

November 2004

# MARITIME REPORTER AND ENGINEERING NEWS

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# The Workboat Annual

Chat with the CEO

## Ole Johansson Shares a Vision

The Future is Now

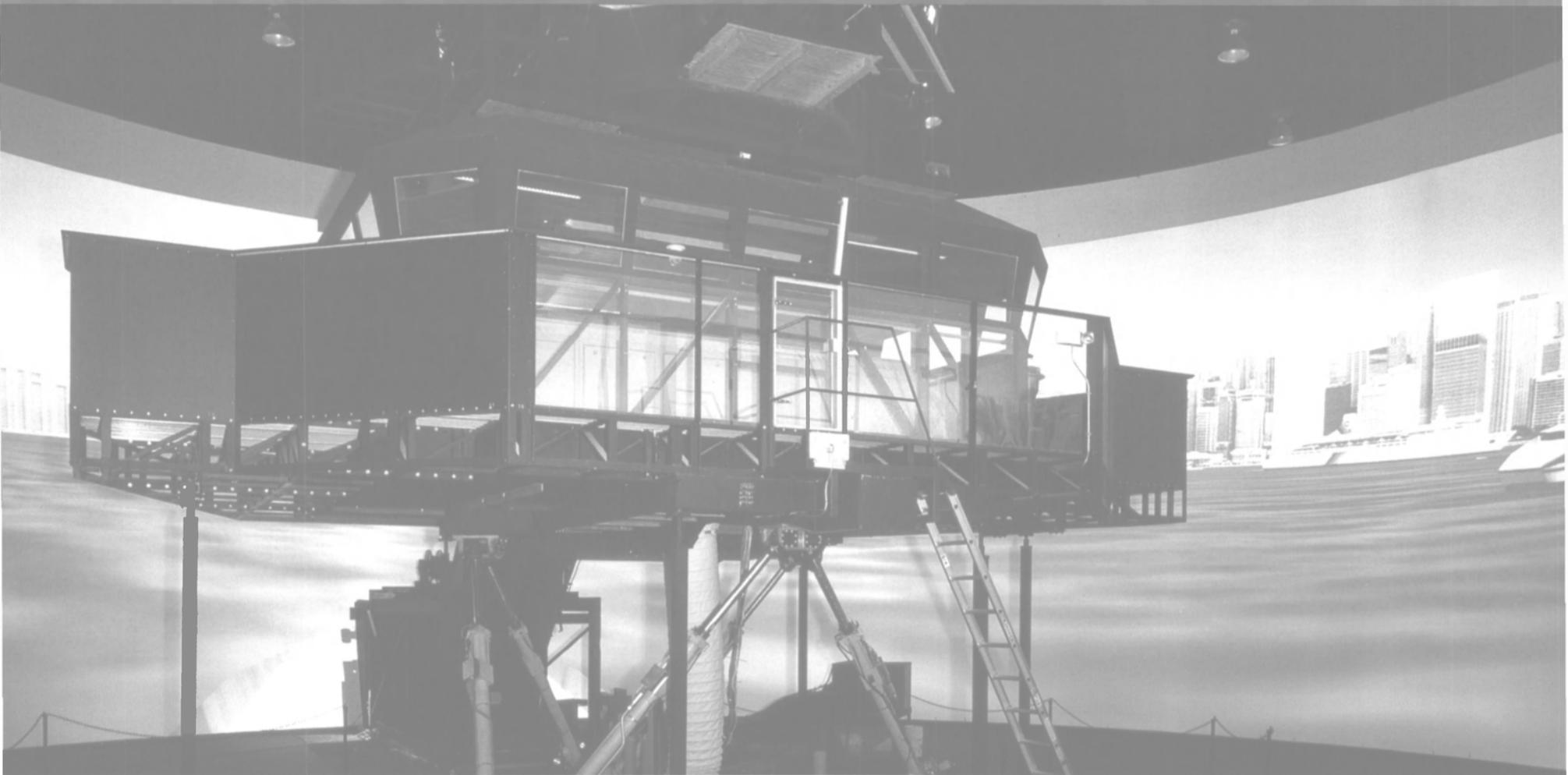
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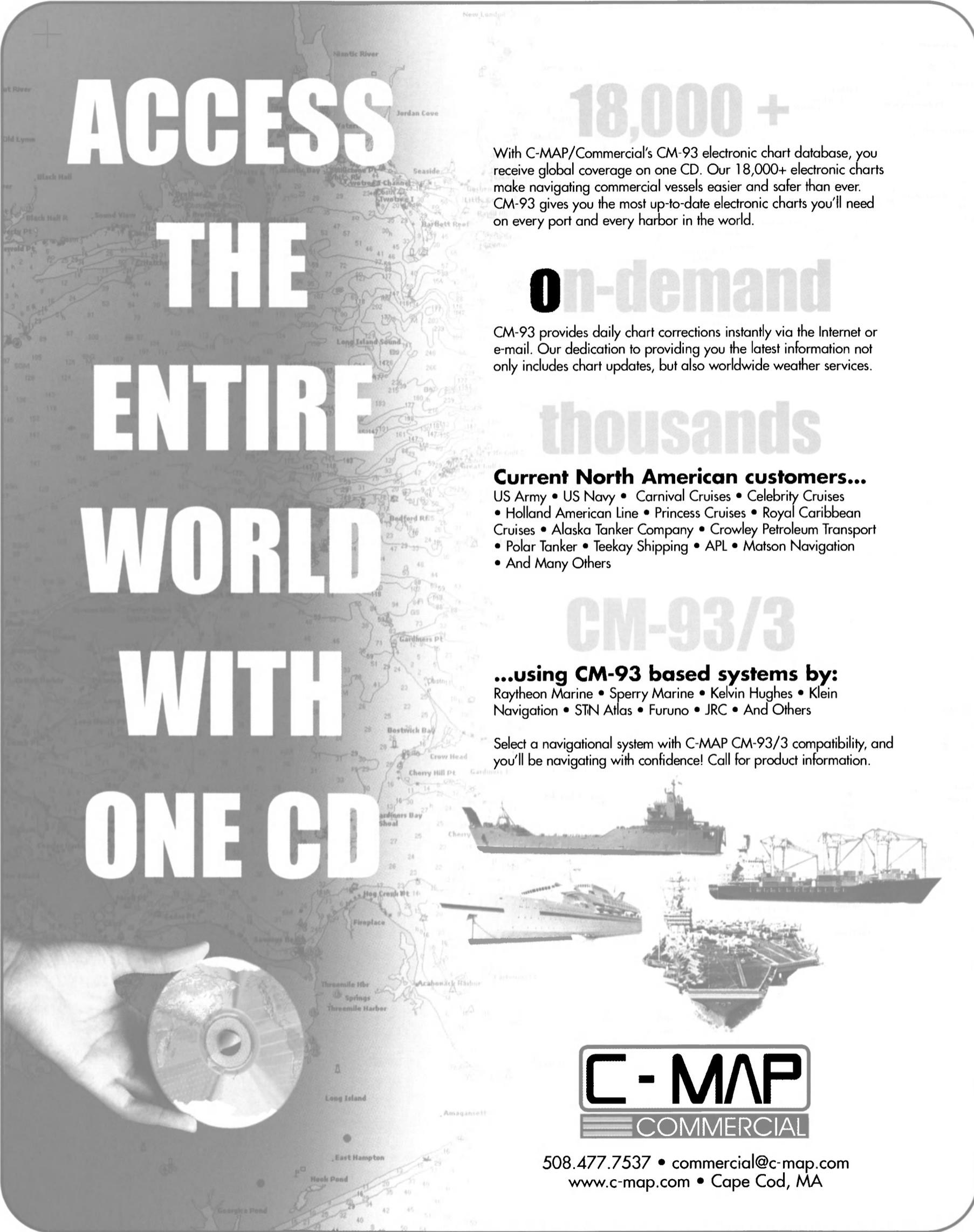


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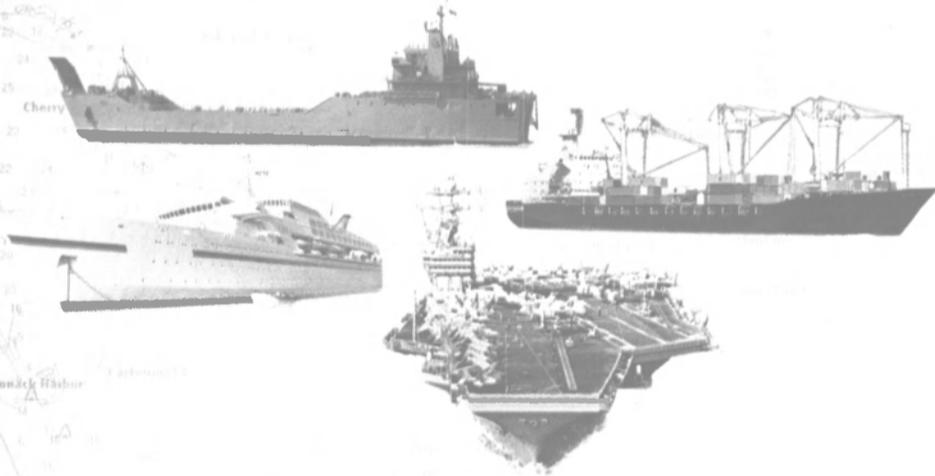
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## Contents

### Government Update

#### 14 Air Emissions from Ships

More than ever, ship owner/operators are under scrutiny regarding emissions from their fleet. — by **Dennis L. Bryant**

### Naval Architecture & Marine Engineering

#### 20 Demystifying Parametric Roll

Parametric Roll is a rare — but dangerous — phenomenon, particularly threatening to containerships.

### The Workboat Annual

#### 26 A Bright Spot in the Oil Patch

Innovations in crew and supply boats have proven to be a bright spot for Gulf of Mexico builders. — by **Larry Pearson**

### CEO Chat

#### 42 Go East

Wärtsilä CEO Ole Johansson confides his visions for the future of the marine propulsion market. — by **Greg Trauthwein**

### Investment in Design

#### 50 For those in Peril

David Tinsley uncovers a treasure trove of innovation, including a new system to reach and rescue stricken submariners.

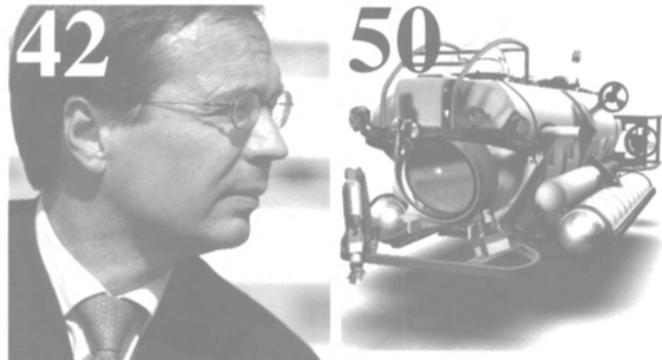
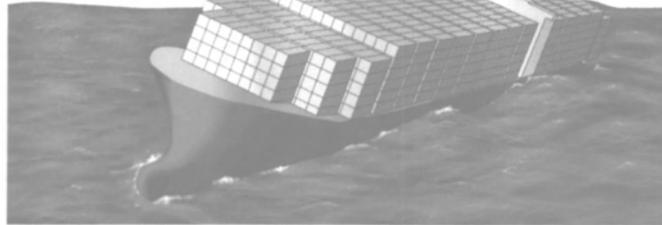
#### 54 Record Spend on Propulsion?

A study says propulsion spending will reach \$5.9B in 2006.

### The Electric Ship

#### 72 Electric Propulsion for Coastal Ships

20



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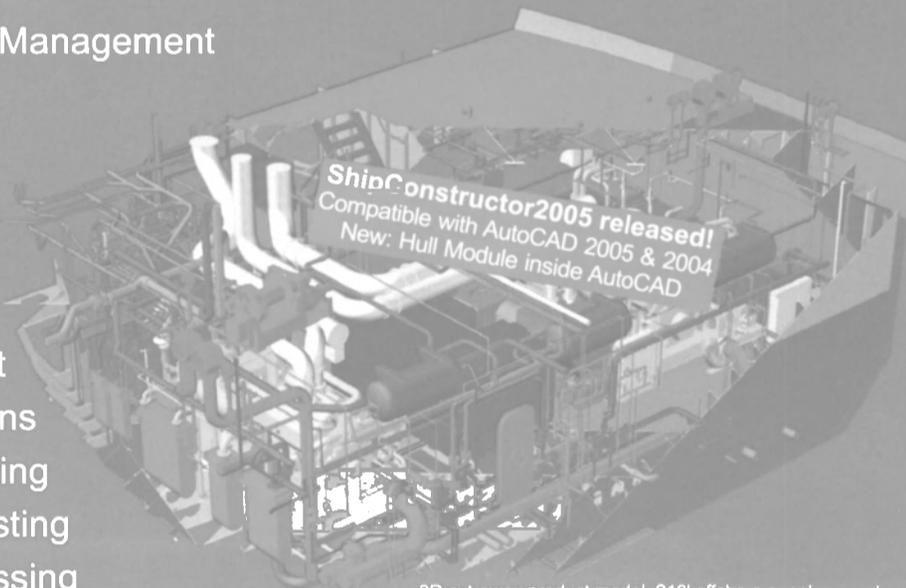
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## The Index

A&P Tyne	68	Grande Anversa	10	Oceaneering International	85
A.P. Moller-Maersk	64	Grimaldi Group	10	Offshore & Marine ASA	73
ABB Turbocharger	33	Guido Perlo & Associates	85	Onboard-Napa	58
ABS	88, 97	Gulf Offshore Logistics	27	Osprey Line	31
Alaska Steamship	69	Gyro Compass	37	P&O Nedlloyd	79, 63
Alstom	17, 73	HamiltonJet	11	Pasha Hawaii Transport Lines	44
Am Rest-Air Quality	34	Hapag Lloyd	58	Princess Cruises	17, 70
AMD Marine Consulting	11	Hepworth Marine	80	R&R Marine	64
American Commercial Lines	85	Hercules Liftboat	30	Red Band AS	88
American Superconductor	74	Horizon Maritime	87	Rigdon Marine	26
Aries Marine	11	Hydrex	65	Riley el Fitzgerald, Jr.	60
ASMAR	53	Hyundai Heavy Industries	56, 58	Roger Richard	31
ASRY	68	Hyundai Vinashin Shipyard	66	Rolls-Royce	50
Austal	9, 86	Idemitsu Tanker	60	Royal Caribbean	17
Benchijigua Express	9	IHC Caland	65	Saab	48
Benrad AB	77	IHI	60	Seacor Marine	27
Blohm + Voss Repair	78, 88	IMO	71	Seacraft Shipyard	37
Blount Boat	10	Industrial Power Systems	85	Selco	85
Blue Ocean Yacht Management	78	Intelligent Engineering	65	SembCorp Marine	66
Bluewater	68	International Point	60	Senesco	30
Boatswains Locker	11	Ips	76	Shell	68
Boeing	47	IPS Marine	85	Siemens	48
Bollinger Shipyards	87	Izar Corenas Ferral-Fene	65	Simrod	71
BP Shipping	58	Izar Construcciones Navales	62	Single Buoy Moorings	53
Breaux Brothers	26	Jamestown Metal Marine Sales	85	Sinsimon Navigation Thailand	68
BridgeMaster	70	Kalmar	81	SNAME	97
Bureau Veritas	78	Kawasaki	52	Star Information Systems	65
CAE	81	Keppel	73	Statoil	56
Cap Saurage	31	Keppel Batangas	68	Stocznia Szczecinska Nowa	43
CapRock Communications	82	KHI	60	Sunnex	71
Caterpillar	11, 26	K-line	60	Teco Ocean Shipping	53
CEtech	56	Knight Carver YachtCenter	12	Teekay Shipping	56, 63
Chantiers de l'Atlantique	62	Knightsbridge	63	Tetra Technologies	30
Chevron Shipping	97	Kongsberg Maritime	78	Thrustmaster	37
Clarkson	63	Kvaerner Masa	62	Tidewater	86
CME Zhenjiang Propeller Co. Ltd	42	L-3	81	Transocean	84
Conaship International	58	Lough Ship	76	Tsakos Energy Navigation	63
Conrad	29	Leif Haegh	56	U.S. Navy	12
Court Ramsay	11	Lloyd's Register	71	U.S. Shipping	30
Crane Materials International	70	M Ship Co	12	Uljanik Shipyard	10
Crescent Towing	40	MacGregor	76, 80	Ulstein Verft	53, 43
Crew Boats	26	Malta Shipyards	65	Universal Shipbuilding	60
CSSC	42	MAN B&W	58, 77, 88	University of Arizona	97
Cummins	48	Marathon Oil	66	V. Ships	17, 68
Cunard	17	Marine United	60	Vacon	73
Damen Shiprepair Rotterdam	65	Master Marine	26	Vallejo/Baylink	11
Douglas-Westwood	53	McMurdo	36	Van der Leun BV	72
Edison Chouest Offshore	26	McNulty Offshore	68	VeriSTAR	79
Elliott Bay Design Group	9	MES	60	ViaSat	83
EnerSea Transport	56	Meyer Werft	13, 62	Vince Breaux	27
Entech & Associates	11	MHI	60	Virtu Ferries	86
Estaleros Navais de Viano do Castelo	62	MOL	60	Wallenius Marine	66, 77
Evergreen	60	MTU	59, 86	Wartsila	41
Farrell Lines	65	Multiship	40	Wynn Marine	80
Fincantieri	62, 70	Mycelx Technologies	71	Xantic	79
Flensburger Schiffbau	62	NASSCO	12		
G.R. Bowler	48	Nauticast	80		
GE Diesel	40	Naval Surface Warfare Center, Carderock Division	74		
General Maritime	63	New Century Shipbuilding	53		
Global Industries	30	Nichols Brothers	59		
Global Marketing	82	Northrop Grumman	70		
Golar	58	NYK	60		

## Maritime Meanings

### Squeegee

The familiar rubber-edged "broom" used for sweeping water from windows, vehicle windscreens, and the like, after they have been washed. Originally a nautical word, with the variation "squilgee"; it referred to the swab used for washing and cleaning the decks, and is a corruption of "squeege," which itself is a colloquialism for "squeeze."

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

### Tiger Woods Off Course?

According to an Associated Press report, **Tiger Woods** will not be fined for entering San Juan's port aboard his yacht without notice following his wedding, but the U.S. Coast Guard warned him not to do it again. Ever since new maritime security rules came into effect as of July 1, 2004, many vessels must submit an arrival notice at least four days before entering a U.S. port. According to the AP report, the Coast Guard briefly detained Woods and his new wife, Swedish model **Elin Nordegren**, aboard their 155-ft. yacht, the *Privacy*, after it entered San Juan's port last month. *Privacy's* captain reportedly did not know that the new regulations applied to Puerto Rico, a U.S. Caribbean territory, officials said. *Privacy*, registered in the Cayman Islands, was allowed to refuel as immigration authorities spoke with those aboard, including the newlyweds. The Coast Guard's captain of the port could have fined Woods up to \$32,500 but since it was a first offense issued a letter of warning.

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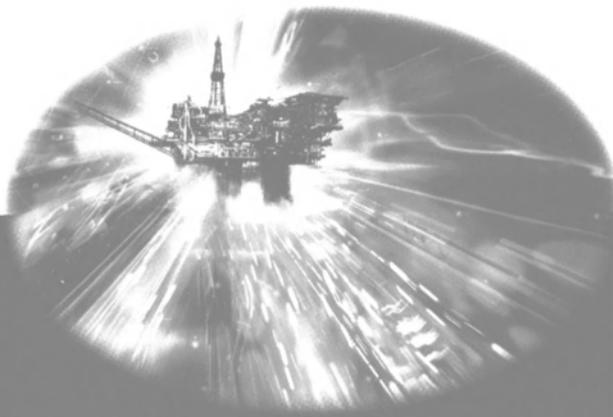


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## Editor's Note

As we enter the homestretch of another year, it is worthy to look ahead to analyze where the best business opportunities lie in the coming 12 months and beyond.

**Maritime Security:** Though the public mantra from companies and organizations seeking to tap this lucrative, long-term market generally bemoans the low level of funding for maritime security initiatives, I ask when is the last time you ever heard anyone say "We're fully funded ... thank you?" Companies intent on getting a slice of this burgeoning pie should have its course firmly set and be prepared to move now. As is expected, the large corporate players are already at the table. But with an Administration that has made securing U.S. borders and commerce its top priority; a Department of Homeland Security that is nearing two years working as a single, cohesive and fully functional unit; and an ever-increasing emphasis and reliance on the skill and assets of the United States Coast Guard to carry out the mission, it could be reasoned that there will be plenty of business to go around.

**Energy:** Broad and ubiquitous, the energy markets — particularly if oil prices remain in the stratosphere — will play a bigger roll than ever in making or breaking bottom lines. It is inconceivable to believe that, given a price per barrel of \$50+, that activity in and around the Gulf of Mexico, or offshore around the world for that matter, will not heat up considerably, particularly efforts to discover and recover resources in ever-deepening waters. Also, the effort to recover and deliver gas is in full swing, with numerous LNG projects in full swing or in advanced planning stages.

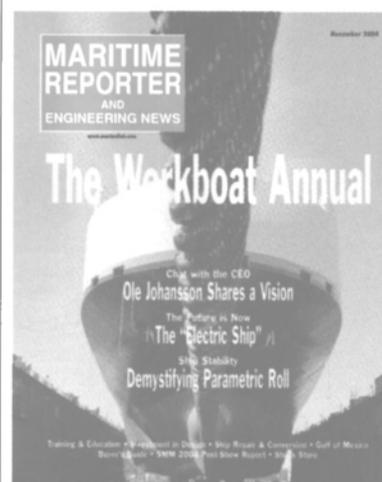
**Short Sea Shipping:** Oft-debated yet rarely acted upon, the ability to move people and cargo on short, high-speed routes in and around the major metropolitan areas is quickly picking up steam. The Maritime Administration has held several conferences on the topic, and the industry has responded with a plethora of innovation, including many proven and new vessel and equipment designs.



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## On the Cover



Pictured on this month's cover is MV Jean Anne, the first Pure Car Truck Carrier (PCTC) to be built in the U.S. Built by VT Halter Marine at its Pascagoula, Miss., facility, Jean Anne is one of the largest vessels to be launched by a U.S. mid-tier shipyard.

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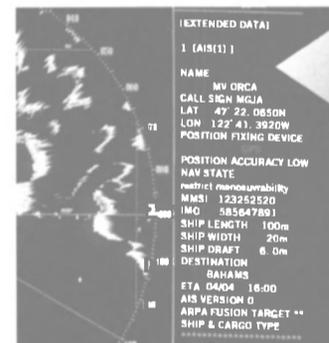
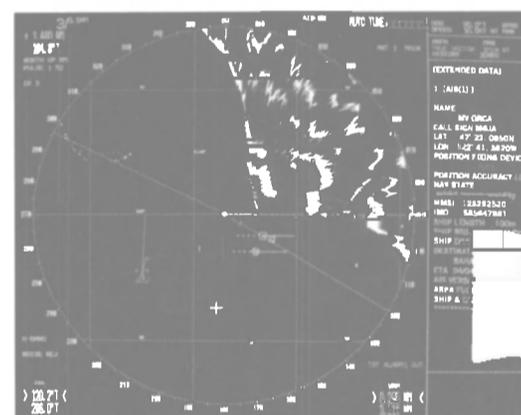


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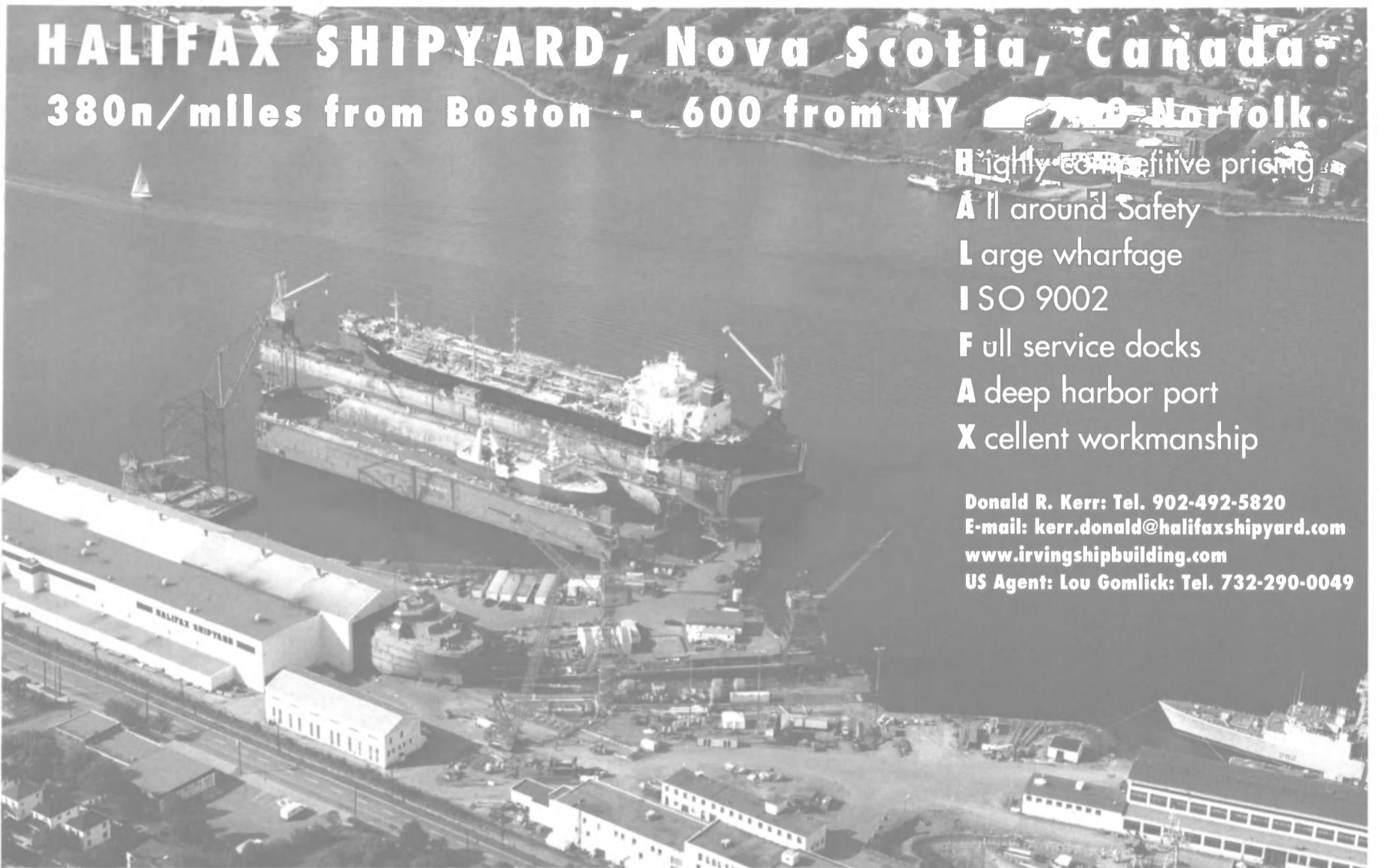
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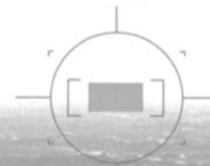
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## Austal Launches 417 ft. Aluminum Ship

Austal has launched what it is claiming to be the largest aluminium ship ever built, the 417 ft. (127 m) trimaran ferry *Benchijigua Express*. *Benchijigua Express* is the outcome of collaboration between Fred. Olsen, S.A. and Austal involving more than three years of R&D to produce a new vessel that is designed to enable operators to begin operations on new routes where sea conditions are too challenging for existing fast ferries. Power is provided by four 8,200 kW diesel engines driving three waterjets the *Auto Express 127* trimaran will be able to maintain Fred. Olsen, S.A.'s projected service speed in excess of 40 knots and carry 1,350 passengers, over 340 cars and a substantial number of trucks. "The sight of this gigantic ship, the largest aluminium vessel to ever be built in the world, illustrates just how far Austal has come since it delivered its first vessel back in 1988," said **John Rothwell**, Austal's Chairman. "At 127 m this huge vessel is 4¼ times longer than the first Austal-built live-aboard dive catamaran of just 30 m which was built in approximately six months with just 30 people. Now we employ 1200 people," he said. "*Benchijigua Express*" is now undergoing final onboard fit-out prior to undergoing sea trials during November. The vessel will then depart for the Canary Islands on a delivery voyage covering approximately 9,500 nautical miles.

