr, Inwood, NY 11096

PAINT APPLICATOR

Mr. Longam, Inc., P.O.BOX 377, Greenwood, MO 64034-0377

PAINT MARKERS

Sakura of America, 30780 San Clemente St., Hayward, CA 94544, 800-776-6257, 510-475-0973, customerservice@sakuraofamerica.com

PARTS LOCATOR SERVICE

Inventory Locator Service, 8001 Centerview Parkway Suite 400, Memphis, TN 38018, 901-794-5000, 901-794-1760, ppugh@ilsmart.com

PIPE FITTINGS/CUTTINGS/CONNECTING/ SYSTEMS

Jesse Engineering, 5225 7th St., E. Tacoma, WA 98424, 253-922-7433, 253-922-2536, tmorgan@jesse-wallace.com

RAMCO Manufacturing Co., 365 Carnegie Ave., Kenilworth, NJ 07033

PIPE LEAK REPAIR

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

PLANNED MAINTENANCE SYSTEMS

Design Maintenance Systems, Inc, 340 Brooksbank Ave, Ste.100, North Vancouver,BC VTJ 2C1, Canada

PNEUMATIC LINE THROWERS

Restech Norway A/S, Box 624, NO-8001 BODO, Norway

PORT DEVELOPMENT

Sasakura Engineering, 7-32 Takeshima, 4-Chome, Nishiyodogawa KY Osaka555, Japan

PORTABLE FOAM APPLICATORS

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

PORTABLE VENTILATORS

Americ Corp, 785 Bonnie Lane, Elk Grove Village, IL 60007

PREVENTATIVE MAINTENANCE

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

PROPELLERS

Rice Propulsion, Av. Rios Espinoza 88, Mazatlan, Sin. 82180, Mexico, 8778396304, 011526699842533, rice@ricepropulsion.com

PROPULSION EQUIPMENT

ABB Turbocharger, Inc., 1460 Livingston Ave., North Brunswick, NJ 08902

Alstom Power Conversion, 3 Ave. Des Trois Chenes, 90018 Belfort Cedex, France

Brunvoll A/S, P.O. Box 370, N-6401 Molde, Norway

Caterpillar, Inc., P.O. Box 610, Mossville, IL 61552-0610

Cummins Marine, 4500 Leeds Ave., Ste 301, Charleston, SC 29405

CWF Hamilton Co., P.O. Box 709, Christchurch, New Zealand

Fincantieri, Diesel Engine Div., GMT, Bagnoli della, Rosandra 3334 Trieste, Italy

Hagglunds Drives Inc., 2275 International Street, Columbus, OH 43228

Harbormaster Marine, Inc., 31777 Industrial Rd., Livonia, MI 48150

Karl Senner Inc., 25 W Third, Kenner, LA 70062

Kawasaki Heavy Indust., World Trade Center Bldg., 4-1 Hamamatsu-cho, 2-chome, Minato-ku Tokyo 105-6116, Japan