Circle 22 on Reader Service Card

## Design Completed for Steamship Authority Ferry

A new 1,000-seat double-ended ferry will soon be sailing the waters between Woods Hole and Martha's Vineyard, Mass., replacing the *Islander*, which has been making the run for more than half a century. The yet-unnamed ferry, whose contract design was recently completed by Seattle's Elliott Bay Design Group for the Woods Hole, Martha's Vineyard and Nantucket Steamship Authority, is expected to begin service in May 2006.

"Our ridership requires a combination of island ambiance, economic operation, and a high standard of environmental friendliness and reliability," said Captain **Ed Jackson**, SSA project manager. A "quiet room" provides riders a tranquil area for working or relaxing, and a snack bar and dining area offer food service. Two elevators permit access to all passenger decks for mobility-impaired riders. Directions in Design of St. Louis is designing the interior decor of all passenger spaces. The enclosed vehicle deck offers protection

from the steep chop frequently encountered on the seven mile crossing and includes two lift decks, allowing a total automobile capacity of up to 80 vehicles in seven car lanes. With the lift decks raised to the overhead, the 255 ft. by 64 ft. freight deck provides more than 1,200 ft of parking lanes with 16 ft. of clear height. The vessel features EMD

main propulsion engines, each developing 3,000 bhp at 900 rpm, and Reintjes WAK 3445K 3.036:1 reduction gears. Design operating speed is 16 knots, permitting hourly departures from Woods Hole and Martha's Vineyard.

A contract award is expected in November.

Circle 20 on Reader Service Card

## Blount to Deliver MV Isleno

The 155-ft. (47.2 m) cargo/passenger ferry, *M/V Isleno*, built by Blount Boats for the Puerto Rico Ports Authority was delivered to Puerto Rico last month. This is the 21st boat Blount has designed and built for the Authority since the 1950's and the 30th OSV type



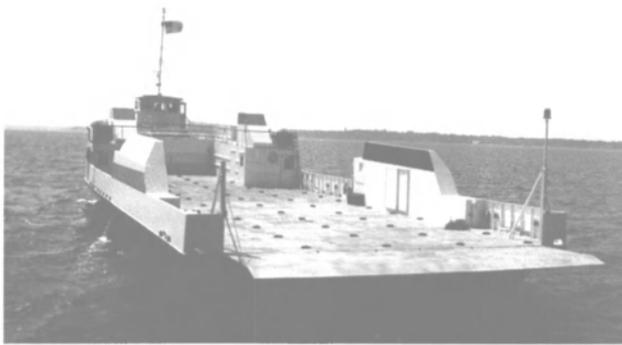
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**Hull - 315**  
 Builder, Designer ..... Blount Boats, Inc.  
 Designer ..... Blount Boats, Inc.  
 Owner ..... Puerto Rico Ports Authority  
 Length ..... 157 ft. (47.2 m)  
 Beam ..... 41.5 ft. (12.6 m)  
 Depth ..... 11.7 ft. (3.6 m)  
 Maximum Draft ..... 8.5 ft. (2.6 m)  
 Main Propulsion ..... (4) Detroit Diesel 12V2000 MTU  
 Ship's Service Power ..... (2) Northern Lights  
 Marine Gear ..... (4) Twin Disk 5202 Gears  
 Propellers ..... (4) Rolls-Royce 48D x 32P  
 ..... 4-Blade Bronze, HTP-4B Style  
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 Steering System ..... Wagner Hyd.  
 Speed ..... 16 knots  
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 Life Saving ..... (2) Viking 100 Man IBA's  
 ..... (1) Category 1 EPIRB  
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design the yard has launched to date.

M/V Isleno is powered by four Detroit Diesel 12V2000 MTU engines totaling 3,220 hp, and is designed to carry 200 LT (eight loaded trailers or 40 cars) on the cargo deck and accommodate 209 passengers on regular ferry runs between the islands of Vieques and Culebra from the Port of Fajardo, making it the bridge for shipping commerce between the islands. The construction of the M/V Isleno was based on the design of the Cayo Norte and the Santa Maria, two previous sister ships built by Blount for the Port Authority. The vessel is certificated by the U.S. Coast Guard under Subchapter "K" for ocean routes less than 100 miles. Blount says this OSV at 15 knots is one of the fastest recently built OSV's and her speed will help in dodging the hurricanes now in or headed for the Caribbean area.

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### Grande Anversa Delivered to Grimaldi

Grande Anversa, a 38,000-ton Pure Car-Truck Carrier (PCTC) was delivered recently from Uljanik Shipyards for Grimaldi Group Naples. Grande Anversa is the eighth of 11 vessels built by the Croatian shipyards of Uljanik for Grimaldi Group Naples. In the last three years, the Uljanik Shipyards have delivered to the Group Grand Benelux and Grande Italia (in 2001); Grande Spagna and Grande Portogallo (in 2002);



Grande Roma and Grande Napoli in 2003; and Grande Lagos last May. Grande Anversa measures 577.4 x 102 ft. (76 x 31.1 m) and is able to transport 4,600 cars and more than 100 containers; or 256 trucks and 2,000 cars. It has a maximum speed of 20 knots and a 26-man crew. The ship's loading flexibility allows it to carry and transport rolling cargo of any length and weight. Equipped with 11 decks, three of which hoistable up to five meters, the ship can load trucks, tractors, twin-deck tourist busses, train wagons and excavators.

### Aries Marine Adds PSV to Fleet

Aries Marine Corp. of Lafayette, La., added a deepwater Platform Supply Vessel to its supply boat division. **Court Ramsay**, President and CEO of Aries Marine Corp. announced that the company has placed an order for the PSV to complement its existing fleet of offshore supply vessels. Expected delivery will be February 2005. The 220 x 54 x 19 ft. Entech & Associates designed M/V Abigail Claire will be USCG inspected, ABS fully classed and in compliance with the SOLAS convention. Caterpillar 3516B main engines, rated at 4,200 bhp will turn a pair of Aquamaster 360 degree azimuthing props, driving the vessel to a speed of 12 knots. The dynamic positioning (ABS classed DP 2) Abigail Claire will have deadweight capacity of 2,400 LT. Clear deck area is 6,140 sq. ft., designed for 875 lbs./sq. ft. deck loading, below deck cargo will accommodate 6,000 bbls of 24 lb./gal. liquid mud (6 -1000 bbl tanks) and 6,000 cu. ft. of bulk (5 - 1200 cu ft tanks). Aries Marine owns and operates nine OSV's ranging from 166 to 254 ft. and 14 liftboats with leg lengths ranging from 105 to 200 ft. Ramsay said that Aries has an option to purchase additional vessels from the builder, Thomas Sea Shipbuilders, LLC in Lockport La.

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#### M/V Abigail Claire Main Particulars

Owner	Aries Marine
Type	Platform Supply Vessel
Length	220 ft.
Breadth	54 ft.
Depth	19 ft.
Main engines	Caterpillar
Type	3516B
Azimuthing props	Aquamaster
Speed	12 knots

### SF Bay Ferry Logs Impressive Performance

Vallejo/Baylink Ferries latest fast passenger Solano, launched in July, is the second HamiltonJet-powered Vallejo Baylink ferry operating in San Francisco Bay, and to date has logged impressive results. Solano was a significant project for HamiltonJet as it is the first HamiltonJet-powered boat designed by AMD Marine Consulting of Sydney,

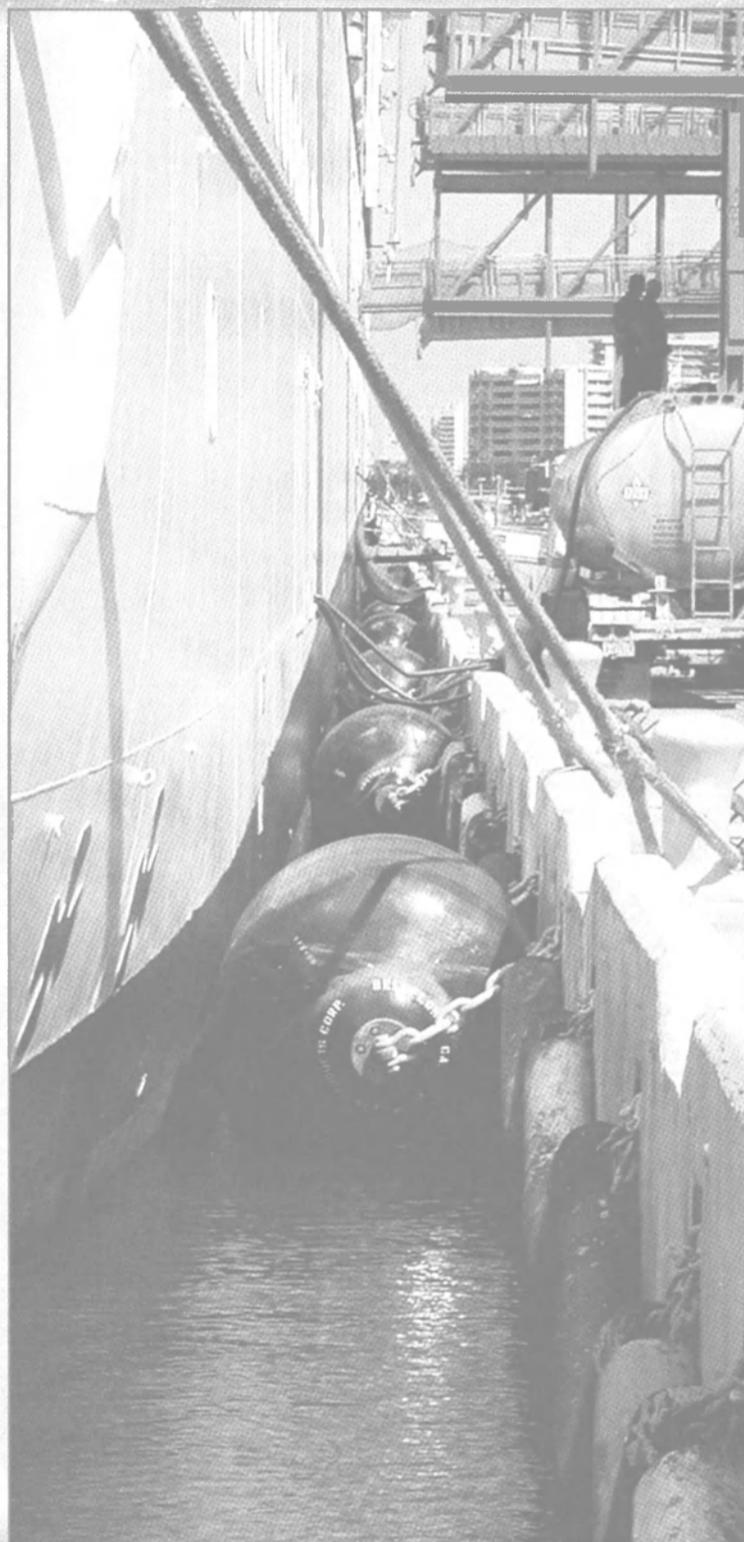
Australia, and the first HamiltonJet-powered boat built at Dakota Creek Industries, Anacortes, Wash.

Baylink Ferries' experience with Hamilton waterjets following the re-power of the 34m Vallejo passenger ferry in 2002 was the primary reason for choosing the HM811 jets for this new vessel.

In the case of the Solano ferry, the HamiltonJet regional office in Seattle

provided waterjet support throughout the project to ensure all performance targets were achieved. Twin Hamilton HM811 waterjets were matched with 2,320 kW MTU engines to push the catamaran at over 34 knots with its 301 passengers and four crew. Parts and service in California are provided by HamiltonJet distributor Boatswains Locker.

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## News

### NASSCO Holds Ceremony for Fourth BP Tanker

National Steel and Shipbuilding Company (NASSCO) recently held a start-of-construction ceremony for NASSCO Hull 487, the fourth of four Alaska Class, double-hull oil tankers being constructed for BP Oil Shipping Company, USA. BP's Site Team



Member **Richard Blaine** activated a robotic welding machine and cut the first piece of steel for the new ship.

"These double-hull tankers are among the most environmentally friendly ships ever built, incorporating the latest in tanker design and construction," said **Richard Vortmann**, president of NASSCO. "They will provide BP with the best available technology to protect

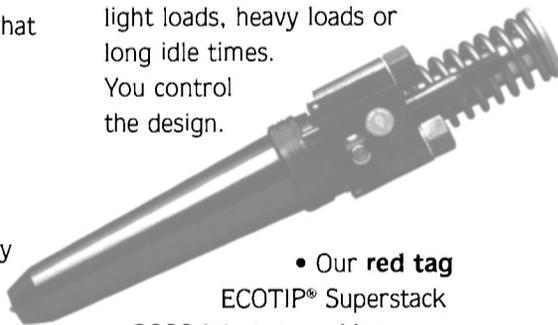


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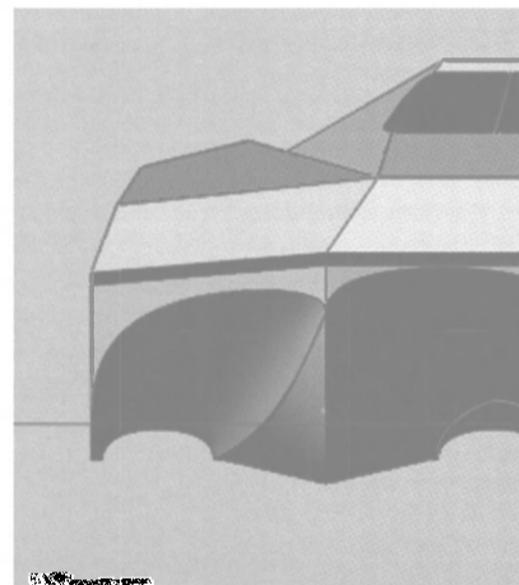
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## K&C Wins \$6M



Knight & Carver YachtCenter, in partnership with M Ship Co. of San Diego, has been awarded a \$6 million contract to construct a high-speed 80 x 40-ft. transport vessel for the U.S. Navy. Characterized by its patented, carbon-fiber "double-M" hull - which is designed to provide remarkable stability, maneuverability and a minimal wake at high speeds - the "M Ship 80" will be built by Knight & Carver in approximately eight months, with work expected to start Nov. 1, 2004. The vessel — most accurately described as a large-scale, high-speed test platform — was designed by the marine design firm of M Ship Co., headed by **Charles Robinson** and **William Burns**.

The M Ship 80 project has been sanctioned by the U.S. Department of Defense's Office of Force Transformation (OFT) and the Naval Undersea Warfare Center, headquartered in Newport, R.I.

The vessel will be powered by four Caterpillar engines, with an anticipated cruising speed of 40 to 50 knots. It features a unique M-Hull, given that name because its hull consists of two M-shaped hulls adjacent to each other.

"This contract marks a significant step forward for our company," said **Sampson Brown**, president and CEO of Knight & Carver. "While we have repaired a wide variety of military vessels in recent years, this is the first major military construction project we have undertaken. We are proud to join in this exciting partnership with M Ship Co. and the U.S. Navy."

US waters." Vortmann said the design of the four 1.3-million-barrel-capacity tankers in the Alaska Class will allow maximum flexibility for oil deliveries to West Coast ports, including BP refineries in Los Angeles and Cherry Point, WA. Vortmann added that NASSCO is continuing to hire people to fill hundreds of positions that remain available for this and other shipbuilding programs

in the company's 10-ship backlog.

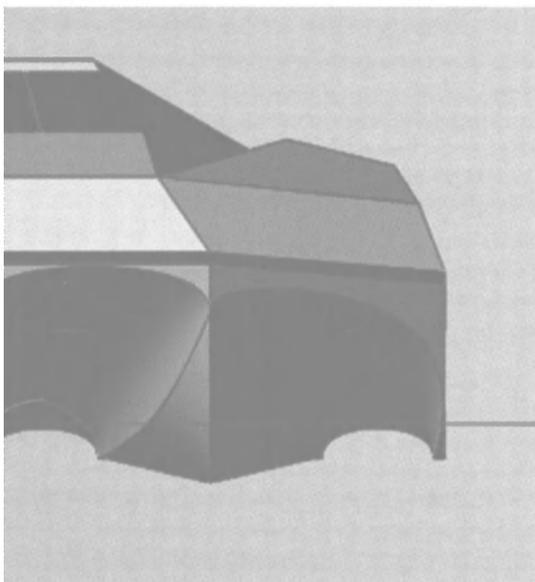
The first ship, the Alaskan Frontier, was delivered to BP on August 11. On July 2, the second ship was floated out of NASSCO's graving dock following structural erection and its fitting out continues pierside. The third ship is under construction in the graving dock. The second, third and fourth ships are to be delivered in 2005 and 2006.

## Meyer Werft Wins AIDA Cruise Order

AIDA Cruises placed an approximate \$793.5 million order for two club ships of a new generation from Germany's Meyer Werft. The 68,500-gt, 817 ft. ships will be designed and built to offer 2,030 guests a unique experience. "With these ships we are progressing our successful AIDA con-

cept," said Michael Thamm, President of AIDA Cruises. "We are looking forward to realizing two ambitious new vessels for AIDA Cruises, the most innovative German cruise company," Bernard Meyer, Managing Director of Jos. L. Meyer GmbH said. "These exciting new vessels will set the standard for the future of German cruising for many years to come."

## Navy Contract



"We're thrilled that the Navy has recognized the world-class partnership we've put together to build a revolutionary ship design that could transform the way the Navy moves on the water," said William Burns of M Ship Co. In M-Hull vessels, as designed and patented by M Ship Co., the compression of the air beneath the hull creates an air cushion and increases propulsion efficiency by converting wave energy to boat lift. The technology is relatively new, dating back only to 1999, when, based on a newly-created design by M Ship Co., Knight & Carver built a 65-ft. M-Hull water-taxi for commercial use in the wake-sensitive canals of Venice, Italy. The vessel proved highly effective in minimizing water damage to the canals and promptly led M Ship Co. to consider similar applications of the M-Hull on both larger and smaller vessels. As part of its partnership with M Ship Co., Knight & Carver has constructed a demo model of a 40-ft. M-Hull motoryacht. Production of additional similar vessels is expected soon. A smaller, aluminum-hulled 38-ft. prototype, featuring the M Hull with cruising speeds in excess of 40 knots, has been a frequent sight along San Diego Bay in recent months.

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### M Ship 80 Main Particulars

<b>Builder</b>	<b>Knight &amp; Carver</b>
<b>Design</b>	<b>M Ship Co.</b>
<b>Length</b>	<b>80 ft.</b>
<b>Breadth</b>	<b>40 ft.</b>
<b>Hull</b>	<b>M-Hull</b>

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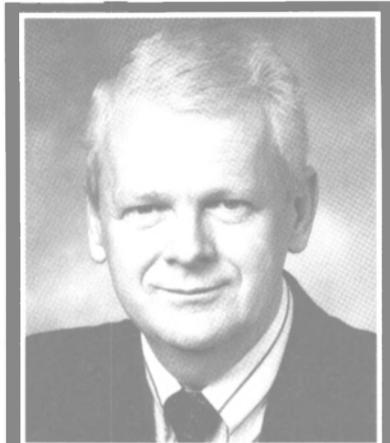
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# Air Emissions from Ships

Environmental advocacy groups have alleged that ships are major contributors to air pollution. Such groups have also brought suit - albeit unsuccessfully -

against the federal government, alleging insufficient regulation of air emissions from ships. Avoiding the issue of the possible merits (or demerits) of such

assertions and litigation, this paper will briefly explore the current state of international, federal, and state regulation of air emissions from ships.



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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Annex VI to the International Convention on the Prevention of Pollution from Ships (MARPOL Convention) is scheduled to come into effect on May 19, 2005. The Annex has been adopted by 17 nations and is under active consideration by numerous others, including the United States and Australia. Nations that have ratified the Annex include: Azerbaijan, the Bahamas, Bangladesh, Barbados, Denmark, Germany, Greece, Liberia, Marshall Islands, Norway, Panama, Samoa, Singapore, Spain, Sweden, United Kingdom, and Vanuatu.

Annex VI is the international community's systemic approach to the issue of air emissions from ships. Different control strategies are used for the various emissions addressed in the annex. The provisions apply to ships of 400 gross tonnage or above engaged in international trade. The Annex sets limits on emissions of nitrogen oxides (NOx) from diesel engines with a power output of greater than 130 kW installed on a ship constructed on or after January 1, 2000. The primary strategy for reducing NOx emissions involves establishment of mandatory procedures for the testing, survey, and certification of applicable marine diesel engines. The procedures are found in the so-called "NOx Technical Code," which was adopted in conjunction with Annex VI. Ocean-going commercial ships may only install and utilize diesel engines with a power output of greater than 130 kW if such engine has been built and tested in accordance with the NOx Technical Code. Fuel for the diesel engines is another area of consideration by the Annex. In an effort to control emissions of sulphur oxides (SOx), the sulfur con-

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tent of bunker fuel generally may not exceed 4.5%. In designated 'emission control areas,' sulphur content may not exceed 1.5%. Currently, the Baltic Sea area is the only designated 'emission control area,' but others may be added at a later date. A program for monitoring the world-wide average sulphur content of residual fuel oils supplied for use on board ships is already in place. A ship operating in an emission control area that does not have qualifying low-sulphur fuel oil may utilize an exhaust gas cleaning system or other approved technology to minimize the SO<sub>x</sub> content of engine emissions. There is some concern that older marine diesel engines may not operate properly on low-sulphur bunkers, but only time will tell. Concern has also been expressed that some ships may lack tankage and piping arrangements to carry two different fuels.

Bunker suppliers will be required to comply with certain technical standards regarding the fuel oil. They will also be required to provide the receiving ship with a "bunker delivery note" certifying that the bunkers meet applicable standards. The bunker delivery note is in addition to the representative sample of the fuel oil that is traditionally provided. Government administrations of ports where bunker suppliers operate are required to monitor their activities and take enforcement action as appropriate in cases of non-compliance with the Annex.

Deliberate emissions of ozone-depleting substances (such as halon and CFC) are prohibited. New installations that contain ozone-depleting substances are prohibited, except (until January 1, 2020) for those containing hydrochlorofluorocarbons (HCFCs). Ozone-depleting substances and equipment containing such substances must be delivered to appropriate reception facilities when removed from the ship. Governments that are party to the Annex undertake to provide adequate reception facilities for ozone-depleting substances and equipment containing such substances.

Governments that are party to the Annex may regulate emissions of volatile organic compounds (VOCs) from tankers by designating the ports at which such emissions are to be controlled and specifying the size of tankers to be controlled, the cargoes requiring vapor emission control systems, and the effective date of such control. Only approved vapor collection systems may be utilized.

New restrictions are placed on use of shipboard incinerators and the substances that may be burned therein. Incinerators must have a manufacturer's

operating manual and shipboard personnel responsible for operation of the incinerator must have been trained in implementing guidance contained in the manual. Various substances, including Annex I, II, and III cargo residues and related contaminated packing materials; polychlorinated biphenyls (PCBs); garbage containing more than traces of

heavy metals; and refined petroleum products containing halogen compounds may not be burned in the incinerator.

Ships subject to the Annex are to be surveyed by, or under the authority of, the flag Administration for compliance with the Annex. Compliant ships are to be issued an International Air Pollution Prevention Certificate. Port state con-

trol officials are authorized to check for compliance with the Annex and to exercise appropriate control measures, including detention, for ships found to not be in compliance.

Separate from the Annex, the International Maritime Organization (IMO) recently adopted a Resolution establishing policies and procedures for

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## Government Update

reduction of greenhouse gas emissions from ships. The Marine Environment Protection Committee (MEPC) of the IMO has undertaken a program to establish a greenhouse gas emission baseline; develop a methodology to describe the greenhouse gas efficiency of a ship; develop guidelines for an emission

indexing scheme; and evaluate technical, operational, and market-based solutions. In the United States, the Environmental Protection Agency (EPA) divided marine engines into spark-ignition and compression-ignition (i.e., diesel) types. Compression-ignition engines were then separated into

three categories. Category 1 marine diesel engines consist of those with a displacement of less than 5 liters per cylinder. Category 2 marine diesel engines consist of those with a per-cylinder displacement of at least 5 liters, but less than 20 liters. Category 3 marine diesel engines consist of those

with a per-cylinder displacement of 20 liter or greater. The EPA developed and adopted regulations for air emissions from marine spark-ignition engines and from Category 1 and Category 2 marine diesel engines. With regard to Category 3 marine diesel engines, the EPA adopted the MARPOL Annex VI standard as its near-term approach and applied it only to U.S. flag ocean-going vessels. The EPA stated that it would commence analysis into a long-term approach to air emissions from all Category 3 marine diesel engines, including those on foreign flag vessels operating in U.S. waters.

The EPA is also engaged in efforts to reduce the level of sulphur in diesel fuel and to eliminate emissions of ozone-depleting substances. The U.S. Coast Guard has promulgated standards for vapor control systems utilized on tank ships in the United States. The Coast Guard also enforces international standards applicable to shipboard incinerators. Various states of the United States have established air emission standards applicable to ships operating within their jurisdiction. Some states require use of USCG-approved vapor control systems. The State of Alaska established air emission standards applicable to cruise ships calling at various ports. As a result, some cruise ships now rely on shore power when making port calls in places such as Juneau. The State of California also established air emission standards for local areas, such as the ports of Los Angeles and Long Beach. As in Juneau, some ships calling in LA/LB will be relying on shore power so as to minimize air emissions. In addition, LA/LB have adopted a voluntary speed reduction program where ships within 20 miles of the ports maintain a speed of not greater than 12 knots in order to reduce harmful air emissions.

Ships and the engines that drive them keep getting larger. World population and world trade keep growing. One of the few things not growing is the atmosphere. Emission standards for factories, power plants, cars, and trucks continue to become more stringent. We should not expect air emission standards for ships to be any different. What we have a right to expect is that those emission standards will be uniform, so that an ocean-going ship qualified to operate in one part of the world will be allowed to operate in all parts of the world. The IMO is the appropriate agency to establish international air emission standards for ships. The U.S. EPA has wisely recognized this. Let us work to ensure that such recognition of IMO cognizance continues.

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# Shipboard Training Comes of Age

Technical innovation continues to revolutionize the maritime industry, touching almost every aspect of life at sea. The trend for larger vessels - in particular cruise, container and LNG ships - and the desire of the vessels' operators to bring them into smaller ports in more remote waters impose greater navigational and ship-handling demands on the crew.

Modern podded propulsors, complex control dynamic positioning (DP) units and advanced integrated bridge systems provide aids to navigation and ship-handling and are testament to the changing environment which a ship's Master will encounter.



Although such technologies bring unprecedented potential benefits, ensuring that they can be used safely and effectively is a key concern. A ship's bridge is becoming an increasingly complex network of computers, displays, consoles and control levers; as technology changes, the industry must ensure adequate training and familiarization in its use.

Cunard's Queen Mary 2 (QM2) is not only the largest passenger ship ever built, but also the first to include four podded propulsors combined with an Alstom DP system. In DP mode the whole vessel is controlled by a single lever (similar to a PC's joystick), with an onboard computer determining the thruster angles and rpm.

To address the issue of familiarizing the ship's officers with this array of hardware and software and the ship's handling characteristics; Cunard has installed a PC Rembrandt ship maneuvering simulator linked to a DP system provided by Alstom.

This enables training exercises to be conducted onboard in any of the ship's ports of call and is the first time such a simulator has been linked in this manner onboard.

Despite the many innovative aspects to this installation, the QM2 is just one of a large number of vessels to have PC Rembrandt installed onboard.

Typically the simulator is being used for the informal training of junior officers, for passage plan and pilot briefings and for the Master to rehearse unfamiliar

maneuvers with the forecast environmental conditions. In contrast to such training accomplished onboard, formal training of seafarers is governed by the

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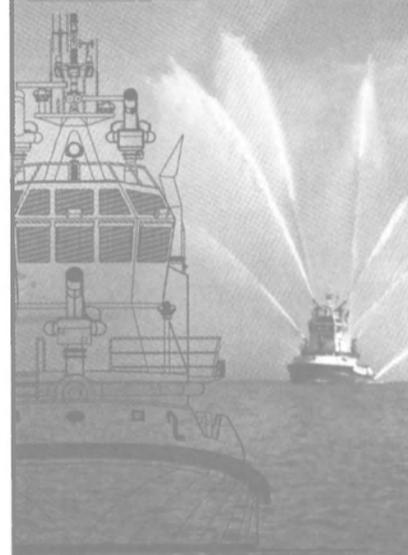
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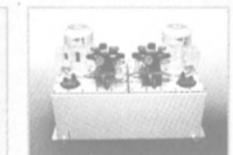
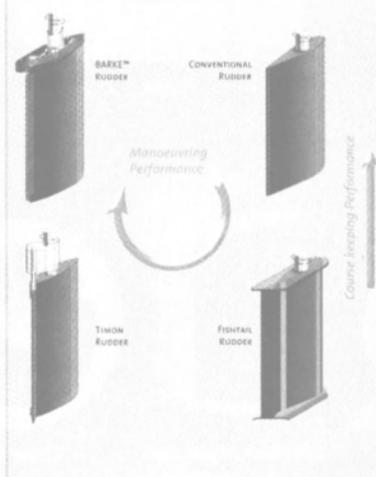
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## Training & Education

requirements of the International Maritime Organization's (IMO's) International Convention on Standards of Training, Certification and Watchkeeping of Seafarers or STCW '95. This has traditionally required seafarers to undertake supervised shore based training and assessments. These

formal and informal onboard training methods have traditionally existed and progressed independently.

However, with its new range of computer based training (CBT) products, BMT is seeking to transform the future of maritime training. A new ship maneuvering and handling CBT course, devel-

oped in collaboration with the Seattle-based Pacific Maritime Institute, offers a highly interactive learning tool, which provides flexibility as to when and where people study. BMT's CBT is based upon fully approved and accredited course material and is initially designed to complement and reduce the

extent of the shore based training component for officers in charge of a navigational watch.

In this manner the remote or 'distance learning' aspect of training can be undertaken at a time and location to suit the student and their employer. Without the travel, venue, accommodation and other associated overhead expenses; a training solution can be provided very cost effectively. In addition, this type of course material can easily be customized to a client's specific vessel and updated to keep pace with technological and regulatory changes.

Developing courses is only one aspect of the CBT solution; another is how to provide them to trainees. An innovative idea currently being developed by BMT is a concept by which remote training can be centrally coordinated, updated and monitored.

In this proposed system, called SeaTrain, training or information modules will be centrally stored on a server that permits direct access from home users and a 'virtual' direct access from shipboard users.

To address issues of adequate bandwidth and satellite access faced by ships, shipboard users' systems will be linked via the Internet to the central web server and storage facility.

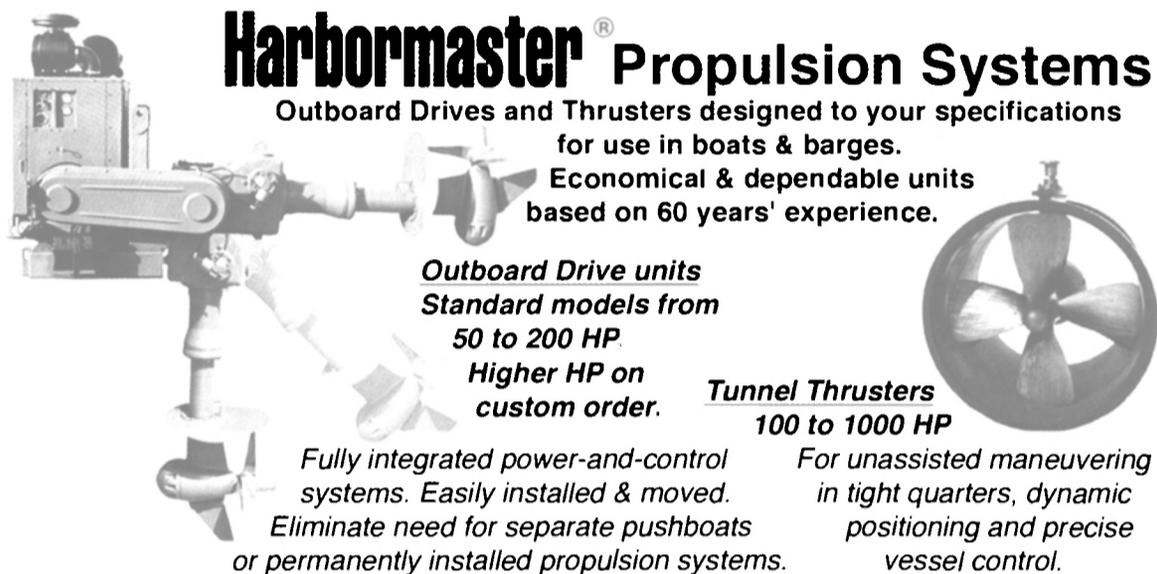
With the SeaTrain concept, all manner of training courses and material can be accessed including specific ship or equipment familiarization material, public health, vessel security, safety and crisis management, regulatory information, company directives and the company's quality management system. The use of a specialized CBT player and modular design will allow components of any course (such as text, audio or graphics) to be easily changed without requiring a costly and time-consuming modification to the entire course.

For ship operators this facility provides advantages for cost and training time reductions. An individual's training or knowledge of company procedures can be tracked and logged and the system itself becomes a multi-functional, flexible and tangible asset.

The pace of change in the maritime sector shows no sign of slowing and training methods must be able to stay a step ahead. E-learning, which has been successfully used in other sectors, presents an opportunity to meet this challenge.

There has already been widespread interest in BMT's developments by companies such as Royal Caribbean International, V. Ships and Princess Cruises.

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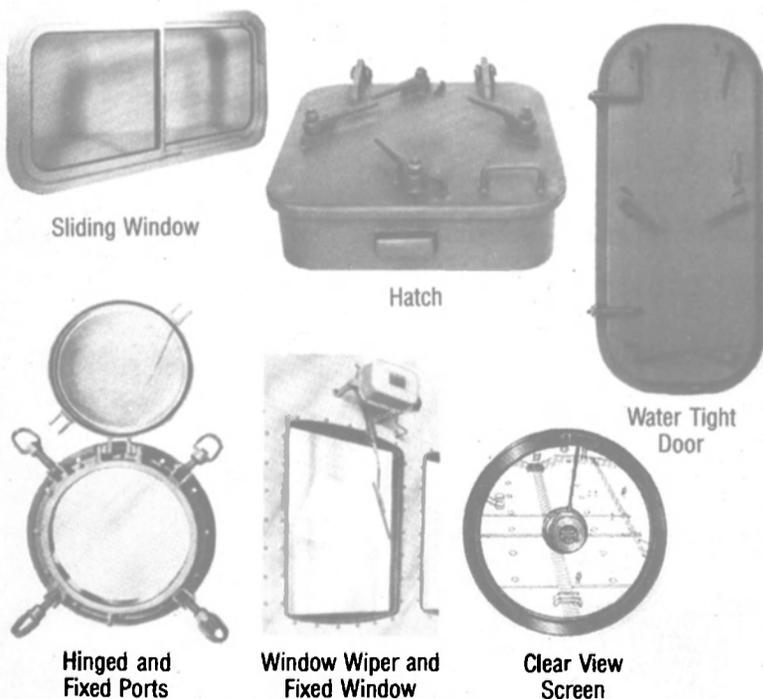
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# Demystifying Parametric Roll

An ABS research project deflates the mystique surrounding parametric roll, a rare but dangerous phenomenon particularly threatening to containerships.

In October 1998, a large, post-Panamax containership limped into the port of Seattle, a victim of the largest ever loss of containers while on passage. On its voyage from Kaohsiung, Taiwan,

the ship had encountered a terrible storm that for some 12 hours lashed the vessel with high winds and boarding waves reaching as high as the foremast and the running lights on the bridge. The offi-

cers not only saw green water at bridge level, but also had to watch helplessly as the forward container stacks collapsed.

By the time those violent seas finally passed, the ship had lost a third of its 1,300 containers on deck; another third lay wrecked and scattered about, with smashed containers and contents hanging over both sides of the ship.

Despite the best efforts of the ship's well-trained, professional crew, the vessel suffered strangely severe motions, unusual even for such storm conditions that made control nearly impossible at times. Yaw angles reached 20 degrees port and starboard, and severe rolling of up to 40 degrees combined with extreme pitching left the master without effective control of the vessel. It was, in fact, in the grip of the phenomenon known as parametric roll resonance or, simply, parametric roll. Parametric roll is one of those destructive phenomena that depend on a set of coincidences so finely balanced as to make the occurrence seem nearly impossible: the ship's geometry has to have certain characteristics; its length has to be comparable to the wave-



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**Greg Guarisco** is Vice President, Sales & Marketing for Atlantic Marine-Mobile and Alabama Shipyard. Greg has over 25 years maritime experience in production, estimating and sales in both repair and new construction divisions. He has been with Atlantic Marine for over 15 years.

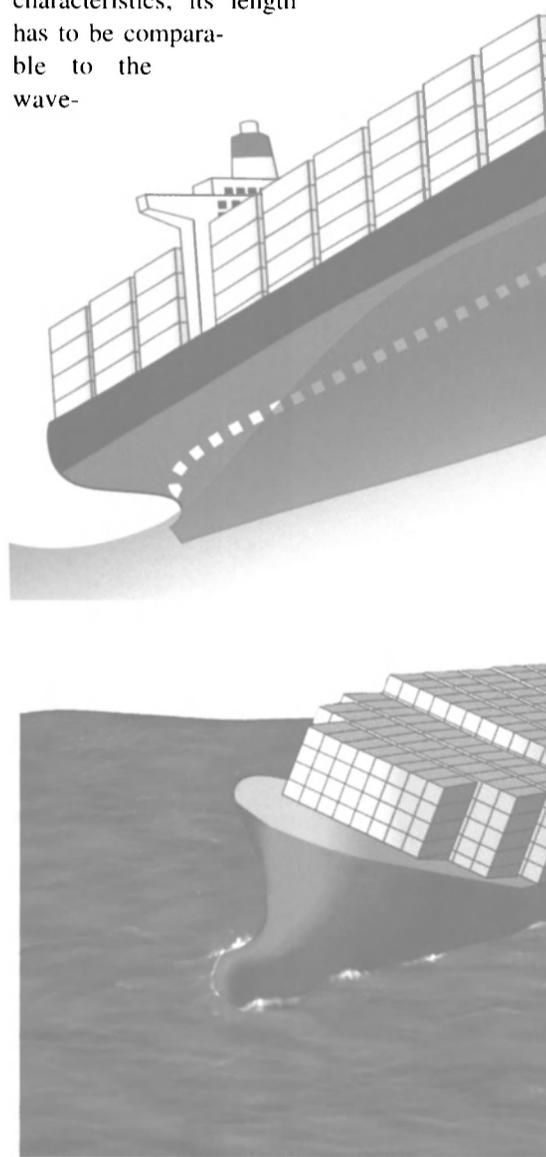
In Jacksonville, **Kevin E. Wilson** has been promoted to Vice President, Sales & Marketing for both the Atlantic Marine new construction division as well as the Atlantic Dry Dock Corp. ship repair facility. Kevin has been with the company for over 18 years and has more than 28 years of maritime experience in various management positions including production, estimating and planning.

**Tom Williams** is Vice President of Operations for both ship repair and new construction at Mobile. With over 30 years of marine operational and maintenance experience, Tom joined Atlantic Marine in 2002. He has a Degree in Mechanical Engineering and a Masters in Telecommunications Systems-Management.

**Charles (Chuck) Nugent**, was recently named Vice President of Production for the Atlantic Marine new construction division in Jacksonville. Chuck has been with Atlantic Marine for over seven years and has 31 years experience in new construction and ship repair operations.

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length of the sea conditions through which it is passing; and its speed must bear a certain relationship to both the wavelength and the vessel's natural rolling frequency.

The 1998 incident and its severe cargo loss warranted a full investigation, the results of which opened the maritime industry's eyes to a long-standing problem, the impact of which it had not yet fully appreciated. This investigation, which included model tests and numerical simulations, determined that hulls with fine, underwater bodies coupled with wide, flat sterns and pronounced bow flare - typical of modern container-ships - may be susceptible to parametric roll.

ABS began its own investigations into the causes and remedies for parametric roll. The two-year project has involved theoretical analyses and numerical simulations, and included collaboration with Prof. **J. Randolph Paulling**, who in the 1970s first observed the parametric roll phenomenon in model tests.

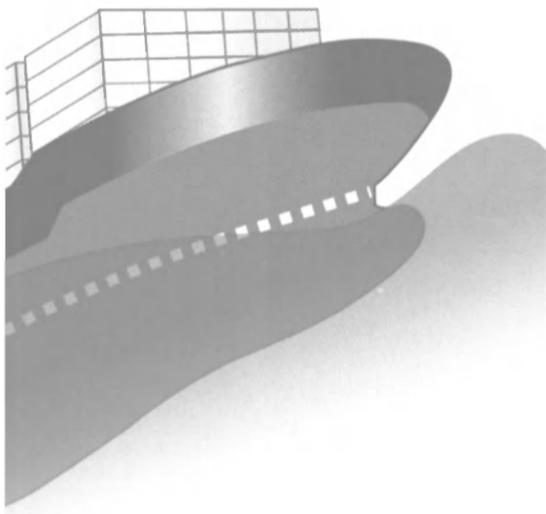
"Shipowners would often approach me at conferences with nervous ques-

tions about parametric roll, asking why and how it happens," says Vadim Belenky, the engineer leading ABS' investigations into parametric roll. "Over time, I came to see that there is a kind of mystique and fear about this phenomenon," A ship motions specialist and former professor at the Kaliningrad University of Technology in Russia,

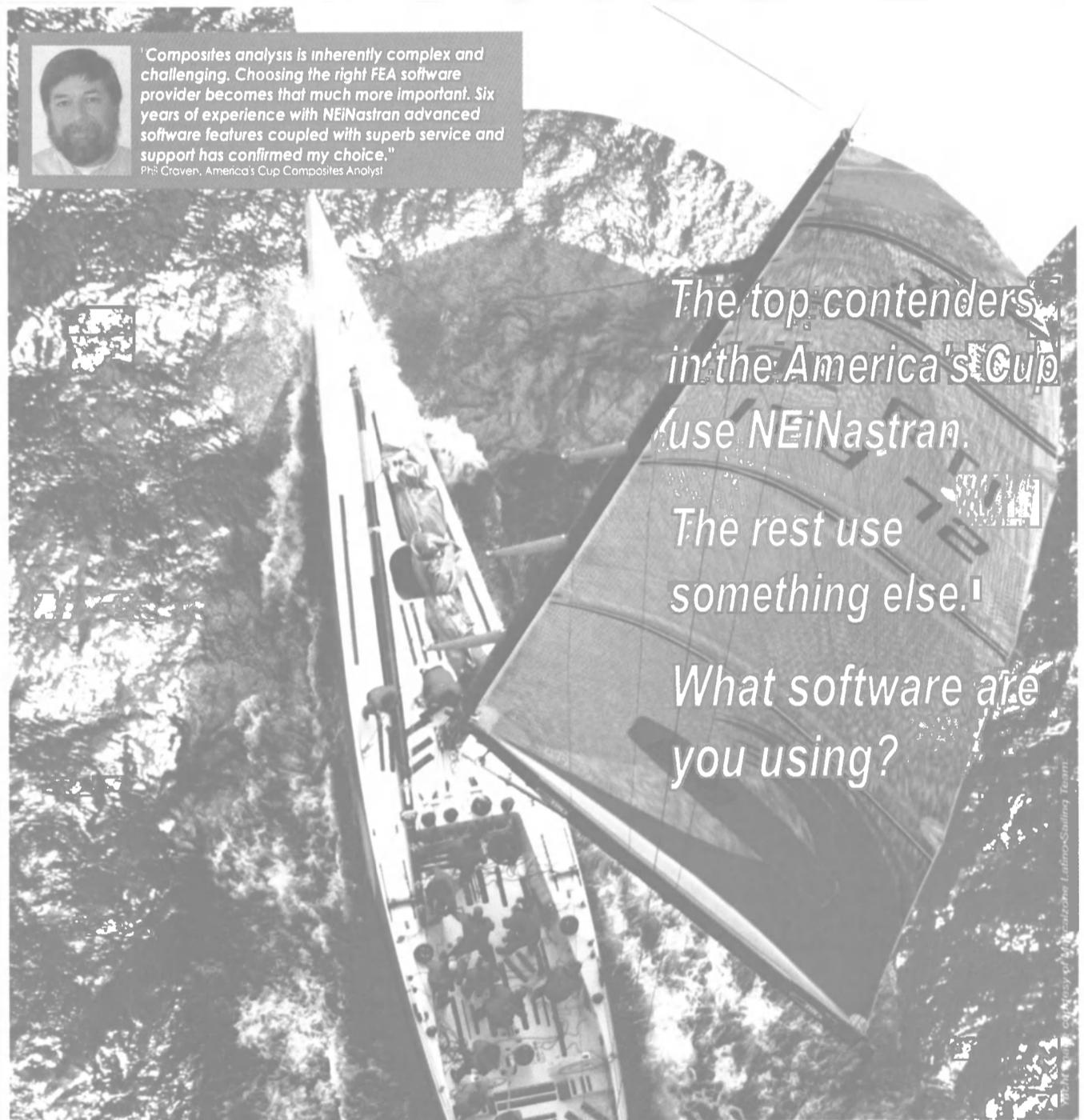
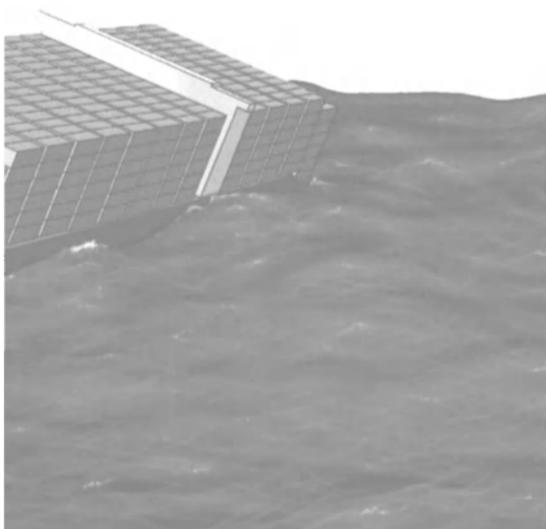
Belenky is still an educator at heart and has dedicated himself to understanding and explaining the phenomenon. "The message I want to communicate to the industry is that there is no mystique to parametric roll. We at ABS understand the phenomenon very well and are taking actions to help keep our clients safe from it."

**The Problem**

Parametric roll is a phenomenon that occurs in head or following seas, when a ship is traveling more or less perpendicularly to the wave front. The phenomenon was first recognized almost 50 years ago but, in the past, it was seen as affecting only smaller ships of poor stability in following seas. The development of



An ABS research project deflates the mystique surrounding parametric roll, a rare but dangerous phenomenon particularly threatening to containerships.



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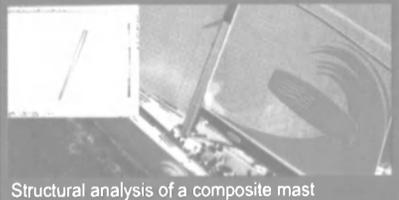
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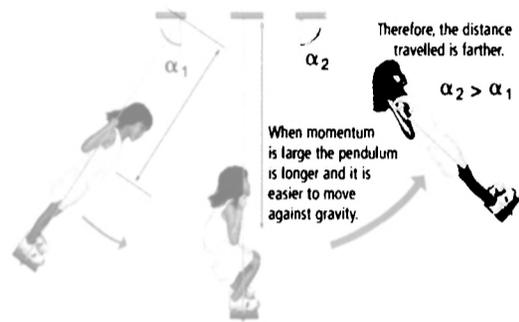
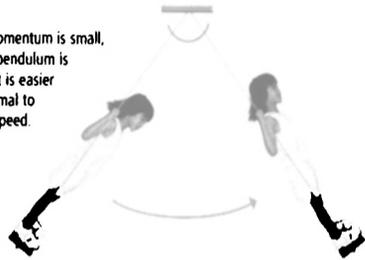
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## Naval Architecture & Marine Engineering

### The Physics of Parametric Roll

When momentum is small, and the pendulum is shorter, it is easier than normal to pick up speed.



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the new generation of large, fast, fine formed, high deck capacity containerships has refocused attention on the problem.

Forces that induce roll are always present at sea. They are resisted by a ship's intact stability, a balancing force inherent to its shape that makes the vessel behave like a pendulum in its give-and-take with the sea. Should a force cause the ship to roll, stability provides the counter-force that tries to return it to the neutral position. The momentum of the return movement pushes the ship a little beyond neutral, a process that continues in ever-smaller swings until momentum is exhausted and the rolling stops.

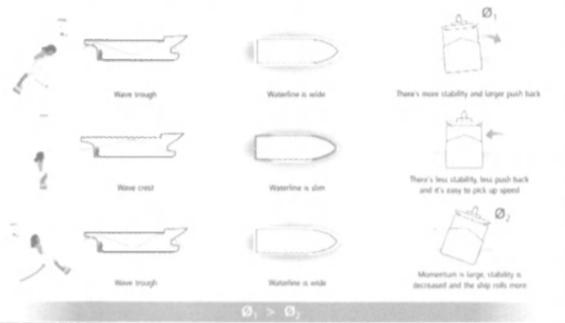
In parametric roll, something happens to upset that balance. Instead of consuming momentum, the ship accumulates it, rapidly and dangerously.

Ironically, part of the problem is a consequence of good design. Below the waterline, a typical containership is designed for speed, with a narrow bow and stern and a full midship section. Above the waterline, it is designed to maximize on-deck stowage capacity by extending a wide main deck as far forward as possible, inducing significant bow flare, and as far aft as possible with a large stern overhang.

As the vessel passes through the waves, it encounters a series of wave peaks and troughs. The speed at which this happens is called the encounter frequency. If the

### Containerships are Particularly Susceptible to Parametric Roll

As head or following sea waves pass along the ship, the waterplane area changes significantly and affects the transverse stability.



ship length is close to the wavelength, it will experience a series of situations in which the midship is sitting either deep into a peak or shallow in a trough, while, at the same moment, the bow and stern are each either shallow in a trough or deep in a peak respectively. In terms of the hull's contact with the sea, the ship effectively changes its beam on a regular basis, from slim (when the midship is on a peak) to wide (when the bow and stern are on peaks).

Because stability varies with beam, as the vessel drives through the series of wave fronts, its stability - the source of its resistance to roll - changes dramatically as the midship moves from crest (maximum) to trough (minimum). This variation is the underlying condition that drives parametric roll.

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For tragedy to strike, however, one more thing must occur: the vessel's encounter frequency has to be about twice its natural roll frequency, which places the ship in a state of cyclically recurring minimum stability.

"Imagine your ship is inclined to one side and, as you start moving back towards equilibrium you enter a wave crest where stability is lower, which causes you to roll further than you normally would expect," explains Belenky. "As you roll back you enter a trough, where stability and its opposing force are greater. However, as you return towards equilibrium resistance again drops off but the force pushing is still the stronger one from a moment before, and again you roll further than you would expect. As this continues, you gain momentum and speed, the way a child pumping his legs on a swing gains height - except in this case you lose containers."

The containership that lost so much of its deck stow and prompted the investigations into parametric roll had experienced just about the worst of all possible cases. It is speculated that what actually saved the ship was a product of its damage: a temporary engine shutdown due to water ingress, after which the wind turned the ship from head into beam seas, forcing it out of the parametric roll regime.

"There's even a nastier thing about parametric roll," says Belenky. "It is a threshold phenomenon. Before you cross the threshold, nothing major is happening to the ship motion: but once you cross it, you can barely stop it. You have maybe five to nine wave periods - say, three to four minutes - in which to react before you get into deep trouble."

"But the threshold effect also holds the key to its own solution," he adds. "The answer is just a question of roll damping. With every roll, you damp your energy, or transfer part of it to the water. This makes it a game of gains and losses - lose more than you gain and you are safe," he explains.

"One possible solution to this formerly mystifying problem, as confirmed by our research, is simply to install a small anti-roll tank to absorb the surplus energy that you otherwise collect to produce parametric roll. When I say small, I mean it; a properly tuned anti-roll tank would take the space of two containers. Though they have only been numerically tested, in my opinion they are the best solution, based on what we know at present. We are encouraging the industry to think about this as an option."

One of the key elements to the project's outcome was the work of SAIC,

Science Application International Corporation, an organization of researchers and developers that has had a longstanding relationship with ABS. About a decade ago, in a program funded jointly by the US Navy and ABS, SAIC developed LAMP, (large-amplitude motion program). A general-purpose program for seakeeping, wave

loads, and other analyses, LAMP confirmed Belenky's research results into the cause of parametric roll, and demonstrated the effectiveness of anti-roll tanks as a remedy. "LAMP is like having a towing tank on your desk," says Belenky.

"Without it, it would have been very difficult to do what we have done."

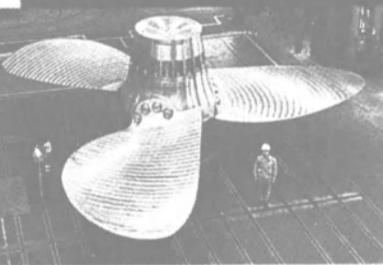
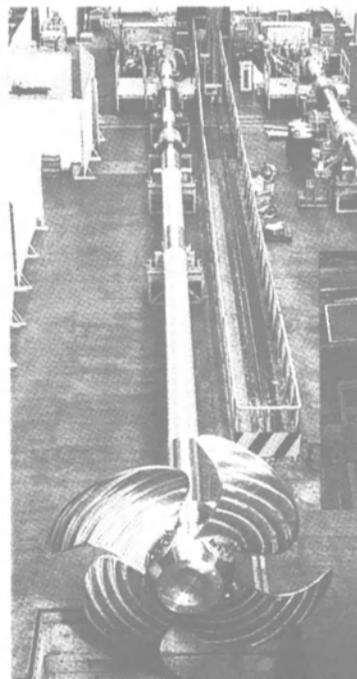
#### Solutions for Industry

Since parametric roll only occurs under the exactly wrong combination of ship geometry, speed and wave conditions in head or following seas, it would appear to be an extremely rare occurrence. Belenky however, believes it may be happening more frequently than recognized.



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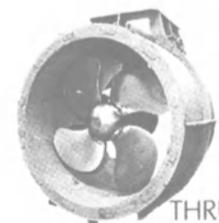
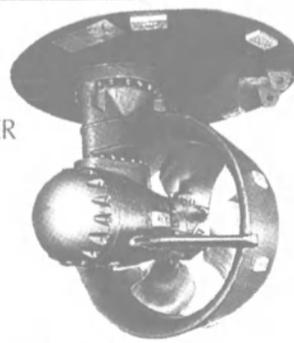


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## Naval Architecture & Marine Engineering

"The vessel involved in that initial incident is a fairly typical containership, which means that what happened to it could happen to a lot of vessels," he says. In fact, the two years of intense study that Belenky has devoted to the subject have revealed that almost all

containerships, under certain conditions, are vulnerable to parametric roll.