LA.ME Srl. Marine Division, Via della Fornace 4, Opera (MI), Italy

Man B&W Diesel, 17 State St., NY, NY 10004

Man B&W Diesel A/S, Teigholmsgade 41, Copenhagen SV DK-2450, Denmark

Man B&W Diesel AG, Stadtbachstrasse 1, Augsburg D-86153, Germany

Mapeco Products, 91 Willenbrock Rd., Unit B, Oxford, CT 06478

Markisches Werk Halver GmbH, Box 1355, Halver D-58543, Germany

Napier Turbochargers, P.O. Box 1, Waterside, South Lincoln LN5 7FD, UK

Nya Berg Propulsion AB, Box 1005, 430 90 Ockero, Sweden

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

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

Schottel GMBH & Co. KG, Mainzer Str 99, D-56322-Spary/Rhine, Germany

Ultra Dynamics Marine, LLC. (UltraJet), 1110A Claycraft Road, Columbus, OH 43230

Voith Schiffstechnik GMBH & Co., P.O. Box 2011, 89510 Heidenheim, Germany

Wartsila Corporation, Box 244, FI-65101 Vasa, Finland

Wartsila Lips, 3617 Koppens Way, Chesapeake, VA 23323

ZF Marine Group, Eherst. 50, 88046 Friedrichshafen, Germany

PROPULSION MONITORING

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

PUMP-REPAIR-DRIVES

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

Wooster Hydrostatics, 4570 West Old Lincoln Way, Wooster, OH 44691

PUMPS

Mack Boring & Parts Company, 2365 Rout 22, Union, NJ 07083

RADARS-ARPAS

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

REMANUFACTURED PUMPS & MOTORS

SHIP MANAGEMENT

Eurasia Group, 22A Floor Chinachem Exchange Sq., 1 Hoi Wan St., Quarry Bay, Hong Kong

SHIP REPAIR

HALIFAX SHIPYARD, 3099 BARRINGTON ST, HALIFAX, NS, Canada
Manitowoc Marine Group, 1600 Ely St., Marinette, WI 54143-2434
Mark Van Schaick BV, Nieuwe Waterwegstraat, 3115 HE Schiedam, Harbour 535/Port Of Rotterdam, Netherlands
OCEAN TECHNICAL SERVICES, MILITARY OCEAN TERMINAL BAYONNE UNIT #8-FOOT OF 32ND STREET, BAYONNE, NJ 07002
R&R Maintenance Inc., 5700 Proctor St. Extension, Port Arthur, TX 77642
United Marine Enterprises Inc., P.O. Box 22077, Beaumont, TX 77720

SHIP SIMULATORS

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

SHIPBUILDING-REPAIRS, MAINTENANCE, DRYDOCKING

Atlantic Marine, Inc., P.O. Box 3202, mobile, AL 36652
Austal USA, 100 Dunlap Dr., Mobile, AL 36633
Bayonne Drydock, PO Box 240, Bayonne, NJ 07002-0240
Blohm & Voss, P.O. Box 10 07 20, D-20005 Hamburg, Germany
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
Detyens Shipyards Inc., 1670 Drydock Ave., Bldg 236, North Charleston, SC 29450
Fincantieri Cantierieri Navali Italiani Spa, Merchant Shipbuilding Div., 34123 Trieste, Italy
In-Place Machining, 3811 N. Holton St., Milwaukee, WI 53212
Leevac Industries, LLC, P.O. Box 1190, Jennings, LA 70546
Motor-Services AB, Box 2115, Ronninge S- 144 04, Sweden
Newport News Shipbuilding, 4101 Washington Ave., Newport News, VA 23607
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, Gulfport, MS 39505
Washburn Doughty, P.O. Box 296, E. Boothbay, ME 04544

SHIPYARDS

Alabama Shipyard, P.O. Box 3202, Mobile, AL 36652
Atlantic Marine, Inc., P.O. Box 3202, mobile, AL 36652
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
R&R Maintenance Inc., 5700 Proctor St. Extension, Port Arthur, TX 77642
United Defense, 1525 Wilson Blvd., Ste 700, Arlington, VA 22209-2444

SIGNS & LABELS

Horizons ISG, 18531 South Miles Road, Cleveland, OH

SILENCERS

EM Products & Cowl Silencer Div. Phillips and Temro Ind., 5380 Cottonwood Lane, Prior Lake, MN 55372, (952) 226-8105, (952) 440-3400, hentig@phillipsandtemro.com, Contact: Bob Hentig, Sales Mgr. Marine Products, www.phillipsandtemro.com
Silex Inc., 6659 Ordan Dr., Mississauga, ON L5T 1K6, Canada

SILICON BRONZE

Atlas Metal Sales, 1401 Umatilla St., Denver, CO 80204, 800-662-0143, 303-623-3034, jsimms@atlasmetal.com, Contact: Jerry Simms, www.atlasmetal.com

SIMULATION TRAINING

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, Oboroni, St. Petersburg 193019, Russian Federation

SLIDING DOORS

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

SOFTWARE

Creative Systems Inc., P.O. Box 1910, Port Townsend, WA 98368
Design Maintenance Systems, Inc, 340 Brooksbank Ave, Ste.100, North Vancouver, BC VTJ 2C1, Canada
Loadmaster International, St. Varvsgarten 11B SE, 211 19 Malmø, Sweden
Resurgence Software Inc., 2021 Lakeshore Dr., Ste 21D, New Orleans, LA 70122