Criteria in the ABS Guide for the Assessment of Parametric Roll Resonance in the Design of Container Carriers allow the designer to determine if a ship has this vulnerability in the

worst cases. "We offer criteria that, for the first time, allow a designer to screen a design for susceptibility to parametric roll, and we recommend measures should a problem be found. If the design is vulnerable, possible options would be to go for numerical studies and model



**Vadim Belenky**, Ph.D., Engineer, Product Research & Development

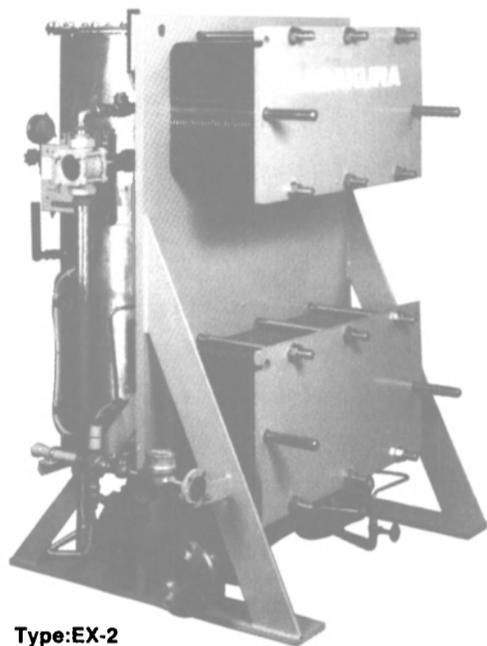
tests from which we can develop a series of diagrams that will define what combinations of speed and sea state for given load conditions might be dangerous," he says.

Armed with such information, and, say, meteorological data from weather services, the navigating officer could, for example, determine the direction and intensity of a storm, and thus avoid dangerous course and speed combinations. "However, many things happen to a ship in a storm; parametric roll is just one of them," Belenky says. "Sometimes, for example, by turning into a quartering sea you reduce your control of the vessel, or by changing speed encounter heavier slamming that can damage the bow. The safety of the ship depends on decisions from the bridge. With our product, we help the navigating officer make a truly informed decision."

Additional products presently in various phases of development include parametric roll advisory diagrams and a computer-based early warning system that, drawing on weather data and ship operations and navigational information, will alert the Master to potential trouble ahead. "In recognition of designers' efforts to deal with the problem, optional class notations have been created for measures taken against parametric roll," says Belenky. "Because it is original work, many questions will arise as the industry absorbs the technology. In anticipation, we have developed the support system to answer user questions and help with its application," he says. "It is, after all, the first time anyone can say to the industry regarding parametric roll, we understand the problem, and we have a solution."

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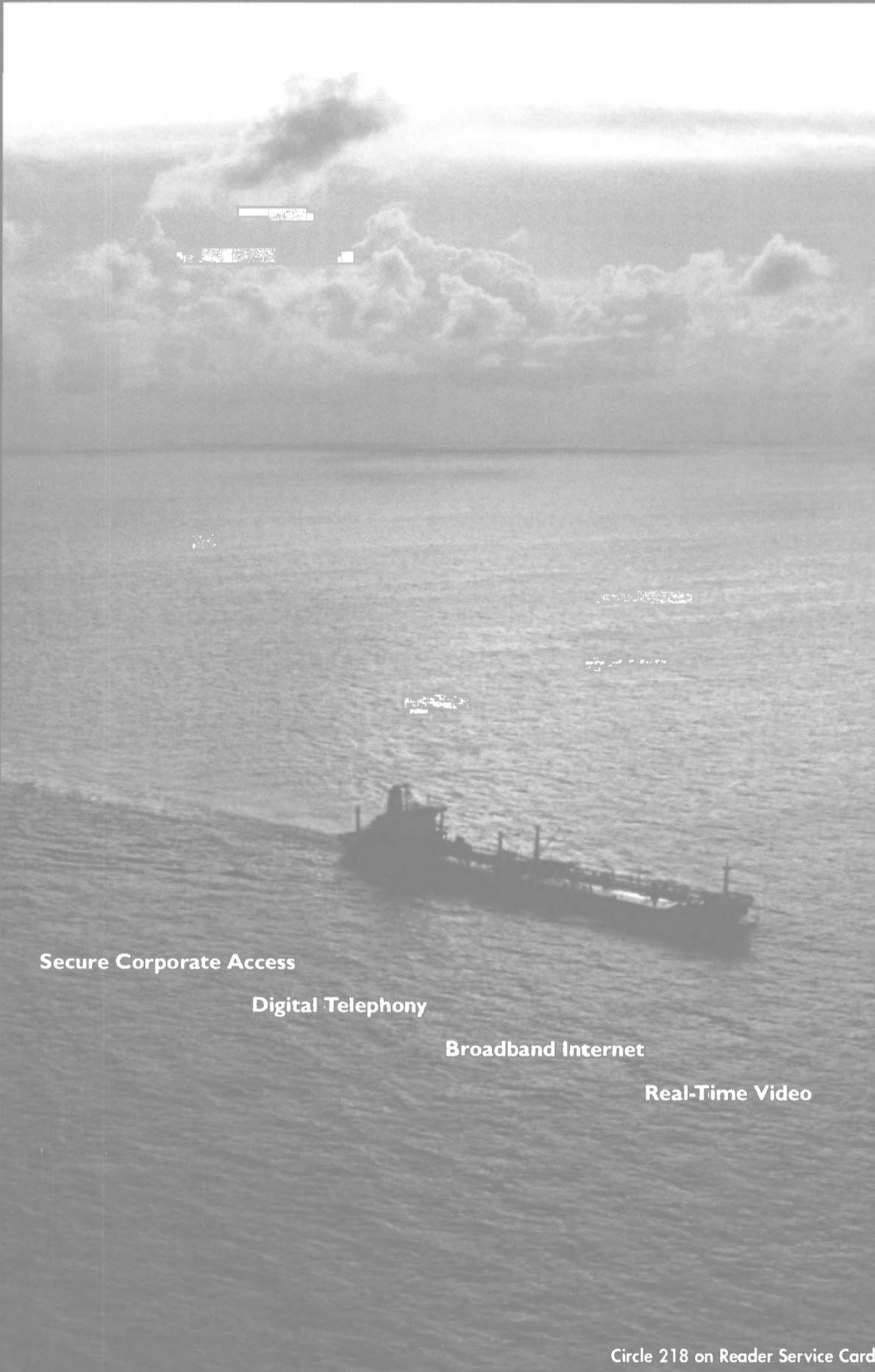
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Crew Boats

# A Bright Spot in Oil Patch Vessel Construction

By Larry Pearson

After a comprehensive tour of shipyards building crew/supply boats, it is clear the construction of these speedy aluminum vessels is the one bright spot in the offshore vessel building market.

Other than the work at Bender Shipbuilding in Mobile, Ala., on the Rigdon Marine order of 10 supply boats, the building of large supply boats by Edison Chouest Offshore for contract to Shell and some construction at Master Marine in Bayou La Batre, Ala., the building of steel hulled supply boats has been slower in 2004.

In some respects, crew/supply boats are doing some the work that used to be reserved strictly for supply boats. The emphasis has definitely been on the supply side of the crew/supply boat equation.

Many operators now call their crew/supply boats "Fast Supply Boats" to point out the importance of delivering deck cargos and drilling liquids quickly. While the deadweight tonnage is still much greater with a conventional steel-hulled supply boat, the aluminum-hulled vessels are very popular with boat operators and their oil company and drilling organizations customers.

As a result, the four crew/supply boat builders in Louisiana on Bayou Teche as

well as C & G Boatworks in Mobile, Ala., and newcomer Conrad Aluminum in Morgan City, La., are enjoying a very good 2004.

"The last four boats I have started were on spec," said **Roy Breaux, Jr.**, president of Breaux's Bay Craft, one of the three crew/supply boat builders in Loreauville, La. "The longest any of the four was on the market was three months," Breaux exclaimed.

"I will be starting another one in November, hopefully with the same results," Breaux added. All of Breaux's Bay Craft's recent vessels are 162 ft. long typically with four Caterpillar 3512 engines. "The 162 ft. vessel we build has been very popular," said **Hub Allums**, director of engineering for the company.

The advanced equipment now going on crew/supply boats is similar to that on supply vessels. For example, Gulf Craft, Inc., Patterson, La., has put both drop down and tunnel bow thrusters on its 175-ft. by 30-ft. water jet-powered crew boats for Seacor Marine, Houston, Texas. "We have built three of these vessels for Seacor in the last 15 months and all three are rated at DP-1," said **Scotty Tibbs**, comptroller of Gulf Craft.

Gulf Craft also has the distinction of building one of the longest crew/supply boats in 2004, the 175-ft. Joyce McCall,

named for the wife of the head of Seacor's Small Boat Division, **Norman McCall**. McCall Boat Rentals was purchased by Seacor three years ago. The vessel was delivered in September.

A series of 175-ft. crew/supply vessels for Tidewater, Inc., under construction at C & G Boat Works, Mobile, Ala., can really claim the title of fast supply vessels because they have the ability to carry up to 1,000 barrels of liquid mud. The first series of four were delivered in 2003 and C & G is working on the second quartet recognizing the relative importance of deck cargo and drilling liquids over passengers, these vessels hold 38 passengers, rather than the usual 70-90.

The 2004 crew/supply boat deliveries by the six yards specializing in these vessels show some interesting trends. The first of which is that these yards will continue to build additional vessels into 2005 and beyond.

For example, Breaux Brothers Enterprises, Loreauville, La. has had a good year with a banner year set for 2005. They started the year with the 155-ft. Ms. Nancy for **Joey Arceneaux** at Gulf Logistics, the operating division for C&G Boats of Galliano, La.

Next came the 160-ft. Ridge Runner for Shane Pescay, Crew Boats, Inc.,

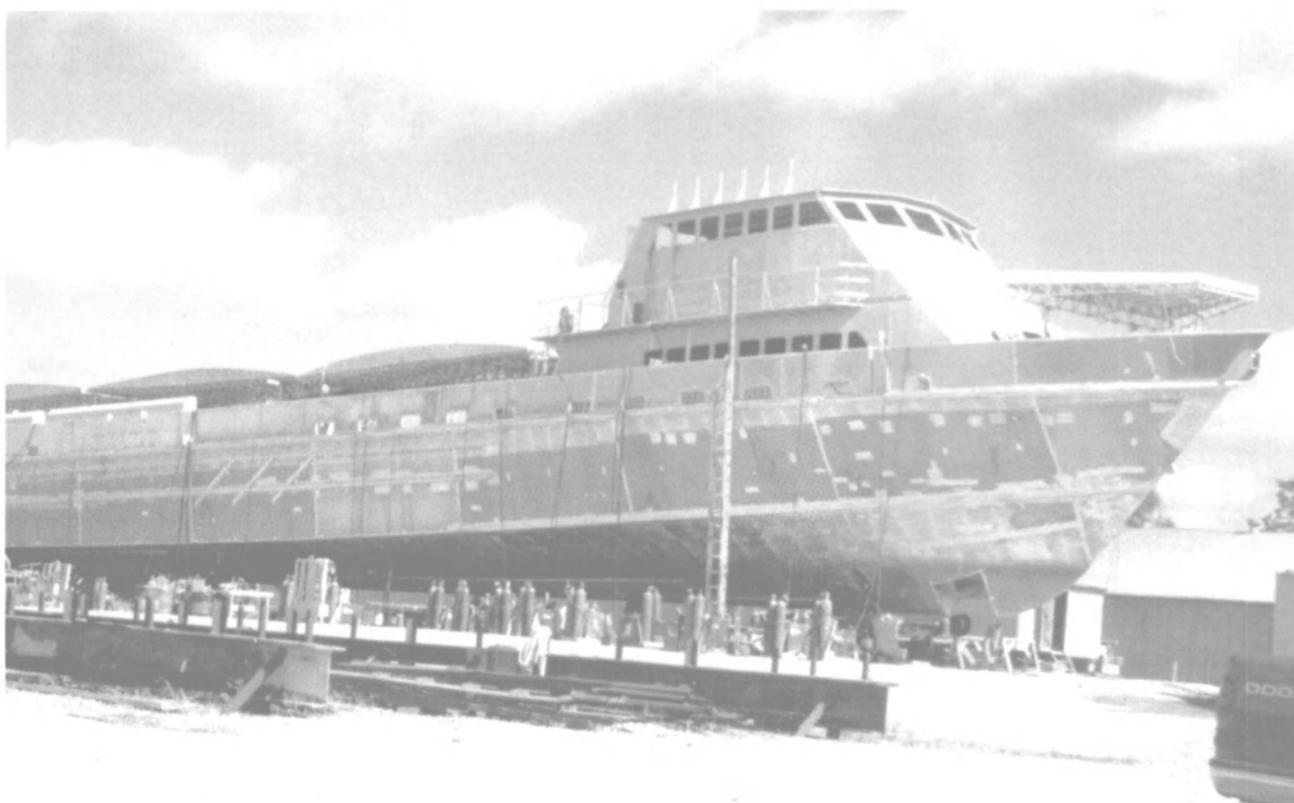
(CBI) Chalmette, La. CBI is in the process of rebuilding their fleet of large crew/supply vessels with multiple vessels being built at Breaux Brothers Enterprises and Breaux's Bay Craft.

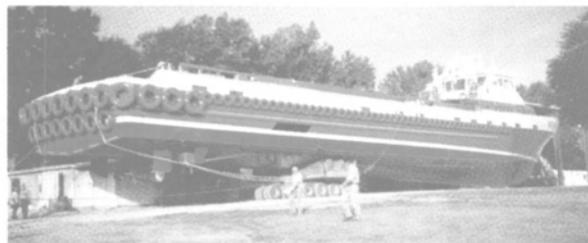
All of the crew/supply vessel shipyards pride themselves on orders from repeat customers

Breaux Brothers Enterprises will deliver five 160-ft. vessels in 2005. Both CBI and Gulf Logistics will take delivery of their vessels in the first half of the year. That will be followed by three vessels of a four-vessel order from Edison Chouest Offshore. Chouest has built 13 crew/supply vessels at Breaux Brothers Enterprises and two of the three vessels set for 2005 delivery are under construction now (Mid October). Delivery dates are July, September and December of 2005 with the fourth vessel set for March of 2006.

All are powered by four Caterpillar 3512B engines with a pair of Cat 3054 engines connected to generators rated at 72 kW each. The main deck passenger cabin had seats for 80 passengers and the rear cargo deck is 98-ft. long. These vessels have a light ship speed of 28.5 knots and 27 knots with 130 tons of cargo. "Speed, economy of operation and 385 tons of deadweight cargo capacity make these vessels popular with our

Gulf Craft is building a 180-ft. vessel for Seacor Marine for a January delivery.





The 162-ft. Ridge Runner is launched at Breaux Brothers Enterprises in September of this year. This is the second vessel that Crew Boats, Inc. received this year.

customers," said **Vince Breaux**.

There are other differences in the vessels set for 2005 delivery. The Chouest vessels have DP-1 and CP wheels while the CBI boats have an engine dedicated to running the fire pump and the bow thruster.

As noted earlier, Crew Boats Inc., is getting back into the crew/supply boat business in a big way. Breaux's Bay Craft delivered the 162-ft. Miss Callie P in March and a sister ship the Capt. Preston P in November. Between those two deliveries was another 162-footer the Mr. Lloyd. For Gulf Offshore Logistics (not to be confused with Gulf Logistics) of Lockport, La. delivered in July of 2004. The next vessel from Breaux's Bay Craft will be a 162-ft. from Offshore Oil Services, Freeport, Texas. This February 2005 delivery will use four Cummins KTA-50 engines, rated at 1800 hp each and Cummins-powered gensets.

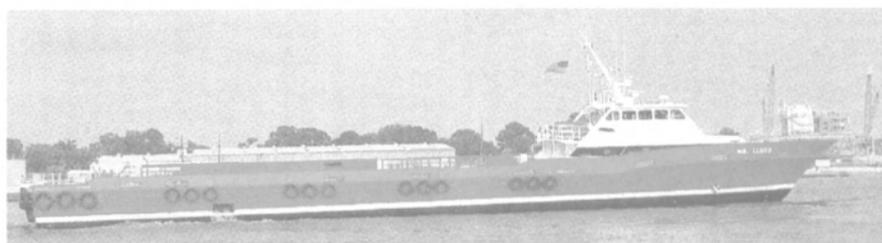
Two more crew/supply vessels for CBI will follow in May and August of 2005. The company will also start a spec boat in November of this year. The third crew boat builder in Loreauville is Neuville Boat Works. They build a variety of vessels, mostly for Seacor Marine. In 2004, the 158-ft. Elizabeth A. McCall joined the Seacor Marine fleet followed by the Chief Bayo KuKu, a 167-ft. water jet powered vessel in August, also for Seacor.

The Elizabeth A. McCall is typical of the vessels

The Elizabeth A. McCall on sea trials in the Gulf of Mexico. This 160-ft. by 30-ft. vessel was built by Neuville Boat Works for Seacor. (Courtesy of Neuville Boat Works)



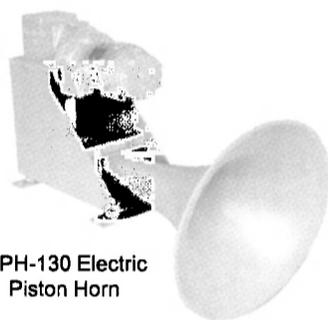
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Right: The 162-ft. Mr. Lloyd built by Breaux's Bay Craft went to work in July for Gulf Offshore Logistics.

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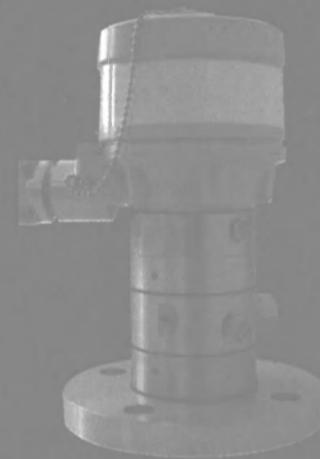
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The Elizabeth A. McCall has a 24 in. tunnel type bow thruster and is certified by the U.S. Coast Guard as Subchapter

The 175-ft. Keith G. McCall from Gulf Craft. This is the first of three water jet powered crew/supply boats built in the last 15 months for Seacor. The Seth McCall was delivered at the end of last year and the Joyce McCall joined the Seacor fleet in September 2004.

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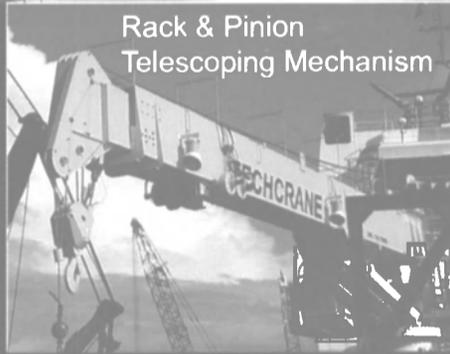
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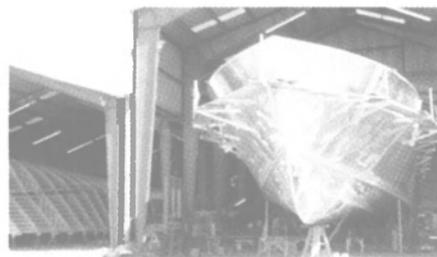
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Both of the Neuville Boat Works fabrication building are busy with two 160-footers. On the left is a vessel for Seacor and on the right a crew/supply vessel for Iberia Crew Boat Rentals, both for 2005 delivery.

T/I and is ABS classed A-1, HSC Crewboat and AMS with Load Line.

Currently Neuville has two vessels under construction: a 160-ft. x 30-ft. vessel for Iberia Crew Boat Rental for February 2005 delivery and a 160-ft. x 30-ft. vessel for Seacor with five Cummins KT-38 engines for September 2005 delivery

Gulf Craft, Patterson, La. remains as one of the most active builders of crew boats. They seem to specialize in the larger, more technological advanced vessels.

In 2004 they built a pair of 155-ft. x 27-ft. crew supply boats for Seacor and the third 175-ft. x 30-ft. water jet powered vessel to join the Seacor fleet over the past 15 months. Called the Joyce McCall, it is powered by four Cummins KT-50 engines coupled to four Hamilton HM-811 water jets. Maximum speed is 32 knots. Twin Cummins BT series gensets produce 99 kW of electricity each.

In keeping with its rating of DP-1 by ABS, the vessel has both a 200 hp drop-down bow thruster and a 150 hp tunnel type bow thruster. Ther tunnel thruster is driven by a Cummins 6CT series engine.

The main deck cabin passenger seating is arranged with 50 seats in Business Class and 14 in VIP Class.

At the present time, Gulf Craft has a 180-ft. crew/supply vessel under construction for Seacor for February 2005 delivery and a sister ship that will join the Seacor fleet in September 2005.

Gulf Craft also builds vessels other than crew/supply boats. Under construction now is the Big E, a 125-ft. x 26-ft. party fishing boat for March delivery and Marquette II, an 80-ft. x 26-ft. passenger boat for September completion.

As noted in September *MarineNews*, Conrad Industries has opened aluminum yard in Amelia, La. to handle new construction and repair of aluminum vessels. Its first new vessel is a 180-ft. water jet powered vessel for Diamond Services, also of Amelia. The vessel was designed by A.K. Suda, Inc., Metairie, La. The vessel is designed without deep

tonnage frames or tonnage openings and is certified under U.S. Coast Guard Subchapter T. Power is via four Cummins KTA-38 engines. The main deck cabin can hold 100 passengers and the vessel can hold 30,000 gallons of fuel and 35,000 gallons of water.

Delivery is November of this year.

The forecast for the next couple of years is very positive for the crew/supply boat industry. The yards have only a few slots open for 2005 deliveries. There is proof positive that drilling will pickup in 2005, so they outlook for crew/supply

boat construction looks good. The crew/supply boat yards stayed busy during the down times of 2003-4, so there is real optimism that the years ahead will be positive for construction of these speedy and increasingly versatile vessels.

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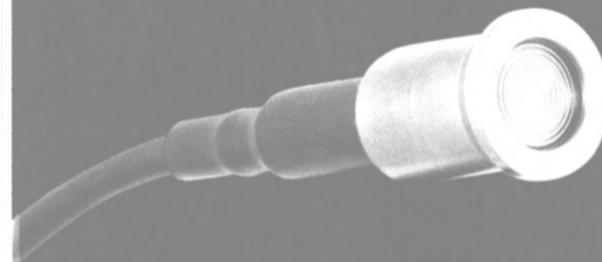
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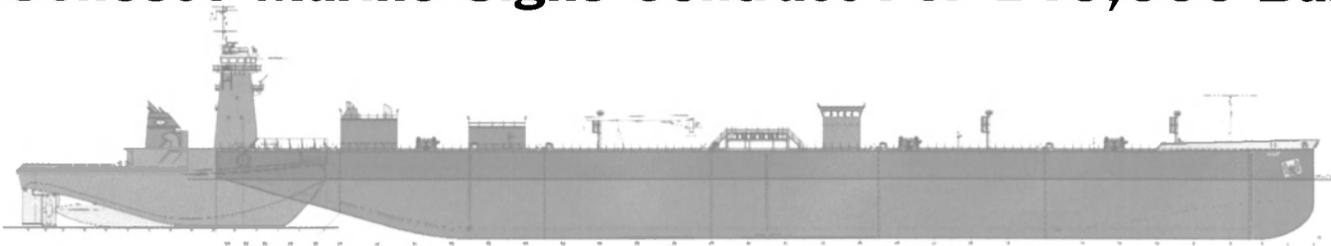


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## Senesco Marine Signs Contract For 140,000-Barrel DH ATB



Senesco Marine signed a contract with New Jersey-based U.S. Shipping, LLC to build a 140,000-barrel double-hulled (DH) chemical ATB with tug that can double as a 150,000-barrel double-hulled petroleum ATB. The development, according to **Gary Schuler**, CEO of Senesco Marine, signals the company's move to service this growing market, and the move will more than double Senesco Marine's workforce, which currently stands at approximately 200. "By November of 2005 we will have a workforce of more than 500 employees," said Schuler. "We are announcing to the industry that we are now focusing on state of the art ATB's." The contract for the first ATB is worth more than \$40 million. In addition to the order, U.S. Shipping has options for three 150,000-barrel DH petroleum ATB's with Senesco Marine. Construction is expected to take around 14 months for the barge and 12 months for the tug. Senesco Marine is scheduled to start cutting steel in December and expects to deliver the ATB early in 2006. U.S. Shipping operates six Integrated Tug and Barge (ITB) vessels in the domestic oil trade and two parcel tankers. The 48,000-dwt ton vessels are equipped with state-of-the-art technology and capable of carrying a wide variety of liquid petroleum and petro-chemical cargoes. The ATB will be the first for U.S. Shipping. Guarino and Cox designed the ATB. Senesco Marine entered a strategic partnership with Guarino & Cox last year as part of a sweeping new on time design, build and delivery process. Senesco Marine has also established a strategic alliance with **Luther Blount** of Blount Boats in Warren, RI, to act as a technical consultant on the tug portion of the project. When complete the barge component of the ATB will measure 512 ft. long with a displacement of 26,600 tons. The 10,000-hp tug will measure approximately 145 ft. long.

Circle 48 on Reader Service Card

### Global Completes Sales of DB Arapaho and Liftboat Division

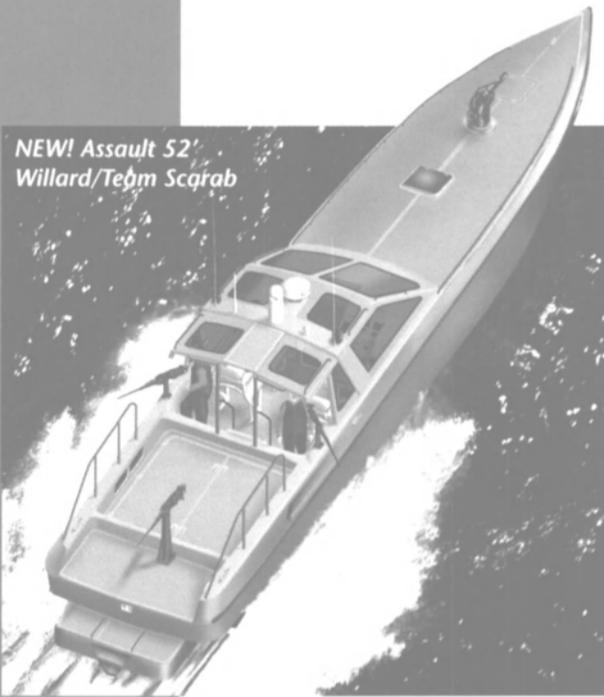
Global Industries, Ltd. completed the sales of the DB Arapaho and the Liftboat Division. The Arapaho, an 800-ton conventional derrick barge currently based in the U.S. Gulf of Mexico, was sold on September 29, 2004 to a subsidiary of Tetra Technologies, Inc. The Liftboat Division was sold on October 4, 2004 to Hercules Liftboat Company, LLC (formerly Mercury Offshore Assets LLC).

Maritime Reporter & Engineering News

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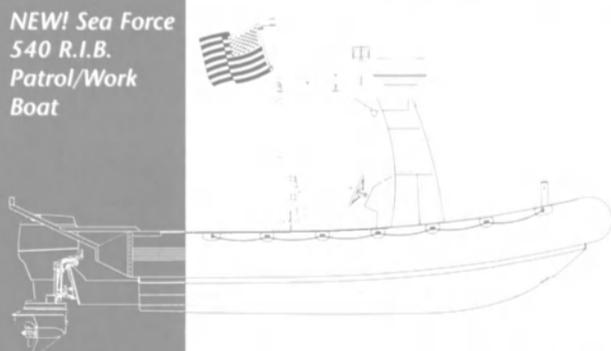
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## Coffee Company Investigates "Container-on-Barge" Service

In 1967 a Brazilian ocean freighter delivered 7,000 sacks of unroasted coffee beans to the cargo docks at the Port of Greater Baton Rouge for Community Coffee Company. That cargo was the first of many shipped into the capital city port by the company founded in 1919 by **Cap Saurage**. In 1968 Community built a coffee roasting plant on leased land at the Port of Greater Baton Rouge and has operated there since. The cargoes of coffee beans stopped arriving at the port's dock years ago, however, when shipping product in large containers became more economical and practical. Since Baton Rouge is not a container ship port, the containers filled with Community Coffee beans have been shipped into other ports, including the Port of New Orleans, and then transported to the Baton Rouge roasting plant by trucks. Recently, Community conducted a test shipment to determine if those containers of beans could be shipped to the port in Baton Rouge by barge rather than moved by truck. The success of that test, say officials at the Port of Greater Baton Rouge, now gives Community an additional transportation option and more flexibility in moving cargo, while adding another convert to the growing list of area manufacturers who have experienced first-hand the economic and logistic advantages of container-on-barge cargo movement.

"Community Coffee Company has had a great relationship with this port for almost four decades," said **Roger Richard**, CEO at the Port of Greater Baton Rouge. Two containers loaded with unroasted beans were moved upriver from the Port of New Orleans by barge and unloaded in Baton Rouge at the port's special barge container facility at the Inland Rivers Marine Terminal. The container facility can store up to 250 containers at once and provides loading/unloading/stacking equipment custom-made for barge operations. The IRMT at the port is located off the Intracoastal Waterway and is accessed from the Mississippi River through the Port Allen Locks. Osprey Line operates the terminal and currently pro-



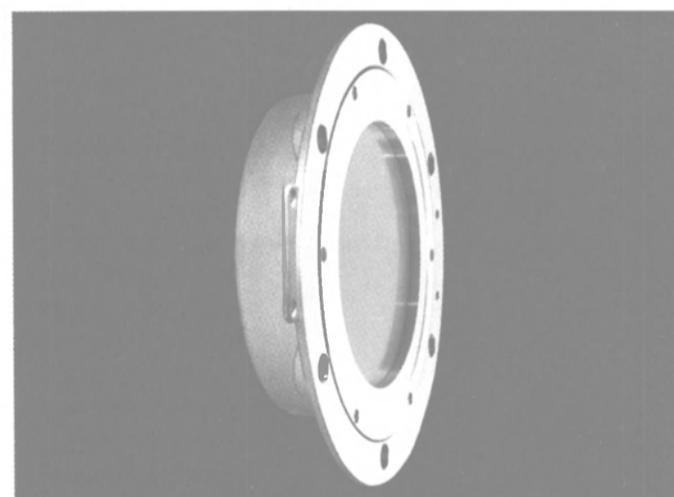
vides twice-a-week container-on-barge service between Baton Rouge and New Orleans, effectively making the oft-debated but seldom applied short-sea shipping a reality. Community's GM of supply, **Carl Leonard** said that the company presently receives containers of "green coffee" — natural, fresh-picked coffee beans — each week that enter the U.S. through the Port of Greater New Orleans. After U.S. Customs and other inspections, they are trucked up to the Community Coffee Roasting Plant in Port Allen. Most of those containers have been loaded in Brazil, he said, and arrive in New Orleans aboard ocean-going ships. Some containers of Mexican coffee also arrived by truck from Laredo, Texas. The green coffee beans are actually the two seeds that form the pits of cherries. The cherry character accounts for the coffee's flavor. Community has been an importer of coffee since the early 1960s. The 85-year-old company is still owned and operated by family descendants of its founder, Cap Saurage. The company is the largest family owned retail brand of coffee in America. Community is ranked 8th nationally in ground coffee grocery sales according to published IRI market research.

An especially encouraging aspect of the test, said Richard, is that all containerized coffee that now reaches Baton Rouge could be received via barges pushed by towboats plying the Intracoastal Waterway, meaning means that the Inland Rivers Terminal could have the potential for a pretty nice coffee business. So far the container-on-barge terminal in Baton Rouge has attracted local manufacturers who have used it to ship synthetic resins, rice, steel and chemicals, said Johnson. "Adding coffee as a regular cargo would be a nice way to come full circle," he said. "since we used to receive so much coffee here previously. Plus, Community's example could

attract other area companies to take a look at the low cost per ton and the higher capacity of barge tows. Just about every type of commodity can be moved by loading containers on barges. That's why the service catches on quickly with just about everyone who really takes a good look at it," Johnson said.

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# USCG Invests in Low Engine Exhaust Temps

Confronted with high exhaust temperatures and emissions on the Alco engines of its Polar Class ice-breakers, the U.S. Coast Guard turned to ABB for a solution.

The answer was quickly found: In a similar case the year before, retrofitting a tug's engines with ABB turbochargers had reduced the exhaust temperatures by 20 percent.

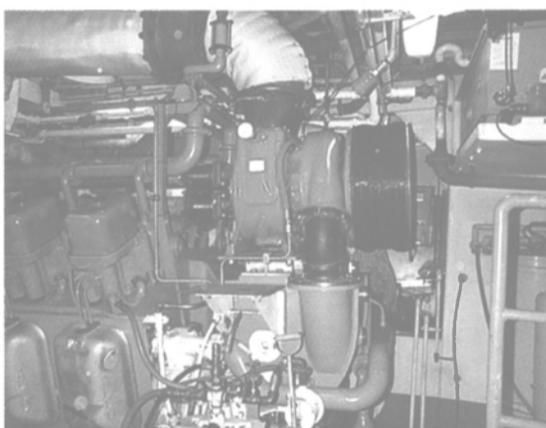
On January 3, 2001, ABB Turbocharger Co. in Tacoma, Wash., received a call from **Kent Halvorsen** of Boyer Towing in Ketchikan, Alaska. Boyer's tug, the *Billie H.*, was experiencing high exhaust temperatures on its two Alco V8 main propulsion engines.

This problem had existed since delivery of the vessel, and all options and fixes had been tried. Kent was ready for new turbochargers.

The tug's full-load operating data was sent to ABB

Turbocharger Company's application engineering department in North Brunswick, NJ. A look at the requirements showed that the high efficiency of ABB turbochargers would enable the exhaust temperatures to be reduced and the flow of air through the engine to be increased. Either a type VTR or VTC would do the job. After further consideration, a VTC254-13 was chosen. This size was able to supply the air that would be required and also fitted the installation best.

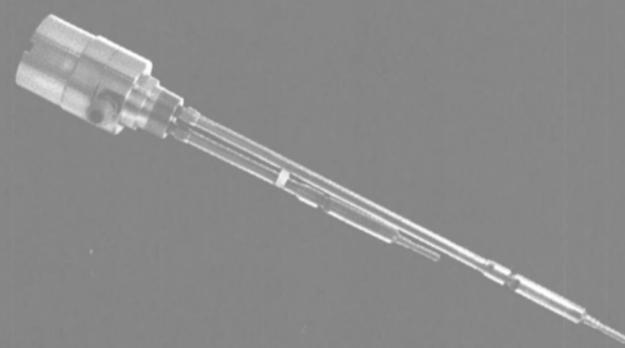
Boyer Towing engaged **Dave Stith**, a long term



Above Left: Boyer Towing's tug *Billie H.* Above Right: Alco V8 with the new VTC.  
Below: The *Polar Sea* on the ice.



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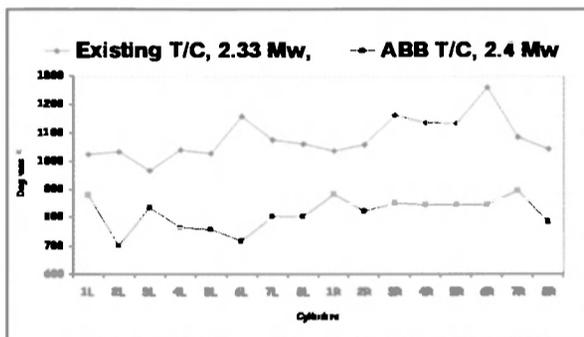
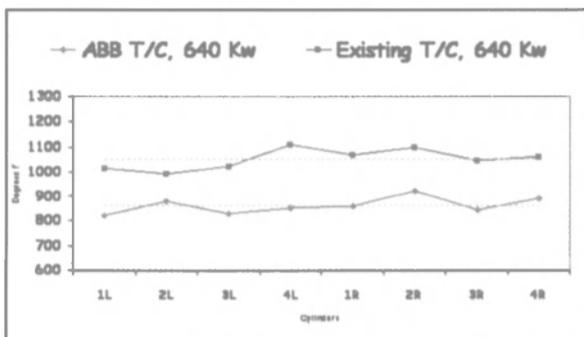
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## The Workboat Annual



Skipper and Senior Port Engineer for the Company, to supervise the retrofit at the Fisherman's Terminal dry dock in Seattle. On June 1, 2001, the Billie H picked up a loaded barge from another tug and towed it at nine knots to check the results. They were excellent: Exhaust temperatures were down to well below 900 °F — a reduction of 20 percent. One week later the tug was back at work, towing freight barges between Seattle and Ketchikan.

The following year, in March, Lt. Don Miller with the Naval Engineering Support Unit of the Coast Guard in Seattle called ABB with the same problem: The USCG was experiencing high exhaust temperatures on the Alco V16 main propulsion engines and the Alco V8 SSDGs on its Polar Class icebreakers. ABB recounted the case of the Billie H and visits to the tug were arranged. Intrigued with the results, the Coast Guard invited ABB to bid replacement turbochargers on a one time trial basis.

ABB's offer was accepted and a VTC304 and VTC254 turbocharger were purchased for the V16 and

V8 engine, respectively. The units were to be installed by NESU Seattle, with technical assistance provided by ABB. In September 2002 the original turbochargers were removed and the two ABB units were rigged into engine room no.2 on the USCG icebreaker Polar Sea. Within two weeks both units had been installed and testing could commence.

### Better Data

The Coast Guard contracted the U.S. Navy's Fleet Technical Support Center, Atlantic (FTSCLANT) out of Norfolk, Va., to conduct the trials. The tests, which took place at the dock in Seattle, compared main engine 1A, fitted with an original Alco turbocharger, with main engine 3A, which had been fitted with the ABB VTC 304 turbocharger. The Polar Sea's No. 2 SSDG with an original factory turbocharger was compared with No. 1 SSDG, which had had the ABB VTC254 turbocharger fitted.

Am Rest-Air Quality, LLC, of Peston, Wash., set up the measuring equipment on the stacks. The results for



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all four engines were soon in, and they showed convincingly that the conversion had had the hoped-for effect.

The improvement in the V16 installation's emissions was especially impressive. At full load the engine with the ABB VTC304 turbocharger reportedly emitted 5 percent fewer hydrocarbons, 15 percent less carbon dioxide and 40 percent less carbon monoxide, while visible smoke at the stack was down by 77 percent.

In its final report, Am Rest-Air Quality noted that the comparative results for the third load point of 2.1 MW were interesting. While CO emissions for the main engine with the ABB VTC304 turbocharger were, as expected, much lower (36 percent, or 180 ppm versus 280 ppm), the recorded NOx concentration was also lower for this engine (1,463 ppm for 3a versus 1,604 ppm for 1a). An examination of the trend data showed that while the NOx emissions from engine 1A continued to rise as the load was increased, in the case of engine 3A they actually fell as the engine approached the 2.1 MW load point, leveling off at around 1,500 ppm. The 1A NOx concentration rose to approximately 1,630 ppm and leveled off at around 1,615 ppm. Comparison of the total hydrocarbon concentration showed a similar reduction (50.0 ppm for 3a versus 52.6 ppm for 1A). A marked difference in the opacity readings was also noted: While visible exhaust emissions for 1A increased to and remained at 35 percent at the 2.1 MW load point, those for the engine with the ABB turbocharger fell consistently to below 10 percent.

With the results of the dock trials documented, the Coast Guard now wanted to know how the retrofitted engines would perform in the warmer waters of the tropics.

To find out, **Bill Sanowski** of NESU and the FTSC/LANT inspectors joined the Polar Sea in Honolulu, on its annual trip to Antarctica to break the ice into McMurdo Scientific Station during the southern hemisphere's summer. Extensive tests were subsequently run on the same four engines between Hawaii and Australia.

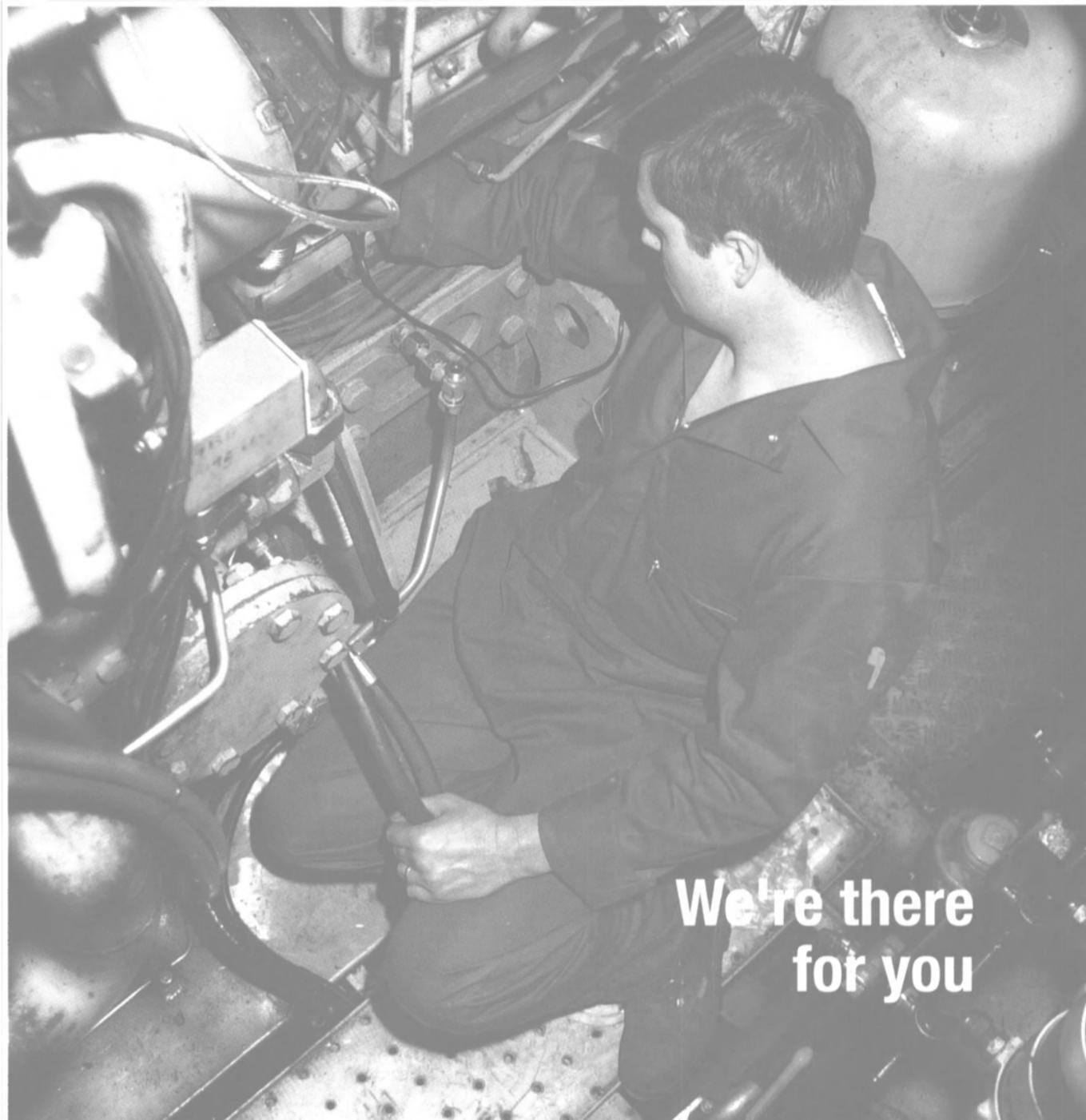
Comparison of the data for the SSDG engines showed that, with the boost, rack and firing pressures approximately equal, exhaust temperatures for the engine with the new VTC254 turbocharger were down, on average, 150°F. Comparison of the main engines' performance showed that engine 3A fitted with an ABB turbocharger was run-

ning at a higher load (2.4 MW compared with 2.33 MW for engine 1A), the rack and firing pressures were down, and exhaust temperatures were a full 300°F lower. After the vessel returned from Antarctica in March 2003 the USGC made the decision to install ABB

VTC254 turbochargers on the SSDG engines of all its Polar class icebreakers. The ABB Turbocharger office in Tacoma was able to modify two SSDG engines aboard the Polar Sea and one SSDG on the Polar Star before these two vessels headed south that year for the

Antarctica summer. This year (2004) ABB also supplied VTC304 turbochargers for the main engines on these ships, the remaining main engine turbochargers being scheduled for installation during routine repairs in 2005.

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## The Workboat Annual

### Seacraft Delivers RV Hercules

Seacraft Shipyard Corporation delivered the 120-ft. all aluminum Research Vessel Hercules to its owners in Key West, Fla. The custom-built vessel was

designed to work in the Mediterranean Sea, for underwater archeology research. Seacraft designed the vessel in-house, with conveniences and comforts a previously unheard of in research vessels. The vessel can carry 14 passen-

gers and a crew of five for an extended expedition. The vessel is configured into three levels including: the pilot-house, main deck, and lower deck.

The pilothouse contains equipment such as: two VHF Radio Telephones,

Autopilot, two Simrad Radar units, Furuno Inmarsat unit, Furuno Inmarsat - C unit, Furuno Single Side Band Radio, Furuno Navtex, Furuno Echo Sounder, a Raymarine Loudhailer, Simrad Shipmate, Gyro Compass, and a 27-in. Sony Color Television with a Pro Video camera system through out the vessel allowing the captain to monitor all major activities. Also in the pilothouse are the controls for the Dynamic Positioning System or DP system. The vessel is equipped with two drop down azimuth thrusters provided by Thrustmaster of Texas, which are controlled by the Global Positioning system on board. With the DP system the vessel can hold itself on location with a 3-ft. area of the length and width of the vessel in sea conditions up to sea state 2. The interior decor of the pilothouse is of black FRP panels on the walls, with black plastic laminate on the countertops, and grey rubber non-slip flooring. The entire pilothouse is trimmed with South American Cedar molding sanded and finished to the owners specifications. Traveling down to the main deck cabin is the salon, computer room, complete galley, and dining area. The salon area is designed for 14 people to relax and enjoy the entertainment center, which consist of a 32-in. Sony Color television, and DVD/VHS player. The salon can be also used as a meeting room or classroom if the need arises. Aft of the salon is the computer room which allows up to six to work at one time. The computer room is used as a control station for operation of equipment while diving, and other operations are taking place. Aft of the computer room is the galley complete with a stove, microwave, refrigerator, garbage compactor, and dishwasher. Also, the galley has all stainless steel countertops and backsplashes, and all aluminum cabinets with positive locking devices to prevent them from opening while at sea. Opposite of the galley is the dining area. The dining area is large enough to seat eight people to enjoy a meal or to just talk about the day's activities on board. The lower main cabin decor consist of white FRP walls and ceilings and grey non-slip flooring. The entire main cabin is trimmed with South American Cedar molding sanded and finished to the owners specifications. In the engine room there are two Caterpillar 3412 engines producing 900 hp @ 800 rpm, which provide main propulsion for the vessel; and one Caterpillar 3406 used to supply power the forward and aft thrusters. The aft azimuth thruster is also located in the engine room.

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# Caterpillar Gets "ACERT"-ive

If indeed there is strength in numbers, then Caterpillar's propulsion prowess is of Herculean proportion. The international company serves a diversity of power needs around the globe, giving it an unrivalled engine installation base from which it can continuously tweak and improve current models while grooming the next generation of powerplants.

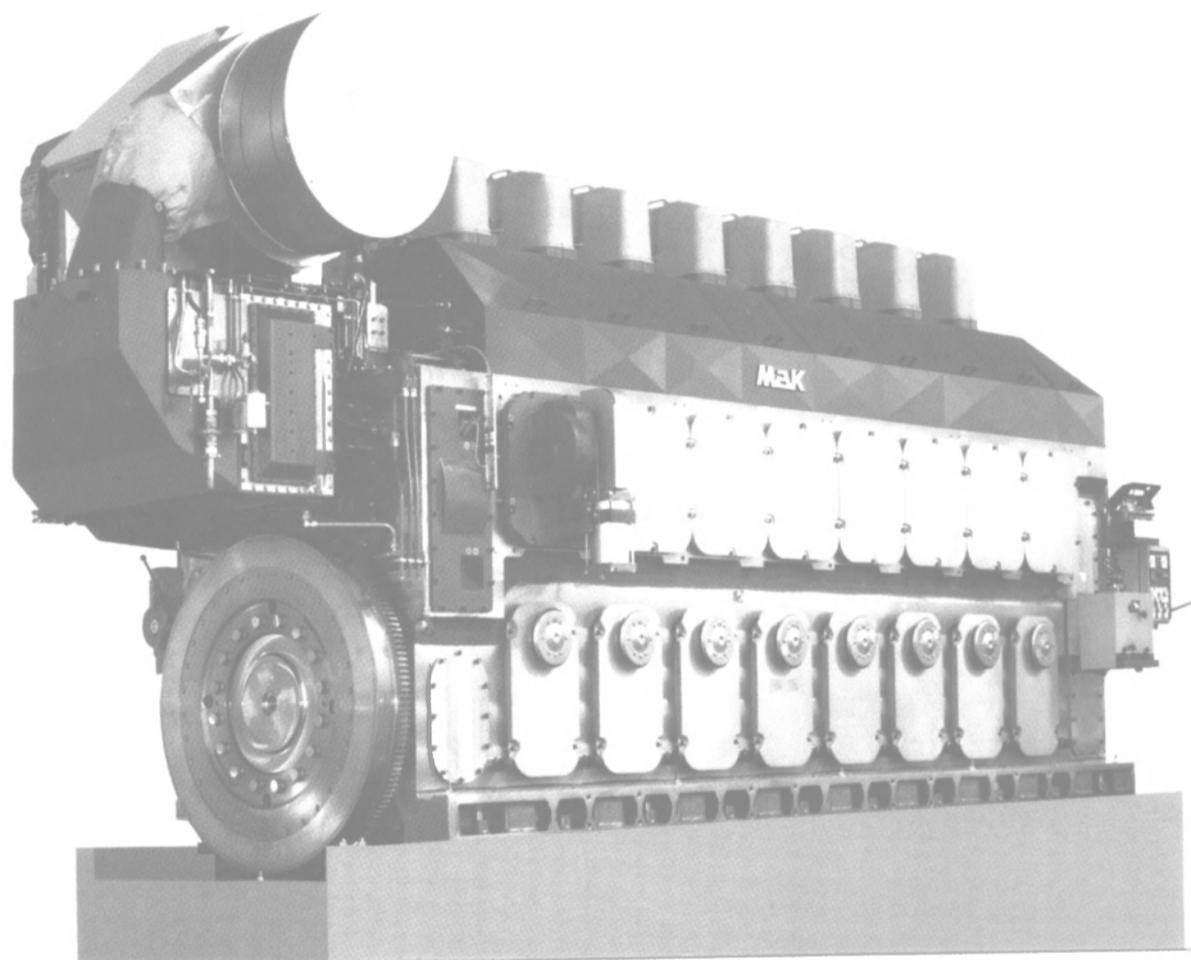
The company's **Advanced Combustion Emissions Reduction Technology** — or more simply **ACERT** — is the result of an initiative started with R&D funding in 1999, an estimated half billion effort to: meet the most stringent current emission rules; enhance true customer value; minimize pollutants where they are generated, i.e. in the combustion space; and, to serve as a stepping-stone for meeting future regulations applying evolutionary steps. The effort continues today, aiming to meet the high standards of "Near Zero Emissions".

Emissions have been the primary driver of engine development during the last decade, said Dr. **George Lustgarten**, Director Power Systems Engineering, Caterpillar Inc., at a presentation on the matter at the SMM 2004 exhibition in Hamburg, Germany. The most restrictive on-highway limits precede only by 2-4 years the land based application. NOx and particulate emissions have been dramatically reduced and will be reduced by an additional 95 percent until 2010. Eventually all emissions will converge towards a "Near Zero Emission" situation. Engine makers of all shape and size are increasingly being pressed by international, national and regional authorities to minimize engine emissions, while simultaneously being squeezed by vessel owners to improve fuel efficiency and engine reliability. In essence, engine makers must be all things to all people.

"Increasingly it is going to take more and more money to compete," said **Dra Wiersema**, Business Development, Caterpillar Marine Power Systems. When asked about competition and consolidation, he said "If you are marginal and don't have the R&D money, you won't be able to compete in the future. Increasingly, we will see the number of engine makers drop." For Caterpillar, the R&D initiative is massive and ongoing. Including the effort to bring ACERT to market, Caterpillar's Research & Development (R&D) activity is supported by its Technical Research Center located at Caterpillar's headquarters in Peoria, Ill. It supports the company's engineers with fundamental research on combustion, emissions, noise, structures, advanced materials and complete power systems. Engines are tested in over 100 cells capable to accommodate units up to 9,000 hp.

## Getting ACERT-ive

ACERT is Caterpillar's solution to the ever-increasing environmental and performance demands put on engine makers, and is indeed a systems approach to reducing NOx and particulate matter while providing attractive in-service performance numbers. ACERT is



MaK 8M 43C diesel engine, 1,000 kW/cyl at 500 rpm, equipped with Flex Cam Technology (FCT).

designed to allow the combustion process to be shaped and managed with an extremely high degree of precision, meaning that emission requirements are met more quietly and with less smoke. The ACERT solution is, in fact, the combination of several separate systems, which collaborate to produce desired results in marine and other applications. The components include:

- **Electronic Controls:** The Cat ADEM electronic controller acts as the brains of ACERT. Pioneered by the company nearly 20 years ago, the ADEM controller coordinates and enhances fuel delivery, air supply and other engine functions to maximize performance.
- **The Fuel System - the Injector in particular:** Multiple injection fuel delivery introduces fuel into the combustion chamber in a series of precisely timed "microbursts", allowing control over many more variables during the combustion process.
- **The Air Handling Components:** Cat engines with ACERT use a variety of refined air management technologies, and benefit from innovations such as variable valve timing; series turbocharging and MaK Flex Cam technology.
- **Variable Inlet Valve Timing:** Uses electronically controlled hydraulic actuators to govern when valves open and close to let air in and exhaust out of the combustion chamber.
- **Exhaust After Treatment**

"When we talk about ACERT, we're talking about a lot of technologies that address many different areas: emissions, durability and reliability," said Wiersema. "ACERT is the combination of these technologies that get us there."

"ACERT is scalable, flexible and adaptable," said **James Weber**, Applied Technology Development Manager.

ACERT debuted in Caterpillar truck engines, a standard progression to market as this sector has environmental emission laws were more strict and implemented sooner. The development of the technology on the truck side, which obviously is a much higher volume market for the engine maker than marine, is an important point for the marine market as the magnitude of the truck engine market allowed much of the R&D cost to be passed off here.

While holding the line on costs is critical for the marine market, equally important is the fact that the ACERT solution is a combustion technology — an internal solution - meaning that as environmental regulations get even tighter, the engine maker has the capability to optimize performance without the use of add-on equipment.