STEERING GEARS/ STEERING SYSTEMS

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

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

SURVIVAL EQUIPMENT

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

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

Saab Marine Electronics, Box 13045, 402 5Goteborg, Sweden
Technical Marine Services, 6040 North Cutter Circle, Portland, OR 97217

TESTING SERVICES

Wyle Laboratories, 7800 Govern's Dr. S.W., Huntsville, AL 35807

THRUSTER SYSTEMS

Omnithruster, 2201 Pinnacle Parkway, Twinsburg, OH 44087, 330-963-6310, 330-963-6325, widmer@omnithruster.com, Contact: Kurt Widmer, www.omnithruster.com

TOWING EQUIPMENT

Allied Shipbuilders Ltd., 1870 Harbour Road, Vancouver V7H 1A1, Canada

TRAINING

International Maritime Training, 910 SE 17th St., Ste 200, Fort Lauderdale, FL 33316
LSI Lockmaster Security, 1044 S. Main Street, Nicolasville, KY 40356
Massachusetts Maritime Academy, 101 Academy Drive, Buzzards Bay, MA 02532
SUNY Maritime College, 6 Pennyfield Ave, Bronx, NY 10465-4198
USMMA- Global Maritime and Transportation School, 300 Steamboat Rd., Kings Point, NY 11024

TRAINING VIDEOS

Coastal Training Technologies Corp., 500 Studio Drive, Virginia Beach, VA 23452
Moxie Media, PO Box 10203, New Orleans, LA 70181

TRANSMISSIONS

Karl Senner Inc., 25 W Third, Kenner, LA 70062

TRAVEL SERVICES

Griffin Americas, 3648 Greenbriar Drive, Houston, TX 77098
MarineTravel Services, 200 Golden Oak Court, Suite 120, Virginia Beach, VA 23452

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 LNS 7FD, UK

ULTRASONIC TESTING

M.A.C.E, 5910 NE 15th Ave., Fort Lauderdale, FL 33331

UNDERWATER SURVEILLANCE SONAR

C-Tech LTD, P.O.Box 1960, Cornwall Ontario K6H6N7, Canada

VACUUM EQUIPMENT

Industrial Vacuum Equipment Corporation, N8091 Maple Street, Ixonia, WI 53036, 800-331-4832, 920-261-7117, randy@industrialvacuum.com

VACUUM TOILET SYSTEM

Envirovac Inc, 1260 Turret Dr., Rockford, IL 61111
Jets Vacuum Sewage System, P.O. Box 14, N-6060 Hareid, Norway

VALVES & FITTINGS

Leslie Controls, 12501 Telecom Dr., Tampa, FL 33637

VENTILATION SYSTEMS / PRODUCTS

Delta T Systems, 858 West 13th Court, Riviera Beach, FL 33404
Dry Air Technology, 313 North Oak St., Burlington, VA 88233

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

RWO, Leerkaampe 3, D- 28259 Bremen, Germany
Severn Trent Da Nora, LLC, 1110 Industrial Boulevard, Sugar Land, TX 77478

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

WATER PURIFIERS

Alfa -Laval Separation, Inc., 955 Meams Rd., Warminster, PA 18974
Everpure, 502 Indiana Avenue, Sheboygan, WI 53081, 866-873-7506, 866-203-7361, customerservice@plymouthwater.com, Contact: Jerry Letcher, www.everpure.com
Gardner Denver Water Jetting Systems, 12300 N. Houston Rosslyn Road, Houston, TX 77086
Offshore Marine Labs, 2000 West 135th St, Gardena, CA 90249
Reverse Osmosis of S.F., Inc., 150 SE 29th Street, Ft. Lauderdale, FL 33316
Reverse Osmosis of South Florida, Inc., 150 S.E. 29th St., Fort Lauderdale, FL 33316