ACERT provides performance, fuel economy and durability without the addition of external solutions, which would require more maintenance and add

# Making the Mark For Crescent Towing's Fleet

The first GE Diesel engine in Crescent Towing's fleet went into service in 1971 powering the retrofitted Port Hudson tug — a retired U.S. Navy tug. The Port Hudson is still operating today using a GE medium-speed diesel engine. "I've worked for Crescent Towing for 24 years, and the GE engines are the most dependable ones we have in our fleet of 24 tugs," said **Larry Ohler**, vice president, port engineer for Crescent Towing, New Orleans, La. "We operate all of our engines at full ahead, full stops, and full range of rpms. We have selected GE Diesels for our tugs because we've found that between overhauls, the GE engines require less maintenance. In addition, on average the GE Diesels will use 25 gallons per hour less fuel than other engines of the same horsepower," Ohler noted.

Today, Crescent Towing has 24 diesel engines powering its fleet, operating in Savannah, Ga., Mobile, Ala., and New Orleans. In Crescent Towing's 24-tug fleet, nine vessels are powered by 10 GE Diesel engines.

The most recent addition to Crescent Towing's fleet is Point Clear, which began operating in 1999 and was added to the fleet as part of Crescent's five-year upgrade program. Point Clear is the first Z-drive tractor tug in the Crescent Towing fleet, and it provides ship-assist work along a 250-mile stretch of the lower Mississippi River.

The 104-ft. long tug features two GE 7FDM 12-cylinder engines, providing



2,500 shaft horsepower (shp) each, and according to Ohler is the most powerful tug in New Orleans. The vessel has tankage for 85,000 gallons of diesel fuel, making it capable of prolonged towing assignments.

Crescent Towing typically performs maintenance on its engines every 30 days, including oil filter change, oil analysis, check valve clearances, pump

timing, and fuel rack settings every six months, Ohler said.

The GE 7FDM engine models are available in 8, 12 and 16 cylinders, for power ranges from 1,600 shp/1,193 kW to 4,500 shp/3,355 kW. The high compression, Electronic Fuel Injected (EFI) engines recently received ABS certification. These engines are fuel efficient, and offer high reliability and low emis-

sions. They are driven by GE's new Powerstar Controller.

GE Diesels meet current MARPOL and EPA Marine Tier I emissions requirements. These engines also will comply with EPA Marine Tier II regulations that go into effect in 2007 (see Table I below for engine specifications).

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**Table 1**  
**GE 7FDM 4-Stroke Diesel Engine Specifications\***

	EFI/uMARPOL Emissions Annex VI Compliant		
	7FDM8	7FDM12	7FDM16
Power Output at 1050 rpm			
Continuous+	2,050 shp (1,530 kW)	3,070 shp (2,290 kW)	4,100 shp (3,060 kW)
Maximum+	2,250 shp (1,680 kW)	3,375 shp (2,515 kW)	4,500 shp (3,355 kW)
Power Output at 1000 rpm			
Continuous+	1,950 shp (1,455 kW)	2,930 shp (2,185 kW)	3,900 shp (2,910 kW)
Maximum+	2,145 shp (1,600 kW)	3,215 shp (2,400 kW)	4,290 shp (3,200 kW)
Power at 900 rpm			
Continuous+	1,600 shp (1,193 kW)	2,630 shp (1,960 kW)	3,510 shp (2,620 kW)
Maximum+	1,760 shp (1,312 kW)	2,895 shp (2,160 kW)	3,860 shp (2,880 kW)
Engine Dimensions			
Bore inches (millimeters)	9.0 (228.6)	9.0 (228.6)	9.0 (228.6)
Stroke in. (mm)	10.5 (266.7)	10.5 (266.7)	10.5 (266.7)
Compression Ratio	15.7:1	15.7:1	15.7:1
A. Height with deep sump	109 in. (2,770 mm)	109 in. (2,770 mm)	109 in. (2,770 mm)
B. Length	127 in. (3,200 mm)	160 in. (4,064 mm)	193 in. (4,902 mm)
C. Width	68 in. (1,727 mm)	68 in. (1,727 mm)	68 in. (1,727 mm)
D. Crank center line to sump	38 in. (963 mm)	38 in. (963 mm)	38 in. (963 mm)
E. Crank center line to mounting feet	19 in. (480 mm)	19 in. (480 mm)	19 in. (480 mm)
F. Exhaust diameter	18 in. (457 mm)	24 in. (610 mm)	24 in. (610 mm)
Dry weight	27,500 pounds (12,470 kilograms)	39,200 pounds (17,778 kilograms)	48,800 pounds (22,132 kilograms)

\*Ratings are based on ISO3046-1

## GE Power for Dutch Tugs

GE Diesel engines have also been selected to power a new tugboat being built for the Dutch towage and salvage group, Multtraship. GE's 12-cylinder diesel engine will be used on the first newbuild to incorporate the Carrousel system licensed by Rotterdam-based Novatug. The compact Carrousel tug will use two GE medium-speed diesel engines, each rated at 3,070 shp for total system propulsion of 6,140 shp. "We selected GE Diesels for this application based on proven life cycle costs, reliable operation, fuel efficiency and recent ABS certification," said Leendert Muller, managing director of Multtraship Towage & Salvage, Terneuzen, The Netherlands. The vessel is expected to go into service in the harbors of southern Holland in 2005.

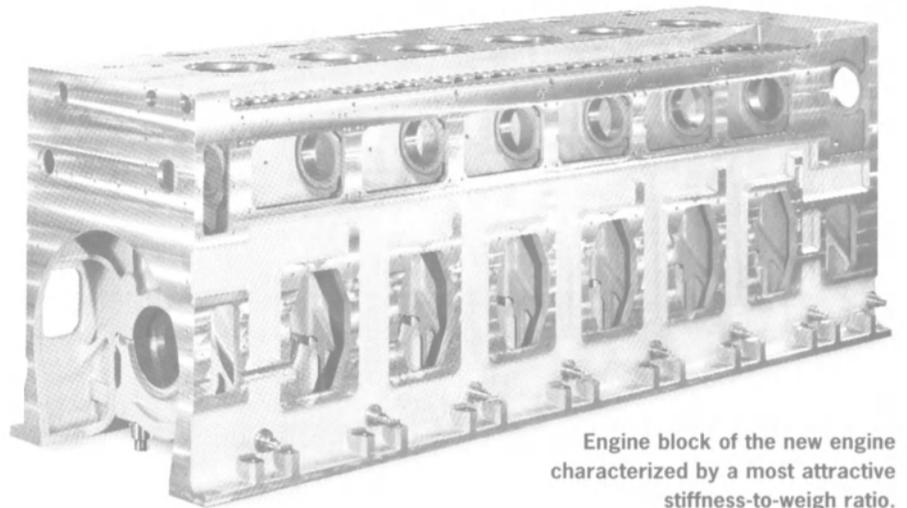
# The New Wärtsilä 46F

The Wärtsilä 46F is the latest in the marine engine series launched in 1987. Though visually similar to the original Wärtsilä 46, with similar bore and stroke, the Wärtsilä 46F is a new engine with the latest technology applied to all major components, including common rail injection and scaleable embedded control, for high performance and record-low exhaust emissions, regardless of fuel quality.

The new engine initially covers the output range from 7,500 to 11,250 kW at 600 rpm in 6-, 7-, 8- and 9-cylinder in-line configurations.

The higher (1,250 kW cylinder) output of the Wärtsilä 46F compared to the original Vasa 46 has been achieved by increasing engine speed instead of mean effective pressure. In full-load operation, early closure of the inlet valves makes it possible to use a low effective compression ratio, resulting in a work-cycle characterized by low combustion air temperature, which is designed to keep the rate of NOx formation low.

In keeping with tradition, the Wärtsilä 46F has modular built-on systems and features such as lubricating oil module with oil cooler and filter, crankshaft



Engine block of the new engine characterized by a most attractive stiffness-to-weight ratio.

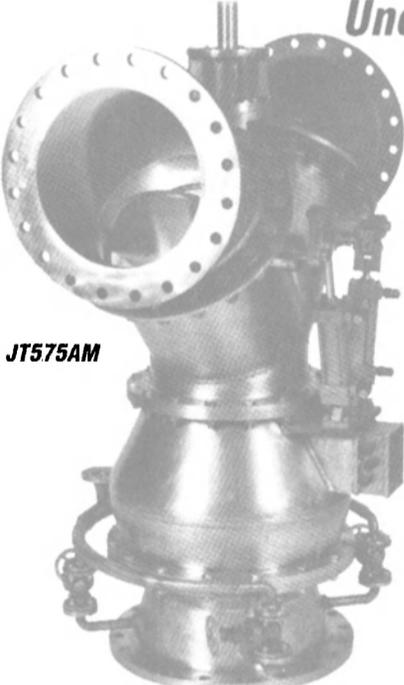
driven lubricating oil pump and cooling water pumps, and thermostatic valves. Besides minimizing installation cost, built-on modules are the key to the

engine's compact design; the new Wärtsilä 46F has the same outer dimensions as the Vasa 46 despite its considerably higher power output.

(Continued on page 43)

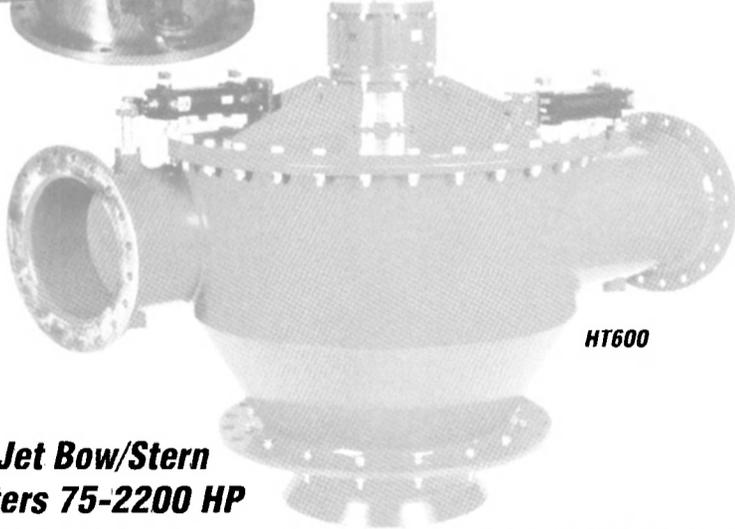


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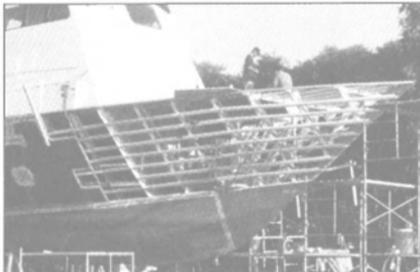



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Interview with the CEO

# Market Vision with Wärtsilä's Ole Johansson

On the occasion of the SMM 2004 exhibition in Hamburg last month, MR had the opportunity to speak with Wärtsilä's President and CEO Ole Johansson to discuss conditions in the international maritime market.

— By Greg Trauthwein

Challenges facing today's corporate manufacturing leaders — particularly those in the marine propulsion segment — are diverse and seemingly ever changing. Faced daily with a burgeoning list of technical, political, and social issues, survival for the long run seemingly depends on building and maintaining a strong organization while balancing the quickening and irreversible shift of manufacturing from the West to the Far East; the ubiquitous and ever-tightening environmental regulation; and the shipowner's demand for increased reliability, easier maintenance and better fuel efficiency.

In a nutshell, Ole Johansson is a busy man.

Balanced with these challenges: the marine industry is embarked on a historic high. "It is a surprisingly good market ... you can feel it," said Johansson. While 'feel' is subjective, this euphoria is backed with solid numbers, as he reported in the company's 2003 Annual Report: "The year 2003 will remain one of the most active in the history of the shipbuilding industry: the world's shipyards took in orders for more than 1,800 (vs. 1,100 the previous year) new vessels representing 108 (vs. 52) million dwt."

Charged to oversee and lead Wärtsilä — a company with 12,000 employees and 2003 net sales exceeding 2.3 billion Euro — Johansson has been embarked

to streamline the organization, positioning it as "The Ship Power Supplier", a literal one-stop-shop for marine power needs.

Bringing this strategy to fruition required several key acquisitions over the past decade, starting with the merger of New Sulzer Diesel, which allowed the company to extend its reach into the slow speed diesel engine market. "Stepping into the low speed end of the engine market was a major piece of making Wärtsilä a major player in the major market," Johansson said. While he admits that the company still has much work ahead in its effort to gain market share, it is clear that this corporate integration, along with the purchase of John Crane Lips, helped to broaden Wärtsilä from an engine maker and embarked it upon the road leading to single source system provider.

While the path may be clear, the journey is not without pitfalls.

**Heading East ... Far East**

The trend of manufacturing operations migrating from Europe to the Far East is hardly new or confined to the shipbuilding industry. However, as shipyards in China make technological leaps, the pace will surely quicken as the country, combined with traditional powers in Japan and Korea, continue to sap business from the west. While Johansson acknowledges the sound business principles for setting up shop in China, he views the migration of manufacturing with a certain amount of trepidation. "We have a very proud tradition of engineering, and I see this trend (of manufacturing moving from Europe) as irreversible," he said. While necessary to keep the corporation functional and profitable, he counts the need to close factories, which inflicts much personal hardship, as the least favorite aspect of his position. Nevertheless, Johansson is committed to ensuring that Wärtsilä is the single source technological and service leader, and is bound to implement a production strategy which delivers to the company's customers where ever they may be found.

Increasingly, this means China. Starting in June of this year Wärtsilä-CME Zhenjiang Propeller Co. Ltd, the joint venture company set up by Wärtsilä and CSSC (China State

Shipbuilding Corporation) to manufacture propellers in China, started operation. The move brings Wärtsilä close to its Asian customers, while also allowing low-cost manufacturing and higher business volume through local manufacturing.

Wärtsilä-CME Zhenjiang Propeller Co. Ltd. will produce Lips- and Kaida-brand FPPs initially up to a weight of 75 tons but this will be increased to conform market requirement as production equipment is upgraded. Production volume will start at around 1,000 tons of propellers a year, growing gradually to an estimated 4,000 tons after 10 years.

In addition, Wärtsilä looks for opportunities to start other propulsor related production and works to explore the construction of smaller, high volume genset engines in China.

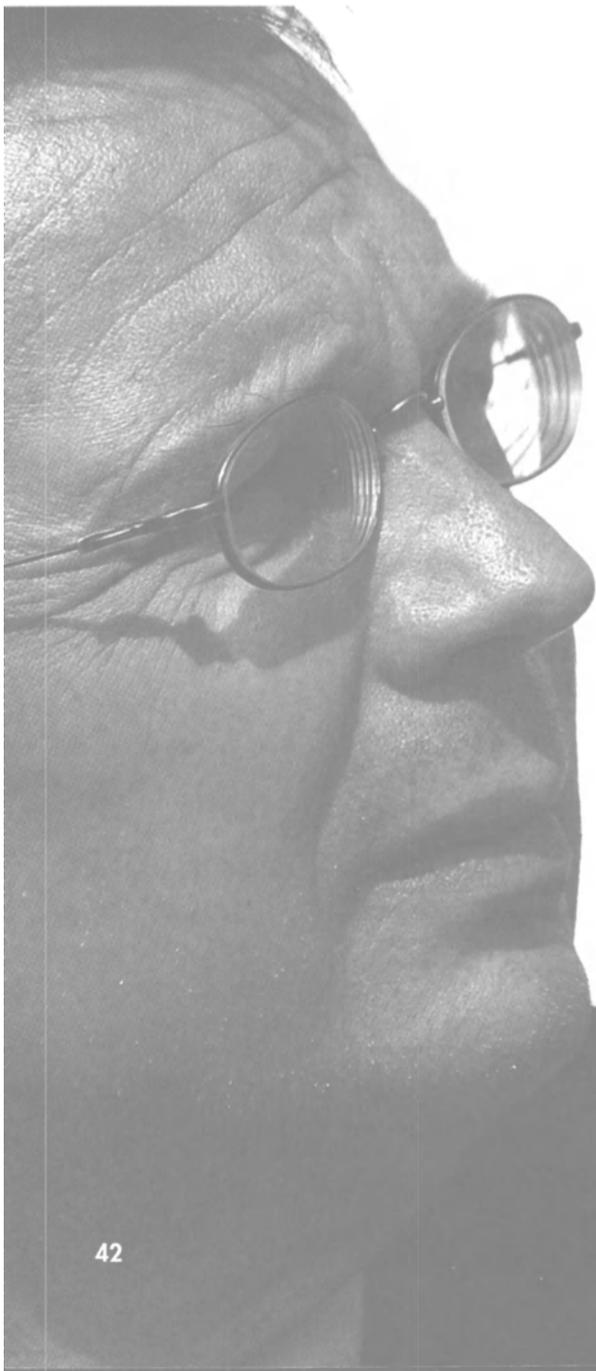
**All in One**

The trend toward corporate consolidation is well established over the past decade, and is evident across the broad spectrum of manufacturing and service entities around the world. As Wärtsilä has gotten larger, so too has its clients. "Large shipowners continue getting larger. Where as we used to discuss engines for one or two ships, we are now discussing engines for 10 or 12," said Johansson.

As owner's fleets get larger, so to does the need for uniformity, which offers obvious life-cycle benefits on the maintenance and technical sides. Johansson maintains that shipowners today are more prone to enter discussions for the larger, integrated package, and while the company is structured to provide an all in one solution, it is flexible to meet most any demand.

We basically have two types of customers, he explained. The first are shipyards that have strong engineering staffs, and have a long track record of pride and reputation. This customer is more likely to buy individual components and integrate them at the shipyard. The other type of customer are newer shipyards with less experience, hence they have less established trust with the owners.

In this case, the integrated solution is attractive, as it lessens demands on the yard while inspiring a confidence within the shipowner.



**Ole Johansson on:**

**Consolidation**

"Large shipowners continue getting larger. Where as we used to discuss engines for one or two ships, we are now discussing engines for 10 or 12."

**China**

"We have a very proud tradition of engineering, and I see this trend (of manufacturing moving from Europe) as irreversible."

**Service**

"If you look today, Wärtsilä has 12,000 people, and 6,300 are in service. Yes, you need the tools; Yes, you need the product; but at the end of the day, every engine needs support."

(Continued from page 41)

The Wartsila 46F enters the market as the first engine to have continuous temperature monitoring of the big end bearings as standard. This patented feature, in addition to main bearing temperature monitoring and exhaust gas temperature monitoring, is designed to provide a complete set of reliable real-time data to monitor the engine performance in all its crucial areas.

The monitoring system on the Wartsila 46F is configured for seamless hook-up to Wartsila's CBM system, a data analysis and condition evaluation service that Wartsila provides for its customers. The CBM service advises operators on how to perform engine

fine-tuning in varying operational conditions and allows owners to get the maximum service lifetime between overhauls. Common rail (CR) technology, standard on the Wartsila 46F, offers almost unlimited possibilities to adjust the fuel injection process to prevailing

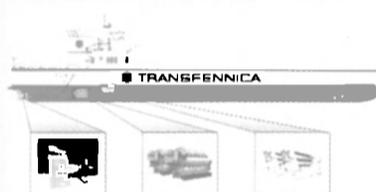
engine operating conditions, fuel characteristics and local emission requirements.

The Wartsila 46F is also available with more conventional fuel injection equipment. In this case the injection equipment is based on injection pumps of the

double plunger type that have been used with good experience on Wartsila 64 engines.

Another unique benefit of the CR system is the engine's ability to adapt to changes in fuel quality.

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### Wartsila Power for Sto-Ro Freighters

Wartsila received an order from Poland's Stocznia Szczecinska Nowa for the ship power plants for four new 12,800 dwt multipurpose Sto-Ro cargo vessels — designed primarily for carrying forest products and paper — being built for Spliethoff Befrachtungskantoor BV. Each ship will feature two Wartsila 12V46 main engines, two Lips CP propellers, two Lips efficiency rudders and two Wartsila 8L20 diesel gensets. The main engines have a combined output of 25,200 kW.

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### Wartsila Power for Offshore Vessels

Wartsila won a contract from Ulstein Verft AS for a 23 MW power plant to be installed in a new offshore construction vessel being built by Ulstein for Norway's Solstad Offshore ASA and the Swiss-based Single Buoy Moorings Inc. The 407 ft. (124 m) vessel, to be named Normand Installer, will feature a diesel-electric power plant comprised of two Wartsila 16V32 (each developing 7,680 kW) diesel gensets and two Wartsila 8L32 (each developing 3,840 kW) diesel gensets. The vessel is due for delivery in January 2006, and has been chartered for eight years to SBM, with an option for 12 additional years.

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# VT Halter Launches PCTC

VT Halter Marine launched MV Jean Anne, the first Pure Car Truck Carrier (PCTC) to be built in the U.S. Built at its Pascagoula, Miss., facility, it is one of the largest vessels to be launched by a

U.S. mid-tier shipyard. "Today marks the successful launching of the first modern PCTC to be built in the U.S. for the Jones Act trade," said **George W. Pasha, IV**, President, Pasha Hawaii

Transport Lines. "We are pleased with the ongoing cooperation with CEO **Butch King** and his team and look forward to the delivery of MV Jean Anne and commencing our service between California and the Hawaiian Islands in March." The ship is owned and operated by Pasha Hawaii Transport Lines, a joint

(All photos: Ray Broussard)



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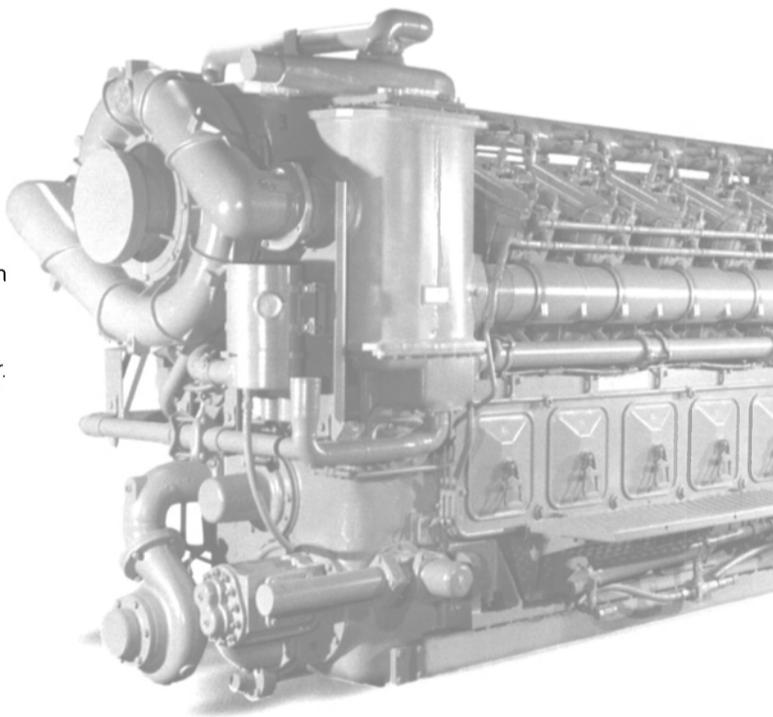
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venture between The Pasha Group, a Calif.-based leading global transportation and logistics provider, and Strong Vessel Operators LLC, a Conn.-based ship owner and operator. Measuring 579 ft. o.a., with a beam of 102 ft. and a draft of 28 ft., the 13,000-dwt, 20-knot PCTC has the capacity to transport more than 3,000 vehicles as well as other rolling stock, household goods and containerized cargoes. The vessel has 10 decks, including three hoistable decks, served by a 100-ton stern ramp that can handle heavy construction equipment. With clear overhead heights up to 16.7 ft. and over 120,000 sq. ft. of over high and wide (OHW) cargo space on these specialized decks, Jean Anne offers flexible capability for OHW shippers. More than 6,150 rollers were used to move the ship across 700 ft. of land where winches pulled the vessel onto a dry-dock. Once onboard, the dry dock was lowered in place and Jean Anne floated free. "The launch of Jean Anne is particularly significant for VT Halter Marine as it is the first PCTC to be built in the US," said **Boyd E. King**, CEO, VT Halter Marine. "Her launch is also testimony that VT Halter Marine is moving forward in its quest to secure shipbuilding projects for highly sophisticated vessels in multi-market sectors."

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## Aluminum Industry Continues Support for the Marine Market

As part of the ongoing effort by the aluminum industry to eliminate potential problems in the selection of aluminum alloys for the marine market, The Aluminum Association has reserved the H116 and H321 tempers for wrought products in the 5xxx series having a nominal magnesium content of 3 percent or greater. In addition, the definitions of both the H116 and H321 tempers have been modified to require testing for both inter-granular and exfoliation corrosion resistance. Previously the H116 temper required only exfoliation corrosion testing, and the H321 temper had no defined requirement for corrosion testing. The new definitions have been approved by American National Standards Committee H35 and are published in ANSI H35.1-2004 and ANSI H35.1 (M)-2004, which are available from The Aluminum Association Bookstore at <http://www.aluminum.org/template.cfm?Section=BookStore>.

The new temper definitions are consis-

tent with the requirements of the recently developed specification ASTM B 928 "High Magnesium Aluminum-Alloy Sheet & Plate for Marine Service". The new definitions are as follows:

- "H116 - Applies to products manufactured from alloys in the 5xxx series, for which the magnesium content is 3% nominal or more. Products are normally strain hardened at the last operation to specified stable tensile property limits and meet specified levels of corrosion resistance in accelerated type corrosion tests. They are suitable for continuous service at temperatures no greater than 150°F (66°C). Corrosion tests include inter-granular and exfoliation;"

- "H321 - Applies to products from alloys in the 5xxx series, for which the magnesium content is 3% nominal or more. Products are normally thermally stabilized at the last operation to specified stable tensile property limits and meet specified levels of corrosion resistance in accelerated type corrosion tests. They are suitable for continuous service

at temperatures no greater than 150°F (66°C). Corrosion tests include inter-granular and exfoliation."

Users should be advised that changes to specification ASTM B 209-04 this year have removed all references to the high magnesium (= 3%) alloys and tempers for marine application service. Marine service alloys and tempers that require demonstration of inter-granular and exfoliation corrosion resistance are now included only in ASTM B928-04. The marine service alloys and tempers listed are the following:

5059-H116	5383-H116
5059-H321	5383-H321
5083-H116	5456-H116
5083-H321	5456-H321
5086-H116	

Material distributors and OEMs should be ordering and selling high magnesium aluminum-alloys for marine service in accord with specification ASTM B 928-04. Aluminum manufacturers should now be producing high magnesium aluminum-alloy for marine service in accord with specification ASTM B 928-04. Ship building materi-

al specifications should be amended to reference only ASTM B 928-04 for the above mentioned alloy-temper products. For non-marine applications and for alloys and tempers not listed above, ASTM B209-04 should be referenced.

For those customers formerly using 5083-H321 and 5456-H321 in non-marine applications (per ASTM B 209), the 5083-H32 and 5456-H32 designations have been added to ASTM B 209 to replace them. For non-marine applications, the buyer can now choose between 5xxx-H321 per ASTM B 928 and 5xxx-H32 per ASTM B 209, depending on the application's need for corrosion testing. Copies of these and other ASTM specifications can be ordered from their web site at: <http://www.astm.org>.

The preceding was written by **Michael Skillingberg**, Vice President, Technology, Chairman, Task Group on Marine Alloys, The Aluminum Association, Inc. Contact The Aluminum Association at [mhskilli@aluminum.org](mailto:mhskilli@aluminum.org)

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# Film Celebrates Golden Age of NW Boats

For more than a hundred years, the Pacific Northwest has ranked as a center for vessel design, construction and preservation. Beginning with the advent of the Pacific cod fishery in the 1880s, utilizing the raw material afforded by the vast Northwest forests, Seattle-area boat builders began creating one of the world's great fishing fleets. Soon, they would craft sailing ships to support the lumber and cargo trades, and work boats that sustained Pacific commerce.

Early in the 20th Century, a related industry took advantage of the same natural resources and human talent to design and build ships that cruised the air. But the designers and builders of the Pacific Northwest didn't focus entirely on the business of transportation. Early on, they began crafting some of the world's most distinguished pleasure boats. The pre-World War II era ranked as nothing less than a Golden Age of boatbuilding in Seattle and the Pacific Northwest.

Throwbacks is a documentary film that profiles the great naval architects of Seattle's early years, and the famous boatyards and shipwrights that applied world-renowned craftsmanship to their nautical visions. It follows the classic boats and yachts through the decades, the rowdy 1920s when everyman dreamed of owning a boat, the grim Depression years when Hollywood wealth was all that sustained Seattle boatyards, the War-era when even the most lavish pleasure



craft were pressed into hard military service, the decades of neglect when signature vessels languished in obscurity and the contemporary fascination with the restoration of these stylish relics of the bygone age.

Spend the afternoon at Toad's Landing, the secluded island in southern British Columbia where builder-designer William Garden still crafts signature vessels in a Santa's workshop for older boys. Take a ride aboard the steamers and paddle wheelers that comprised Puget Sound's Mosquito Fleet. Sit down with Norm Blanchard aboard the lavishly restored fantail yacht Malibu as he reminisces about the Seattle boatyard where his father and the celebrated designer Ted Geary collaborated on classic after classic.

Board the 86-ft. motor vessel Westward, circa 1925.

for an excursion with the rich and famous clientele that stalked big game as guests of Campbell Church, Junior's Alaska Coast Hunting and Cruising Company; meet Leigh Coolidge, the imperious Duke with the Homburg hat and the Van Dyke beard who conceived elegant workboats, pleasure boats, rum runners and rum chasers. Marvel at the restoration of the Glorybe, one of the oldest classics of them all that burned to a cinder in the Seattle Yacht Club fire but will soon cruise into her second century on the Puget Sound. Experience the luxury of the Thea Foss, christened Infanta after the first child of actor John Barrymore who built her for his wife only to lose her when alcohol consumed his fortune. Meet the Jensens and the Francks whose Lake Union boatyards have crafted world-class vessels for decades.

Slated to premiere in November 2004, Throwbacks was commissioned by Seattle maritime enthusiast **Cary Swasand** whose Aleutian Spray Fisheries Company operates a fleet of high seas fishing vessels including the 240-ft. F/V Starbound. The program was written and produced by **John Sabella**. **Paul Sharpe** of Seattle's Sharpe Productions served as director of photography and editor. Copies of the hour-long program will be available on VHS videocassette or DVD at a cost of \$19.95 plus shipping.

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## Fire Prevention: "Rising" to the Occasion

Earlier this year, the USNS Impeccable and the USNS Stockham recognized the need to make repairs and enhancements on many of the ships' multi-cable penetrations. Reminded about the importance of fire prevention, the ships were looking for a solution that could reliably protect the vessels against the passage of fire, gas and water.

In particular, the USNS Stockham needed the work done immediately in order to avoid a late departure on its next voyage.

Milcom Systems, a marine contractor specializing in C4I, HVAC and LAN installations, was tasked with performing a sizable portion the work.

During a dry docking period of the USNS Impeccable, it was determined that eight cable transits running toward the antenna dome needed to be reinstalled.

Because of a series of educational

product demonstrations by W&O Supply, a maritime supplier of pipe, valves, fittings and electrical products, Milcom was aware of the range of product options for this type of repair and determined the optimal product was the RISE multi-cable system.

Specifically designed for marine and offshore installations and with all major Classification Society approvals, the RISE system can be used to seal multi-cable penetrations or pipe penetrations. RISE consists of two different components: rubber insert sleeves and a silicone-based fire resistant and water repellent sealant. Manufactured by CSD Sealing Systems, when RISE is exposed to heat, the rubber sleeves expand five to ten times their original volume, creating a strong rubber mass within the penetration. The sealant, which is applied to both sides of the penetration, also cures to a rubber-like mass that withstands tremendous pres-

ures, enabling it to achieve its gas and watertight ratings. Milcom selected the RISE system for several reasons. "First and foremost, I'm confident that RISE offers the best fire-stop protection on the market, which prevents fires from spreading and limits damage on a vessel," said John Pugliese, a project manager at Milcom. "In addition, some of the clear advantages that we've experienced are that installing the RISE system is much quicker, easier and more flexible than any of the block systems currently available."

Working on the eight transits, Milcom's installation on the USNS Impeccable was completed in three to four hours, saving time and money. Just as importantly, the Coast Guard inspectors were impressed with the fire prevention system.

A few months later, while the USNS Impeccable was in dry dock, an additional 200 transits were sealed using the

RISE system, saving thousands of dollars from the short installation period.

In early August 2004, the Military Sealift Command once again called upon Milcom to upgrade three transits while the USNS Stockham was temporarily docked in Norfolk, Va.

With only two days to perform the work, the cargo ship was heading to Guam with supplies for troops deployed in the Persian Gulf.

Obviously, the repairs needed to be performed within an extremely tight timeframe.

On this occasion, Milcom used the RISE system and realized a labor savings of nearly 66 percent in comparison with traditional block methods. The repairs were completed in less than three hours. Again, as a result of the short installation time, the USNS Stockham was able to sail on time and meet its mission requirements.

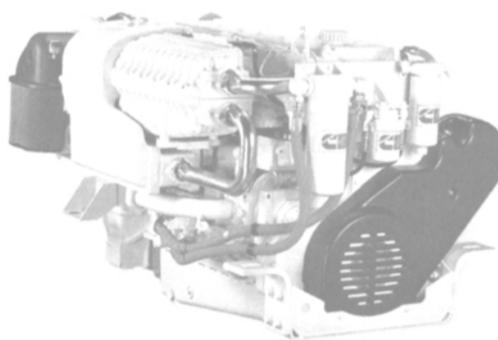
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### Pressure Transmitter Receives ABS Approval

The Siemens Process Instrumentation Group of Siemens Energy & Automation has received a Certificate of Type Approval from ABS for the SITRANS P, DSIII Series pressure transmitter. The SITRANS P DSIII pressure transmitter incorporates software that provides diagnostic capabilities and simulation functionality. Its diagnostic capabilities include the following benefits: high- or low-signal limit alarms; peak value registers that store the maximum and minimum values for pressure, sensor temperature, and electronics temperature; and two programmable "watchdog" timers that alert the operator when user-set maintenance and calibration times occur. Local configuration of all operational parameters can be made using magnetic pushbuttons on the instrument, eliminating the need for programming devices such as handheld communicator or laptop computers with configuration software. The transmitter's simulation capabilities provide for a complete signal simulation, from the input through to the output. A single technician can test the entire signal loop. The SITRANS DSIII transmitter is available for measuring pressure, absolute pressure, differential pressure, flow or level. It can be specified with a number of different exotic metal process diaphragms for use in aggressive process materials. The two-wire device provides a standard 4-20 mA output signal that is proportional to the input pressure. G.R.Bowler, Inc. is a Siemens Energy & Automation, Inc. Solutions Provider.

Circle 7 on Reader Service Card

### New Ratings For QSM11 and QSC8.3



Cummins MerCruiser Diesel announced new commercial engine application ratings for the Quantum Series QSM11 at 300 hp (220 kW), 355 hp (261 kW), 405 hp (298 kW) and 455 hp (336 kW) respectively. Additionally, commercial engine application ratings of 490 hp (361 kW) for the QSC8.3 diesel engine were released.

These full-authority electronic system engines are EPA Tier 2 and IMO emissions compliant. Available with the keel cooling option, Cummins MerCruiser Diesel engineers have configured the engines with a wet exhaust system and created new smaller-frame waste gated turbochargers to provide more air into each of the cylinders.

Circle 23 on Reader Service Card

### Saab TransponderTech Debuts GPS Option on AIS



Saab TransponderTech introduced a new type-approved GPS as an integrated part of the R4 ship AIS transponder system.

Gunnar Mangs, business director for mobile systems, said, "This fully compliant GPS receiver is intended to provide a fully qualified backup to the SOLAS class ship's main DGPS, and adds GPS navigation functionality to the AIS transponder. It will also become an excellent complete combined AIS and GPS solution for many non-SOLAS applications."

The GPS receiver is embedded inside the R4 transponder. It provides the necessary GPS outputs to the AIS, and also provides navigation functions on the R4 display unit.

The unit is fully compliant with IMO and IEC specifications for shipboard GPS, including RAIM (Receiver Autonomous Integrity Monitoring). An external IALA DGPS beacon receiver can be connected as an option. Existing Saab R4 AIS installations can be retrofitted with the new transponder module containing the new GPS receiver and a software upgrade.

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**HAGGLUNDS**

Some features of hydraulic motors from Haggglunds

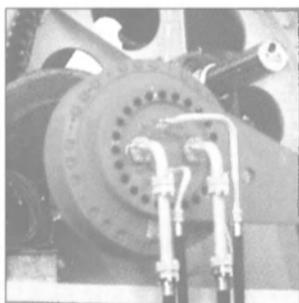
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- ▶ Excellent performance, with high impact torque capability
- ▶ Reliable and user friendly, with low noise
- ▶ Long life time, low maintenance



Haggglunds Viking motors used on ramp handling winches.



The Viking maintains high starting torque throughout the speed range.



The Viking motor offers the best tension control available.



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Federal Employment

# For Those in Peril

By David Tinsley

Although peacetime losses of submarines through accidents have been few and far between, rarely have sailors survived situations where they have been trapped within a distressed boat on the ocean floor. The Kursk tragedy in the Barents Sea during August 2000, when all 118 crew perished, was a sad reminder of the risks faced by those who provide a largely unnoticed service to their countries, and of the horrors of being marooned underwater. Some 37 years before, in 1963, the loss of the USS Thresher and all 129 aboard, had stirred similar feelings, and had spurred development of dedicated rescue vessels. A new initiative involving UK defense contractors, offshore and underwater technology specialists is intended to improve the chances of survival for trapped submariners. The \$80 million NATO Submarine Rescue System (NSRS) to be provided and operated by Rolls-Royce is due to enter service at the end of 2006. It will primarily support the three partner nations involved in the project, namely the UK, France and Norway, but will also be on standby to assist any country worldwide, complementing systems operated by the USA, Australia, Italy and Sweden. The Rolls-Royce led team will provide a remotely operated vehicle (ROV), designed to locate the distressed submarine within 56 hours to check for signs of life and furnish emergency supplies to survivors, and will also deliver a three-man operated submarine rescue vehicle (SRV), to bring trapped sailors to safety. The SRV will be able to work at depths of 600 m, some 150-m deeper than the UK's current rescue vehicle LR5, which had been dispatched to the Kursk incident four years ago. The SRV has been developed to rescue 150 survivors, in groups of up to 15 at a time. Within three hours of an emergency call, the ROV, SRV and 12-strong rescue team, on permanent standby at the Clyde naval base in Scotland,

will be mobilized and dispatched to the accident site. Air transportability is an important aspect of the equipment, which can then be put aboard a suitable 'mothership' at a port near the incident. The standby team will use a mobilization database to identify and track vessels, in the area involved, capable of loading and carrying the ROV and SRV. Awarded by the UK Ministry of Defense on behalf of the three partner countries, and won in the face of intense competition, Rolls-Royce's contract spans a 10-year term, covering design, build and operational support for the system. As opposed to purely a 'package' of equipment and services, the project signifies the development of a dedicated rescue system from the outset, to function as a truly integrated system. The team that Rolls-Royce has put together includes Perry-Slingsby Systems of York, contributing the SRV and ROV, and The Engineering Business of Newcastle-

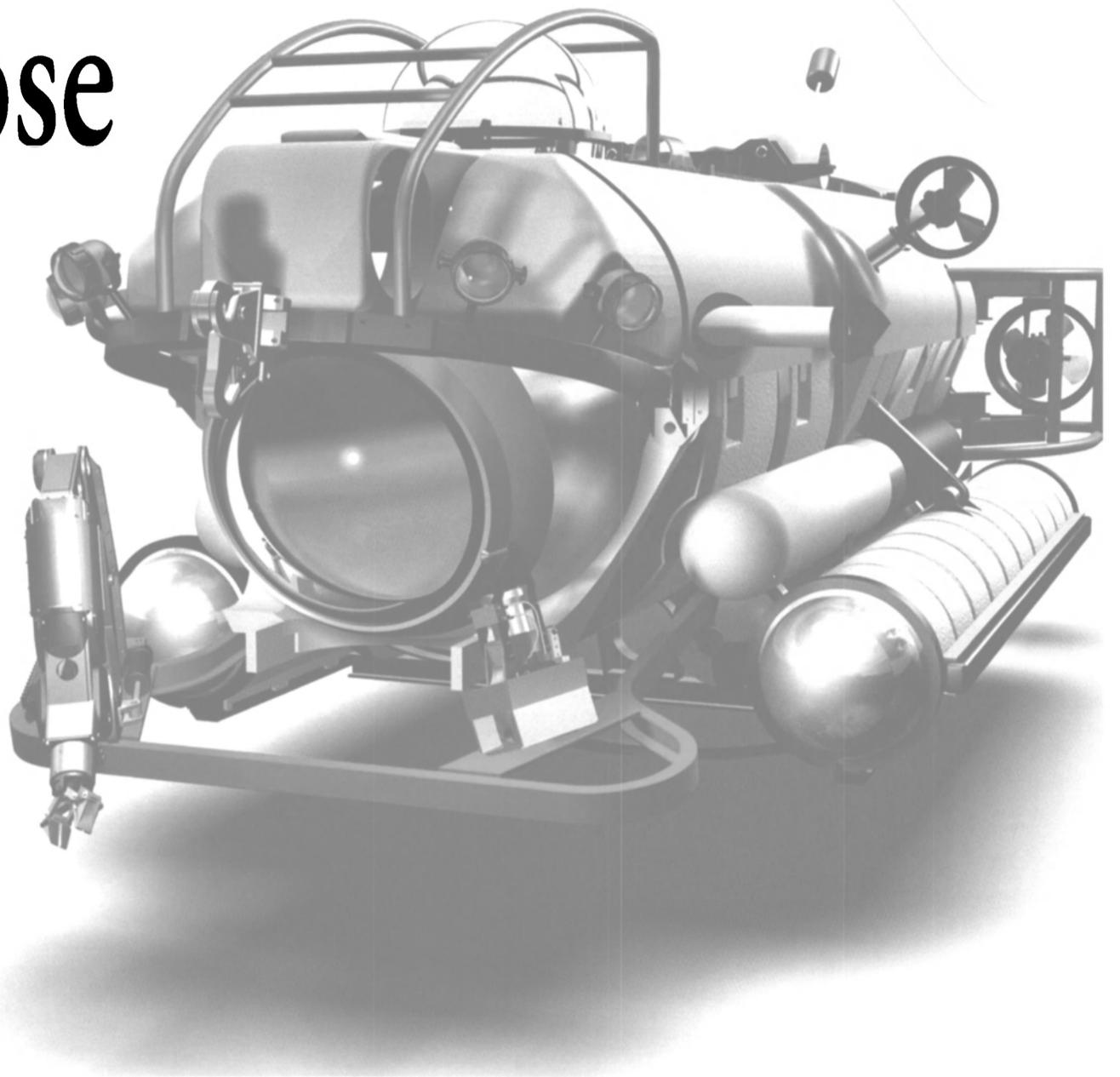
upon-Tyne, as the producer of the portable launch and recovery system.

The SRV will provide the first marine reference for the innovative Zebra battery, well established in electric road vehicle powering applications, including cars, buses and vans. The installation will comprise eight batteries of 17-kWh capacity, to propel and power the SRV. The exceptionally compact sodium/nickel chloride Zebra battery has almost twice the energy density, in a reduced volume at much reduced weight, compared with the original lead/acid alternatives. The additional energy will enhance the SRV's endurance factor as well as its speed and operability in strong currents. Rolls-Royce signed a 10-year agreement with Swiss firm MES-DEA last year to transfer Zebra battery technology to the marine market. Rolls-Royce is hoping that its overall NSRS solution will attract interest from other countries cur-

rently considering the acquisition of rescue systems. The group also has a wide range of UT-Design offshore vessel types capable of fulfilling a 'mothership' role.

## Steam Turbine Bastion

While the market is presented with increasingly convincing arguments and solutions for alternatives to steam turbine propulsion in the buoyant LNG carrier sector, Kawasaki Heavy Industries has bolstered its extensively proven offering with a more powerful turbine set. The new UA500 design has been engineered to meet the power requirements of the largest LNG tankers planned or envisioned. Ratings upwards of 36,000-kW indicate suitability for future ships incorporating a cargo capacity of 200,000-cu.-m. or more.



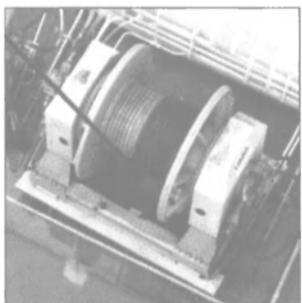
# HAGGLUNDS

Some features of hydraulic motors from Hagglands

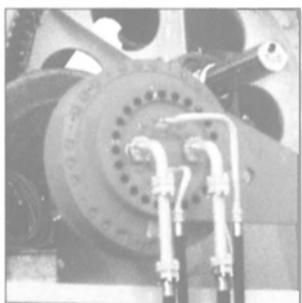
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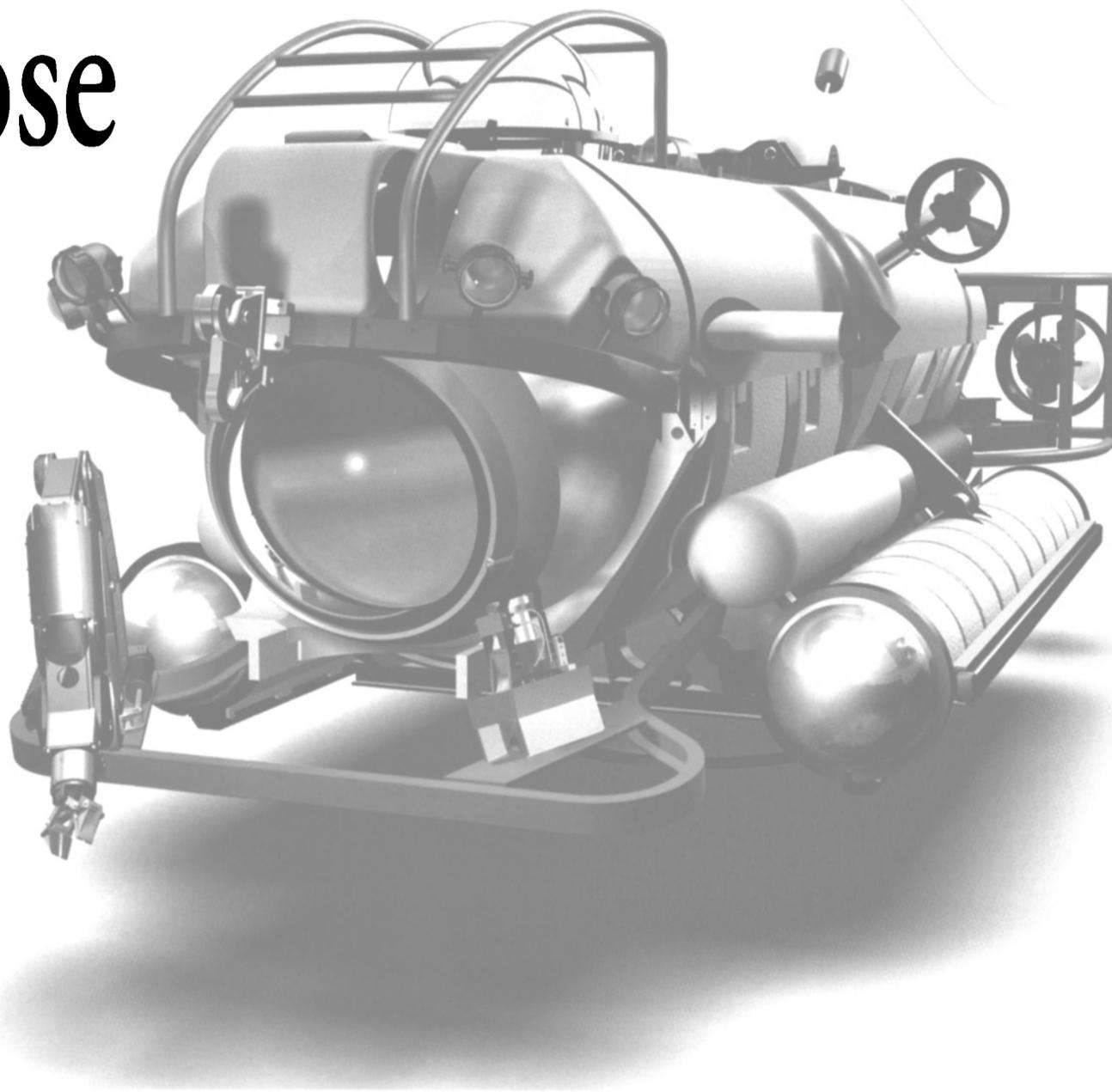
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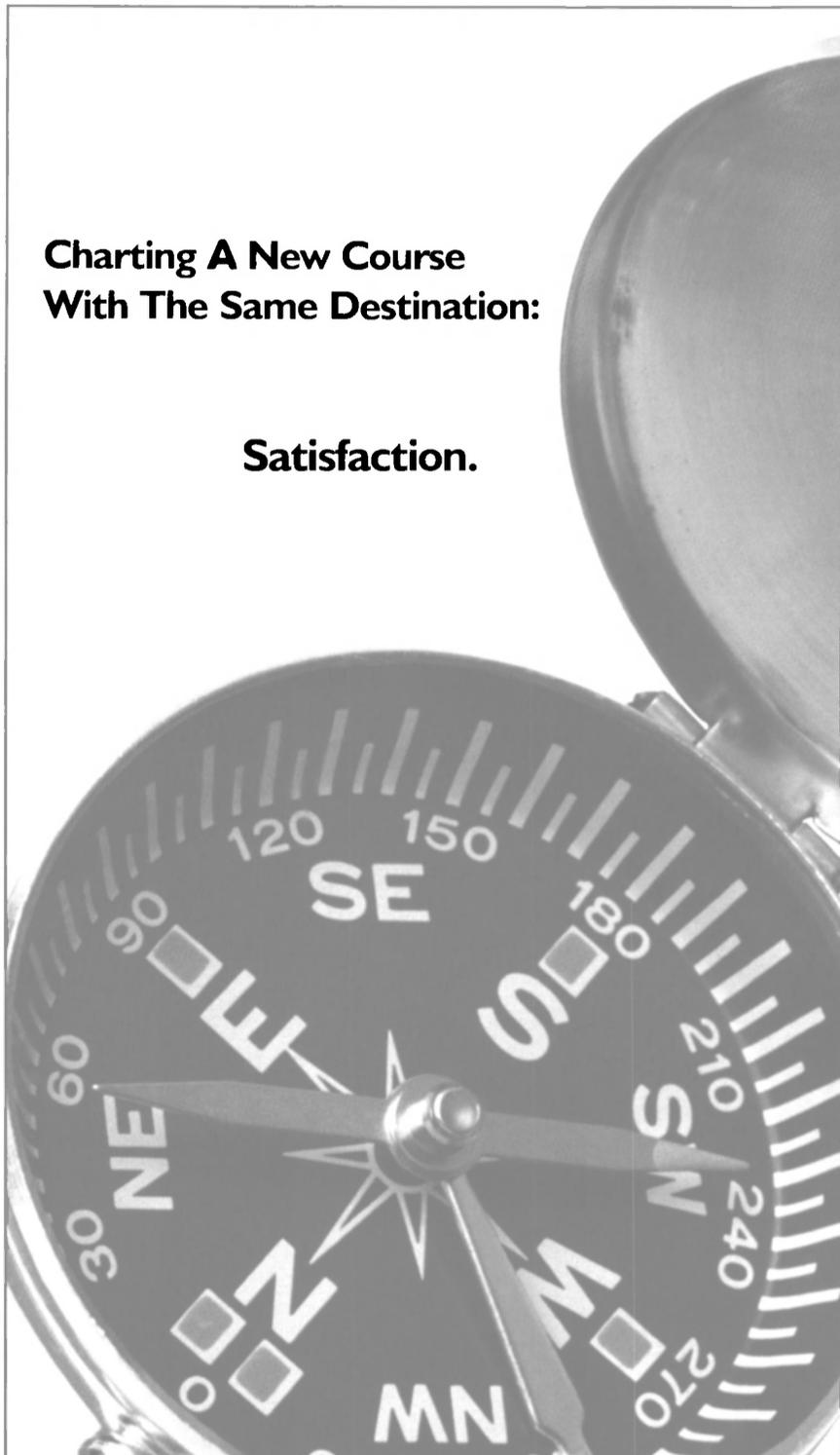
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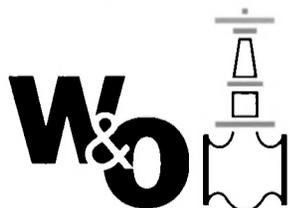
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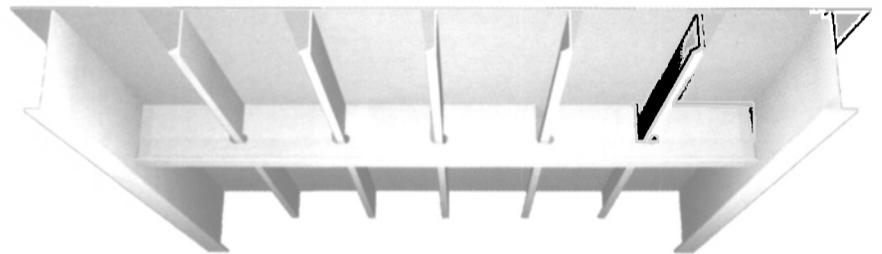
# A Future in Composites

Initially developed to provide impact resistant plating for offshore structures and ice islands in the Beaufort Sea, Sandwich Plate System (SPS) technology has seen a steady evolution over the past 10 years, with a growing uptake in the commercial marine field as well as in civil engineering. Much of the marine work generated to date has entailed the reinstatement of corroded or operationally damaged structure such as tank tops, ramps, bulkheads and decks, using SPS Overlay. However, recent penetration of the newbuild market is expressed in the adoption of SPS panels in the funnel casings of DFDS Tor Line's new Tor Magnolia-class North Sea RoRo trailerships, ordered from Flensburger Schiffbau-Gesellschaft of Germany.

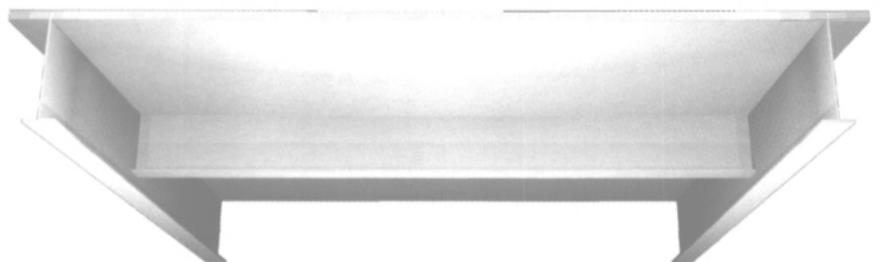
Anglo-Canadian company Intelligent Engineering developed SPS in conjunc-

30,000 sq. m. in decks, tank tops, bulkheads and funnel casings.