WATERTIGHT CLOSURES

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

WINCHES & FAIRLEADS

Allied Systems, 2300 Oregon St., Sherwood, OR
Burrard Iron Works Ltd., 220 Alexander Street, Vancouver, BC V6A 1C1, Canada, 604-684-2491, 604684-0458, sales@burrardironworks.com
Coastal Marine Equipment, 20995 Coastal Parkway, Gulfport, MS 39503-9517, 228-832-7655, 228-832-7675, sales@coastalmarineequipment.com, Contact: Ralph Waguespack, www.coastalmarineequipment.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
MMC International, 60 Inip Dr, Inwood, NY 11096
Rapp Hydema, 4433 27th Ave. West, Seattle, WA 98199, (206) 286-8162, (206) 286-3084, scotta@rappus.com
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
Timberland Equipment Ltd & Almon Johnson, 459 Industrial Ave., Woodstock, ON N4S 7Z2, Canada

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Rapp Hydema, 4433 27th Ave. West, Seattle, WA 98199, (206) 286-8162, (206) 286-3084, scotta@rappus.com

WINDOWS

Deansteel Mfg., 111 Merchant St., San Antonio, TX 78204
Garibaldi Glass, 7344 Winston Street, Burnaby, British Columbia V5A 2G9, Canada

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Bae Systems, 550 South Fulton St., Mt. Vernon, NJ 10550
Hepworth Marine International, Hepworth House, Brook St., Redditch, Worcestershire B98 8NF, UK
Wynn Marine, Ltd., Wynn House, Lansdown Estate, Cheltenham, Gloucestershire, UK

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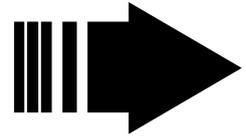
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ABB has supplied electric propulsion systems to ships for over 50 years and has the longest experience and highest number of deliveries of any company in the world. In 1983, they delivered the world's first AC electric propulsion system. In 1990, they delivered the first electric podded propulsion system, Azipod.

Circle 101



Autoload

ASC On-board and Load Planning software is used at all stages of vessel operations. Central to the On-board solutions is Autoload. The program reads data from tank, draft, wind and SCR sensors as well as user-input, and then reports on the condition of the vessel. Autoload is used in conjunction with ASC-developed load planning module.

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. Features like centrally located handles that allow for maneuverability.

Circle 103



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The Atlantic Companies encompass four shipyards. Two are located on the East Coast in Jacksonville, Florida and two on the Gulf of Mexico in Mobile, Alabama. Yard-by-yard, Atlantic offers a wide range of capabilities and services: new construction, repairs and conversion.

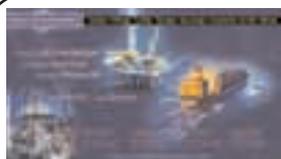
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Marine Sonic

Marine Sonic Technology's Centurion Sea Scan PC Spalsh Computer Systems is a small, compact and rugged portable low cost sonar system. It is designed with the search and recovery community in mind. The system can be operation within minutes and only needs a 12 VDC power source.

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Circle 108



McNichols

Founded by Robert McNichols in 1952, McNichols offers product categories such as Perforated Metal, Wire Cloth and Expanded Metal. They also offer a wide range of flooring, treads, bar, safety and fiberglass gratings and handrail components.

Circle 109



Parker

Parker Hannifin is a component systems supplier for marine applications such as steering systems, engine controls, fuel/water systems, refrigeration and air conditioning, bow thrusters, stabilizers, trim control, door/hatch operation and more.

Circle 110



Glenair

Glenair is a manufacturer and supplier of commercial and Mil-Spec connector accessories. Glenair offers full-spectrum product lines designed to meet interconnect requirements. From hermetic connectors to fiber optics, from conduit systems to Micro-D assemblies, Glenair does it all.

Circle 106



McMurdo

The McMurdo M-2 Automatic Identification System AIS provides safety benefits and improves effectiveness of safe navigational practices. The M-2 provides an AIS solution for all types of vessels that are required by legislation, code or national ruling to install AIS. The M-2's compact design and ease of use accommodates smaller crafts.

Circle 107



Smiths Detections

Smiths Detection offers security solutions through trace detection equipment and Smiths Heimann x-ray systems. In both areas we are world-leaders. Their combination of technologies results in products & services no other company is capable of supplying, to protect our freedom.

Circle 113



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Circle 114



Viking Fender

Viking Fender custom measures and manufactures these bow fenders to fit properly, realizing that lines must work over them without fouling. All of their fenders have their particular advantages. To ensure the best selection to meet your specific need, please feel free to consult with them before placing your order.

Circle 115



MMC

MMC CL Couplings provide a pick and safe flanged connection on a wide variety of applications. The helical cams are rotated into place with the average connection taking less than one minute. Each cam is individually locked into place resulting in a vibration proof, leak proof, twist proof connection.

Circle 116



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 boat builders (OEMs). Nearly all products, which are mainly intended for installation in smaller commercial vessels, are still being developed in-house.

Circle 117



Seaward

Large or small, floating or fixed, Seaward Sea Guard fenders are in use from the tropics to the Arctic, providing tough heavy-duty fendering systems for harbor, offshore and ship-to-ship applications. The foam-filled construction provides an unsinkable fender body that permits high energy absorption with a relatively low reaction force.

Circle 118



ShipNet

ShipNet is an international maritime IT solution provider. They develop, implement and support a complete range of vessel and shore maritime software, including financial, fleet, commercial and liner management solutions. ShipNet was established 1991 from their predecessor DataShip.

Circle 119



Centa

Centa has published an updated 57 page catalog covering the Centax-SEC coupling line. The "Super Elastic Coupling" system, introduced in 1988, offers several styles of flexible couplings covering marine propulsion and auxiliary drives thru 650 kNm (480,000 Lb-ft.).

Circle 120



MTU

MTU's new Series 2000 and 4000 engines in the 330 up to 3,010 kW power range were jointly developed with the American cooperation partner Detroit Diesel Corporation. MTU's Series 1163 features a power and reliability, while offering propulsion solutions commercial navigation as well as fast naval vessels.

Circle 121



Furuno

The FA-100 is a universal shipborne AIS capable of exchanging navigation and ship data between own ship and other ships or coastal stations. The FA-100 consists of VHF/GPS antennas, a transponder unit and several associated units. The LCD panel displays all required information about Static data,

Circle 122



Detcon

Detcon Model TP-700 Hydrogen Sulfide sensors are non-intrusive Smart sensors designed to detect and monitor H₂S in air over the range of 0-100 ppm. The sensor assembly consists of a proprietary solid state metal oxide semiconductor in a stainless steel housing, a control transmitter circuit, and sensor splashguard.

Circle 123



Stromme

Stromme Ships Equipment has been supplying the maritime industrial sector with goods and services on a worldwide scale, with operations in 14 countries around the world. Stromme air solutions give air quality, air treatment, distribution system, SMC Compressors, installation, and low life-cycle costs to their customers.

Circle 124



Hernis

Norway-based Hernis Scan Systems launched its CCTV system server, called Hernis 500. Totally digital and ethernet-based, it contains all benefits of its predecessor, the Hernis 400. High quality moving video-pictures in real time, simultaneously streams to/from disc as well as the system Ethernet backbone, which is easily extended with new applications.

Circle 125

Vessels for Sale/Charter • New/Used Equipment

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WTA

SAN FRANCISCO BAY AREA WATER TRANSIT AUTHORITY

NOTICE OF REQUEST FOR PROPOSALS
TO DESIGN BUILD AND DELIVER TWO NEW 46 CFR
SUBCHAPTER T PASSENGER-ONLY VESSELS

CONTRACT NO. 05-006

Proposals will be received until 1000, Prevailing Time, on Wednesday, 12 October 2005, at which time all proposals will be opened in accordance with the provisions of the Spare Vessels RFP. The San Francisco Bay Area Water Transit Authority (the "WTA") will accept sealed proposals from responsible and eligible proponents to enter into a Contract with the WTA to design build and deliver two (2) new 46 CFR Subchapter T passenger-only ferry vessels. The desired characteristics include: a length of approximately 24 meters, a service speed of twenty-five (25) knots at eighty-five percent (85%) of the Marine Continuous Rating (MCR), an aluminum hull, a combination of interior and exterior seating arrangements, weather protected storage for a minimum of 25 bicycles, a design compatible with the existing as well as proposed terminal facilities including the ability to bow and side load passengers and bicycles. The Contractor shall also provide drawings, manuals, training, engineering support, special tools and required spare parts.

An Offerors (Pre-Proposal) conference will be conducted on Tuesday, 09 August 2005, from 1300 - 1600 Prevailing Time at the Bayside Conference Room, Port of San Francisco, Pier One, San Francisco. Attendance at the Offerors (Pre-Proposal) conference is mandatory. The Request for Proposals package (the "Spare Vessels RFP") will be posted on the WTA website, www.watertransit.org on 12 July 2005. After 12 July 2005 interested parties may request a free CD of the Spare Vessels RFP from the WTA; or, upon payment of a non-refundable fee of \$100.00, interested parties may obtain a hard copy of the Spare Vessels RFP from the WTA office during regular business hours. The WTA is located at 120 Broadway, San Francisco, CA 94111. Informational copies of the Spare Vessels RFP will also be on file at the WTA's office for viewing during regular business hours. Proposals are due in accordance with the RFP requirements.

The WTA reserves the right to accept any proposal or proposals, to waive any informality, to modify or amend any proposal prior to acceptance, and to reject any or all proposals, all as the WTA in its sole judgment and discretion may deem to be in its best interest. The WTA also assumes no obligation of any kind for any expense incurred by any person who responds to this advertisement or submits a proposal in accordance with the provisions of the Spare Vessels RFP.

All inquires with respect to this advertisement should be directed to
Mary Frances Culnane, Manager, Marine Engineering, at 415.291.3377.

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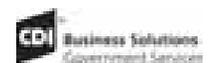
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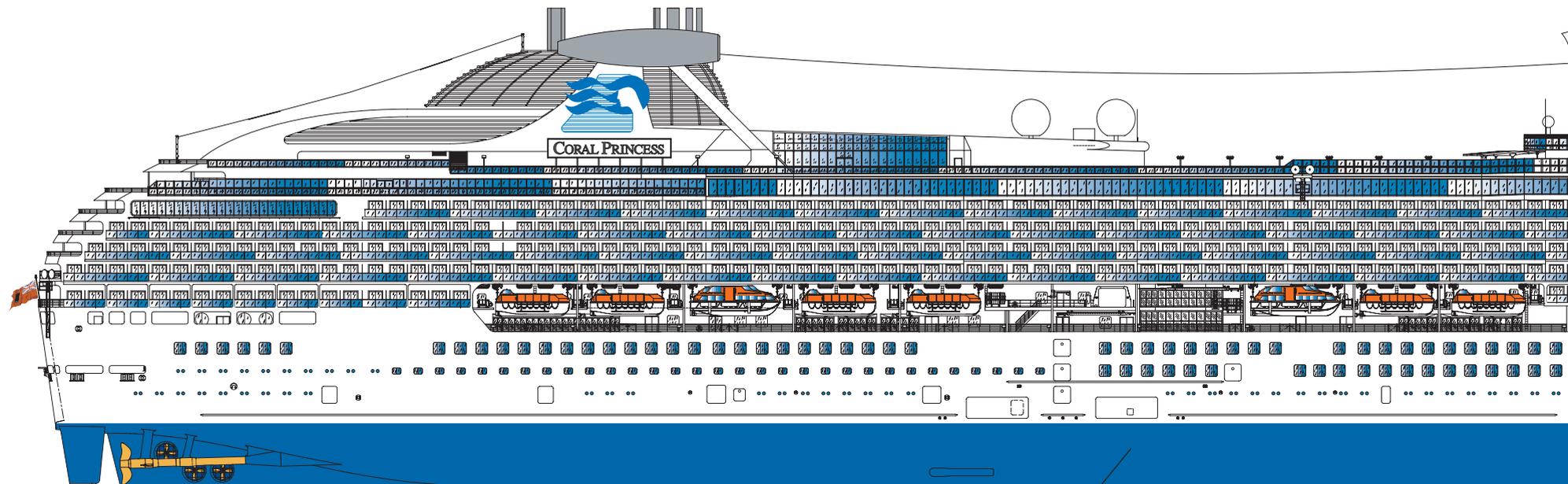
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