Affording an insight into future scope for the technology in the marine domain, Welch identified a number of newbuild and conversion design projects and studies that were under way. One of the initiatives relates to a scheme for the "double hulling" of existing, single-hull vessels, by using prefabricated SPS panels to form the inner hull plating. IE has also developed UR S21-compliant SPS hatch covers for panamax and capesize bulk carriers, and is working with industry partners on lightweight vehicle decks for dedicated vehicle carriers. The company is also advocating SPS for the inner hulls and tank covers of LNG carriers, on the grounds of the system's attributes as regards vibration dampening, space saving, and insulation and



Above: Conventional Plate • Below: SPS Plate



tion with industry partner Elastogran, a member of the BASF Group, and with its licensees. SPS comprises two metal plates bonded to a continuous elastomer core, and is claimed to form a much stiffer and stronger system than a single stiffened plate, precluding local buckling and eliminating the need for closely spaced discrete stiffeners to provide in-plane strength. It is said to make for a simpler structure, and reduces the overall welding requirement.

In a presentation to the RoRo2004 Conference in Gothenburg, Denis Welch, the SPS Overlay Director for Intelligent Engineering in the UK, advised delegates that SPS had achieved total references in service on some 34 ships, amounting to more than

blast protection characteristics.

Furthermore, Kawasaki's shipbuilding arm and IE are preparing SPS scantlings for the revolutionary Sea Arrow bow. It is anticipated that use of the system will engender a structure able to withstand high impact loads from the sea, while ensuring that the bow collapses in a controlled manner in the event of a collision, so as to minimize damage to both the inflicted and inflictor. IE has commissioned a study by the University of Strathclyde, to investigate the economics of using SPS in the production of superstructures. According to Welch, initial results indicate that labor costs could be cut by over 50 percent by employing prefabricated SPS panels relative to the conventional, all-steel alternative.

Building on the foothold gained with the new generation of high capacity DFDS trailerships from the Flensburg yard, and in keeping with its staged approach with SPS to ship design, Intelligent Engineering is targeting the RoRo new construction market. The system is held to offer important benefits in RoRo projects as regards the costs of build and ownership, crew and passenger comfort, safety and environmental pro-

tection, and space utilization.

More recently, IE announced that Teco Ocean Shipping — following a successful tank top reinstatement on the bulk carrier Gayle Eustace — has elected to use the technology on another of its vessels, the Doris Guenther. Two tank tops with a total surface area of 981 sq. m. was to be overlaid at Chile's ASMAR Shipyard in mid-October.

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## Extra Value in Chinese Construction

While the Chinese shipbuilding industry is exhibiting expertise across a widening range of ship types and sizes, it is also taking care to enhance its technical competitiveness in the most populous categories of mercantile trader. As a microcosm of the whole, New Century Shipbuilding of Jianjiang is producing an export series of cargo-optimized Bulkers in the Handymax category at some 56,000-dwt. Victoria Steamship adopted and modified a type developed by the Shanghai Merchant Ship Design and Research Institute (SDARI), to achieve a B-60 load designation. The original design was a 'B' freeboard ship. "Discussions with both SDARI and Lloyd's Register Asia paved the way toward an upgrade which improved carrying capacity by adding a poop deck and adjusting the hold lengths to minimize deck immersion in the event of flooding of the holds and adjacent tanks," reported LR. The B-60 designation is regarded as a striking achievement considering that only Panamax and Capesize Bulkers qualify under the 1966 Load Line Convention, as a result of their greater number of holds and their shorter hold lengths, typically of 25- to 26-m. With hold lengths of 29- to 30-m, a Handymax potentially has a more severe problem if its forward hold becomes flooded, since this cargo space is bigger in relative scale than that of a Panamax or Capesize. The 56,000-dwt design has been adopted for six vessels for Victoria Steamship and two for Halcoussis at New Century, while a further two such Bulkers have been contracted by Pacific Basin from Xiamen Shipyard.

## Engineering for the Human Factor

Although there has been a steady decline in maritime accidents leading to loss of life, property and environmental damage over the past decade or so, statistics point to the human element as the key factor in the vast majority of cases involving collisions and groundings. Lack of situation awareness and errors in situation assessment are primary areas of

concern, where casualties can be attributed to the human factor, as are fatigue and task omission.

When bridge activities rely on interfaces that are awkward for the mariner, human errors relating to judgement and vessel control can occur, underscoring the importance of a holistic approach towards human interactions at the design stage. In that context, a notable new addition to the knowledge base is American Bureau of Shipping's 'Guidance Notes on Ergonomic Design of Navigation Bridges.'

The document provides criteria for the effective ergonomic design and layout of interfaces located within the navigational bridge area. The criteria are aimed at providing designers and engineers with practical guidance and work processes to use from the concept stage to better ensure functional integration of ergonomics and engineering. Human-system interfaces are considered to include controls, displays, alarms, video display units, computer workstations, labels and the overall workspace arrangement.

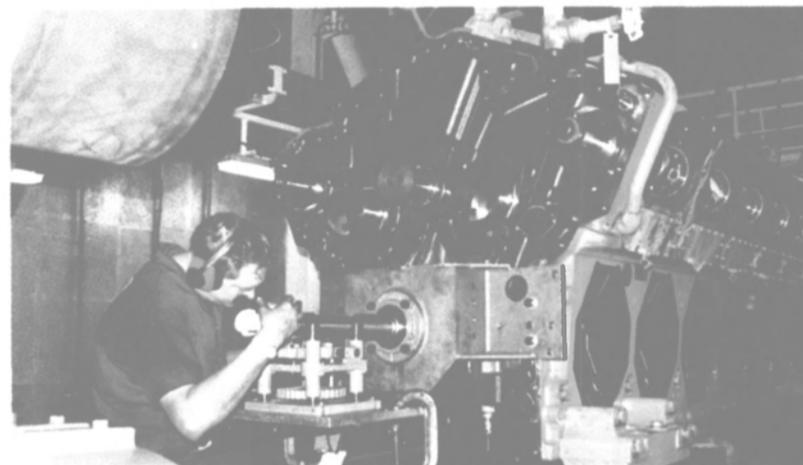
## Ulsteinvik Plays to Strengths

Perseverance has paid off for Norwegian shipbuilder Ulstein Verft, which has landed two contracts in quick succession to kickstart newbuild production again at Ulsteinvik after a lean spell.

The yard recently logged one of its single largest projects to date, in the shape of an order to build an offshore construction vessel of m length, quickly following the landing of a contract for an 86.2-m platform supply ship. The platform supply vessel, worth around \$29 million and booked to the account of an investment company linked with locally-based Island Offshore, will encapsulate Ulstein's own P105 design. The offshore construction ship, incorporating a moon-pool, anchor-handling winches, an 'A' frame, a heave-compensated, 250t crane, and some 24,000-kW of power, is valued at some Nkr650-million, and will be owned by a joint venture of Norwegian offshore support specialist Solstad Rederi and Monaco-based, FPSO owner and operator Single Buoy Moorings.

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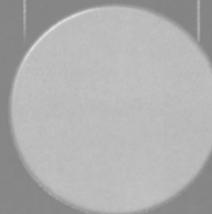


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# Record Spend on Propulsion?

By David Tinsley

With commercial shipbuilding output expected to top 40-million gt in 2005 and 2006, attended by a shift to higher installed powers, the global spend on marine propulsion systems is set to hit record levels. A new report from analysts Douglas-Westwood forecasts that the value of the propulsion market will grow to \$5.3-billion in 2004, from last year's \$4.7-billion, and is anticipated to reach \$5.7-billion in 2005 and nearly \$5.9-billion in 2006.

The World Marine Propulsion Report 2004-2008 indicates that main engine power installations for 2004 will reach 18-GW, and that new records will be set in each of the two succeeding years, peaking at some 20-GW in 2006. One of the strongest influences is buoyant investment in the containership market, characterized by the trend towards higher capacity, more powerful newbuild tonnage.

Taking a five-year view, it is anticipated that the market for propulsion systems over the period 2004-2008 will exhibit 21 percent growth, in monetary terms, relative to 1999-2003, and that the market for engines will increase by 22-percent.

Main engines will account for \$3.85-billion of the

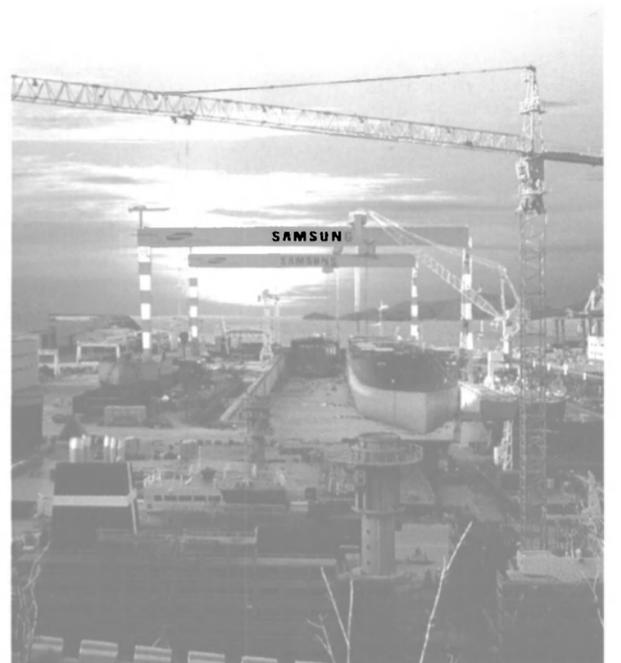
total \$5.3-billion propulsion plant expenditure for new installations in 2004, increasing to \$4.15-billion and \$4.29-billion for 2005 and 2006. On this basis, prime movers would up more than 70-percent of the value of the overall shipboard propulsion systems.

In 2007 and 2008, with newbuilding production falling back to around 35 million gt, the annual value of propulsion business would show a commensurate fall to just under \$5 billion, with an engine market of around \$3.6 billion.

To give added perspective to the sector's economic worth, the \$5.3 billion propulsion market for 2004 may be set against a projected, total shipbuilding output value of some \$42 billion. The latter is forecast to grow to around \$45 billion in each of the peak years of 2005 and 2006. The compilers of the new report forecast that China's shipbuilding industry will account for 13 percent of main engine installations by value by 2008,

compared with 7 percent in 1999. Although South Korea is also set to deliver substantially more vessels over the 2004-2008 period, its share of global engine value is not expected to increase much beyond the 30-percent achieved in 2003.

"The high power requirements for container vessels



A healthier than normal orderbook has propulsion makers seeing green.

mean that this vessel sector will continue to require the greatest amount of main engine power," say the report's authors, adding "This will be followed by tankers and bulkers/general cargo vessels." Surging investment in LNG carriers also has a pronounced proportional effect on power demand.

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# Collaboration Creates Vehicle for CNG Solutions

An alliance between Norwegian energy group Statoil and shipowners Leif Hoegh of Oslo and Teekay Shipping of Vancouver has given fresh momentum to the drive to foster the development of ships for the carriage of compressed nat-

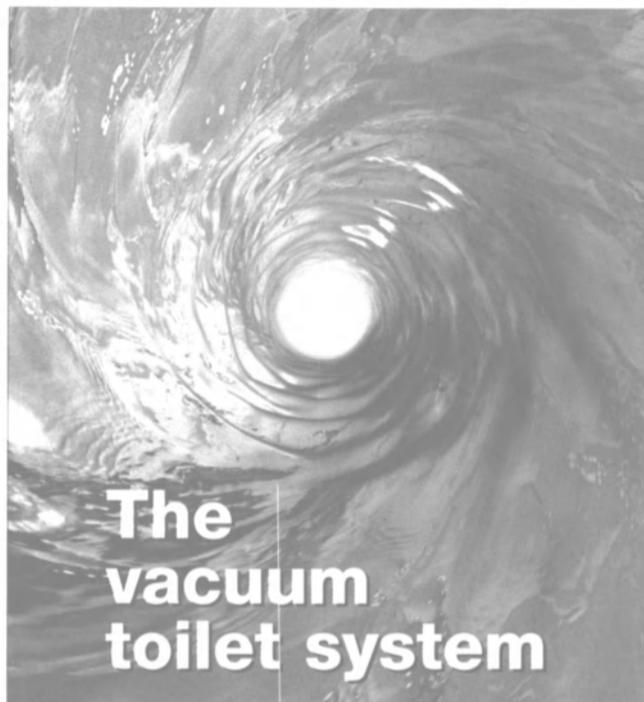
ural gas(CNG). The technical clout and competitive influence exerted by the creation of the partnership venture Compressed Energy Technology (CETech) has enhanced prospects for the realization of a new breed of gas carrier, designed and engineered specifically for the envisioned trade in CNG. Newly-established CETech's brief is the commercialization of new systems for the transport of CNG, and its aim is to be a leading player in the development and licensing of compressed gas shipping technology. Shipment in compressed rather than liquefied form offers potential cost and operational benefits in specific applications.

**The main potential for the concept is seen within a transport range of 300-2,000 nautical miles**

It opens the way to exploitation of resources where field size and location means that transportation is not commercially viable if based on LNG or conventional pipeline solutions. "Associated gas from oil fields can now be commercially exploited instead of being flared off on the field or injected back into the reservoir," observed CETech. The main potential for the concept is seen within a transport range of 300-2,000 nautical miles, and where production volumes are in the order of 0.5 to 3-billion cubic meters per year. CETech is the result of more than two years' collaboration with the research

department of Norwegian classification society Det Norske Veritas, which has also played an active part in verification and quality assurance of the technology. The company's CNG concept has secured approval in principle from DNV, and patents have been applied for on a number of technological systems. The proposed CNG vessel series would offer a cargo tank volume of 30,000-100,000 cubic meters, requiring containment at pressures of some 200-250 bar.

Various interests worldwide are promoting CNG projects, which could result in orders being placed for dedicated newbuilds. One contender for future contracts is Hyundai Heavy Industries of South Korea, which has been working with EnerSea Transport since 2002 on the development of vessel designs based on the Houston company's Votrans technology.



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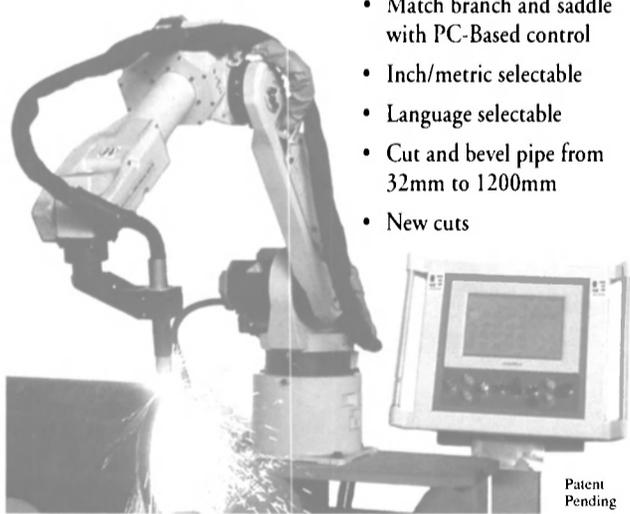
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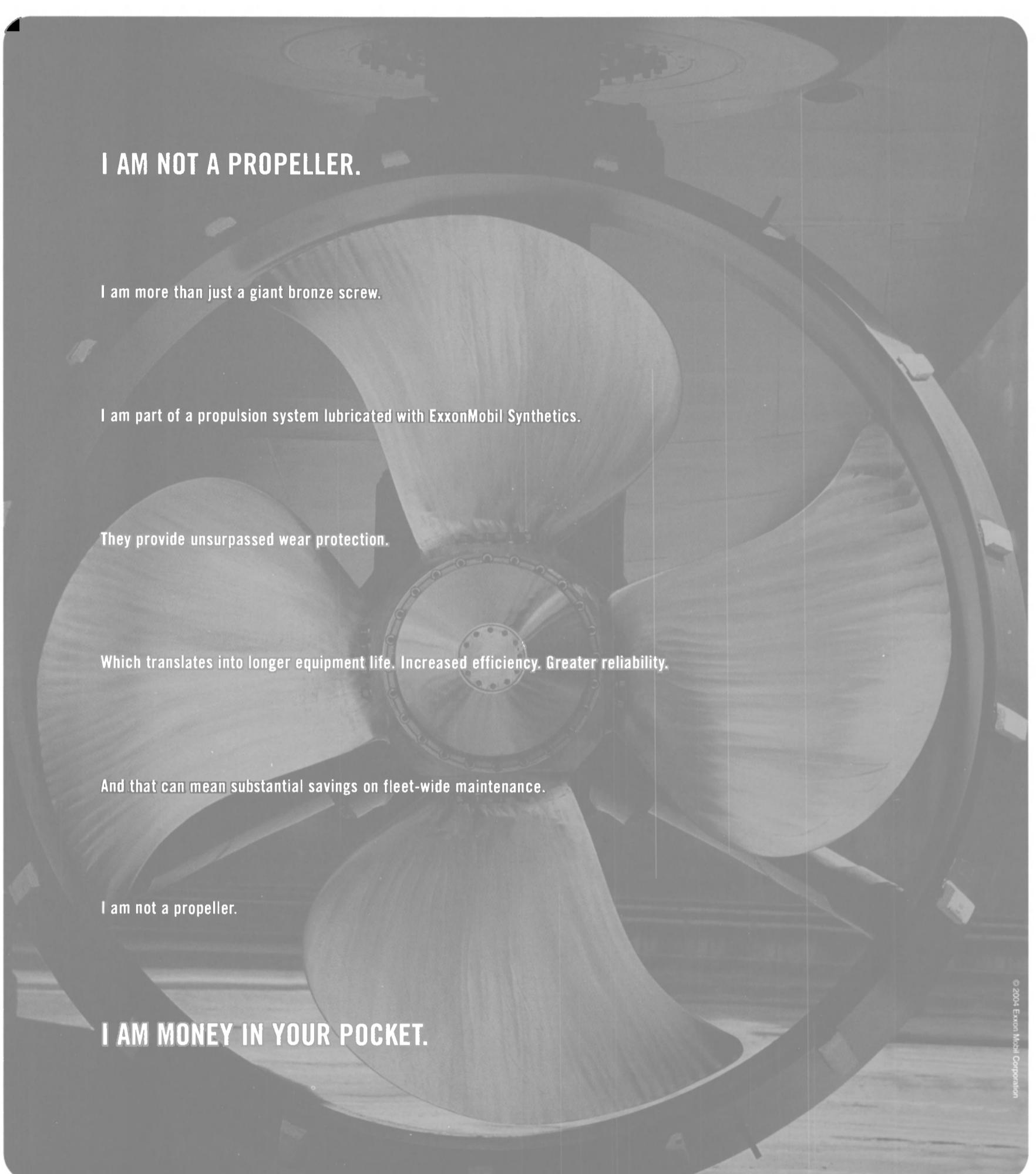
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# The Will for Business

A new chapter in Hyundai Heavy Industries' development of its position among the top echelon of producers of gas tanker tonnage is set to unfold with the anticipated delivery before the end of 2004 of the yard's first membrane-type LNG carrier.

Building on its track record in LPG carrier and Moss spherical tank-based LNGC construction, the South Korean company's strategic decision to enter the membrane LNGC market has proved positive. Encapsulating the

GTT Mk3 containment system, the 140,000-cu. m. newbuild for Golar is a further string to the Ulsan yard's bow, and continuity is ensured through contracts sealed in the first nine months of 2004 for another 11 membrane-type vessels. The latest success has been BP Shipping's order for a series of LNG carriers of record-breaking size, employing membrane cargo containment technology.

Underscoring its determination, HHI is currently allocating two of its build-

ing docks for membrane and spherical-type LNG carriers, and claims that it can turn out up to eight membrane ships or five spherical tank vessels per annum.

Additional delivery flexibility and capacity is offered through recourse to the subsidiary Hyundai-Samho shipyard, which has the wherewithal to produce three membrane-type carriers per year.

To date, HHI has delivered three 125,000-cu. m. and eight 135,000 cu. m. Moss spherical tank-type vessels, plus 34 LPG carriers employing a range of designs and cargo containment arrangements.

Besides the 140,000-cu. m., membrane-type Golar newbuild, HHI's for-

ward workload includes four 141,000 cu. m., Moss spherical-type LNG tankers and seven membrane carriers of 150,000-cu. m. capacity for various owners, plus the newly-secured quartet of 155,000-cu. m. membrane-type tankers for BP Shipping. The BP deal covers options on a further four ships, and the chosen design is distinguished by the selection of a dual-fuel diesel-electric power plant.

HHI's production program also encompasses a remarkable tally of 13 LPG carriers in hand and on order. One of the next targets for the South Korean builder in the cryogenic sector is a requirement for a 200,000-cu. m. class of LNG carrier to serve the Middle East-Europe trade.

## Wider Remit for Dutch Matchmaker

Owned by its member shipyard companies, Groningen-based sales, marketing and design firm Conoship International (CI) encapsulates the spirit of the industry in the Netherlands' northernmost provinces, where the maritime cluster continues to demonstrate resilience and an ability to innovate. CI's efforts are oriented to proactive business development and to its matchmaker role between customers and shipyards. While providing a commercial function to shipbuilding firms with typically very

slim management structures, it also offers a high degree of design and product development expertise to complement or support the activities of constituent yards. Widespread collaboration between independent yards, sub-suppliers and equipment makers is emblematic of the region, and competitiveness springs to a high degree from the expectation of efficiency and contractual performance from each party, to the extent that non-performers will not be tolerated within a co-operative framework. In keeping with that northern ethos, CI also has to continually demonstrate its value

and effectiveness to the membership.

Notwithstanding successful product diversification in recent years, the industry has maintained a high international profile in its core areas, namely the smaller types of multipurpose cargo vessel and tankers, to the extent that more than 30 such newbuilds were on hand at CI shareholder yards at the time of writing. New designs of competitive, standardized vessel built according to a series construction philosophy reflect considerable groundwork on market trends and operators' evolving requirements. Underscoring its proactive approach, and bid to broaden the yards' market reach, CI has in recent years embarked on a series of research endeavors with Dutch and other European partners, including projects on innovative designs of intercity cruise-ship and a new generation of exceptionally high-speed vessel. Some 50 years on from its foundation, and in response to changes in the structure of European shipbuilding and a reduction in the number of member yard companies, CI has implemented a change of business policy. From this year, it has augmented its activities on behalf of shareholders by offering services to third parties, including direct assignments from shipowners and logistic players, and intermediary, research and technical design functions on behalf of other shipyards at home and abroad. The move will expand the firm's scope beyond its well known services in the main fields of multipurpose vessels, shortsea traders, tankers, fishing vessels and dredgers. Yards other than members will be known as 'associated shipyards' of CI, and the new involvements are expected to increase the latter's activities in areas such as offshore support ships and inland waterway vessels.

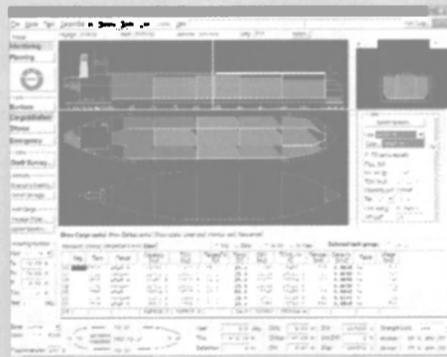
## Milestone Reference with MAN B&W

September saw the keel laying at Ulsan of the first of Hapag-Lloyd's nascent generation of 8,600 TEU containerships, embodying a beam some 30 percent greater than the maximum for Panama Canal transits, and installed with a colossal 93,360-bhp (68,640-kW) of propulsive power. At 1,099 ft. (335 m) length overall, the Colombo Express will be 49 ft. (15-m) longer than the line's 7,500-TEU Hamburg Express type, while ensuring the requisite port and terminal accessibility through a draft of approximately 47.5 ft. (14.5-m). The advance in revenue-earning capacity in the new breed will be secured through the provision for a fifth 40-ft container bay abaft the superstructure, relative to the Hamburg Express class, and by the adoption of higher lashing bridges in the main foreship section. The extension of the lashing structure will permit up to seven tiers of loaded boxes to be transported on deck, with an eighth tier of empty units. Colombo Express will provide a milestone reference for electronically controlled, two-stroke engine technology in application to such a huge power concentration. By virtue of the adoption of a 12-cylinder version of the MAN B&W 12K98ME prime mover, the vessel should be able to maintain an average 25-knots in keeping with scheduling needs, while engendering increased operational flexibility and improved unit efficiencies. Hapag-Lloyd claims that the engine type emits 30 percent less nitrogen oxide (NOx), and consumes some two-percent less fuel, and is able to ingest fuel having a low sulfur content of 2.5- to 3.0-percent, with additional positive environmental implications. Leading a series of five entrusted to Hyundai Heavy Industries, Colombo Express is expected to be ready for handover at the end of March 2005. It is planned to deploy the vessels on the trade between Europe and eastern Asia.

Circle 51 on Reader Service Card

## 2<sup>nd</sup> Generation Onboard NAPA Tanker Released

Onboard-Napa has released the upgraded user interface for the Onboard-NAPA tanker version. The new version is now ready for delivery for chemical, product and crude oil tankers. Onboard-NAPA is a software system for onboard load planning, damage stability analysis and decision support. The system is based on the same reliable core technology as the NAPA system for professional ship design used by the world's leading shipyards, ship design consultancies, maritime authorities, and classification societies. The same 3-D model used to design the ship in the NAPA system can be utilised in the Onboard-NAPA loading computer, in the fuel economy software and in the decision support system onboard the ship.



### Onboard-NAPA Tanker

Onboard-NAPA can be tailored for virtually any ship type. The version available specifically for tankers has several special functions designed especially for this type of ship, including planning, monitoring and simulation of cargo operations. Naturally the version handles all statutory calculations, such as direct damage stability enabling instant evaluation of a loading condition against the MARPOL or IBC rules. Special attention has been focused on the damage stability features in emergency conditions, including grounding, estimation of out-flown cargo as well as possible countermeasures, thereby helping the officers onboard to make well-informed decisions about possible courses of action. The new upgraded version for tankers includes a new way of monitoring cargo operations while simultaneously allowing the planning of new conditions. The new balancing features provide the user with a unique way of finding the optimum solutions for complex cargo and ballast operations while taking into account the restrictions pertaining to stability and longitudinal strength.

Circle 3 on Reader Service Card

## Nichols Named "Maritime Man of the Year"



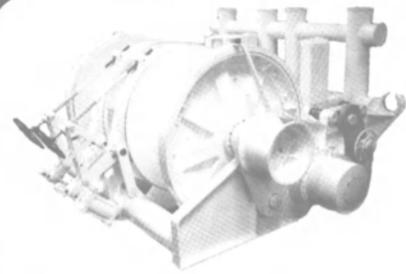
Citing his "outstanding leadership and vision in new ship design and construction," American Master Mariners named **Matt Nichols**, "Maritime Man of the Year." The award was given to Nichols, CEO of Nichols Brothers Boat Builders, by the Port of Seattle/Pacific Northwest Chapter. He was presented with the certificate of award by Captain **Andrew Subcleff**, president of the chapter. The Council of American Master Mariners consists of active and retired big ship masters and pilots.

"His company continues the proud tradition of maritime excellence in the Puget Sound region," Subcleff said. Subcleff himself was a ship master and port captain for Alaska Steamship Company; later serving as a pilot for the Ports of Anchorage and Valdez before retirement. Nichols Brothers, located on Whidbey Island, presently is building two major vessels. A 44-m twin hull passenger catamaran, powered by four 12V400 Detroit Diesel engines, is under construction for Catalina Express Lines of San Pedro.

Nichols Brothers also is building the "X-Craft," a 265 x 73-ft. catamaran, which is the largest and fastest vessel ever built in the Nichols yards. Powered by LM2500GT gas turbines and 16V595 MTU diesels, the vessel will have a top speed of 60 knots. It is being built under a subcontract from the Titan Corporation, which in turn has the contract from the Navy to develop the vessel.

## ACBL Makes Appointments

American Commercial Barge Line announced the following appointments: **Larry Cornett**, **Keith White** and **Reuben R. Bush** have joined ACBL as Fleet Managers in the Planning Center; **James Benjamin Chandler**, **Theus Slemmons** and **Jackie Hansford** have been named Dispatcher in the Logistics Department; **Donald N. LaVigne, Jr.** has joined ACBL as Boat Com Operator in the Logistics Department;



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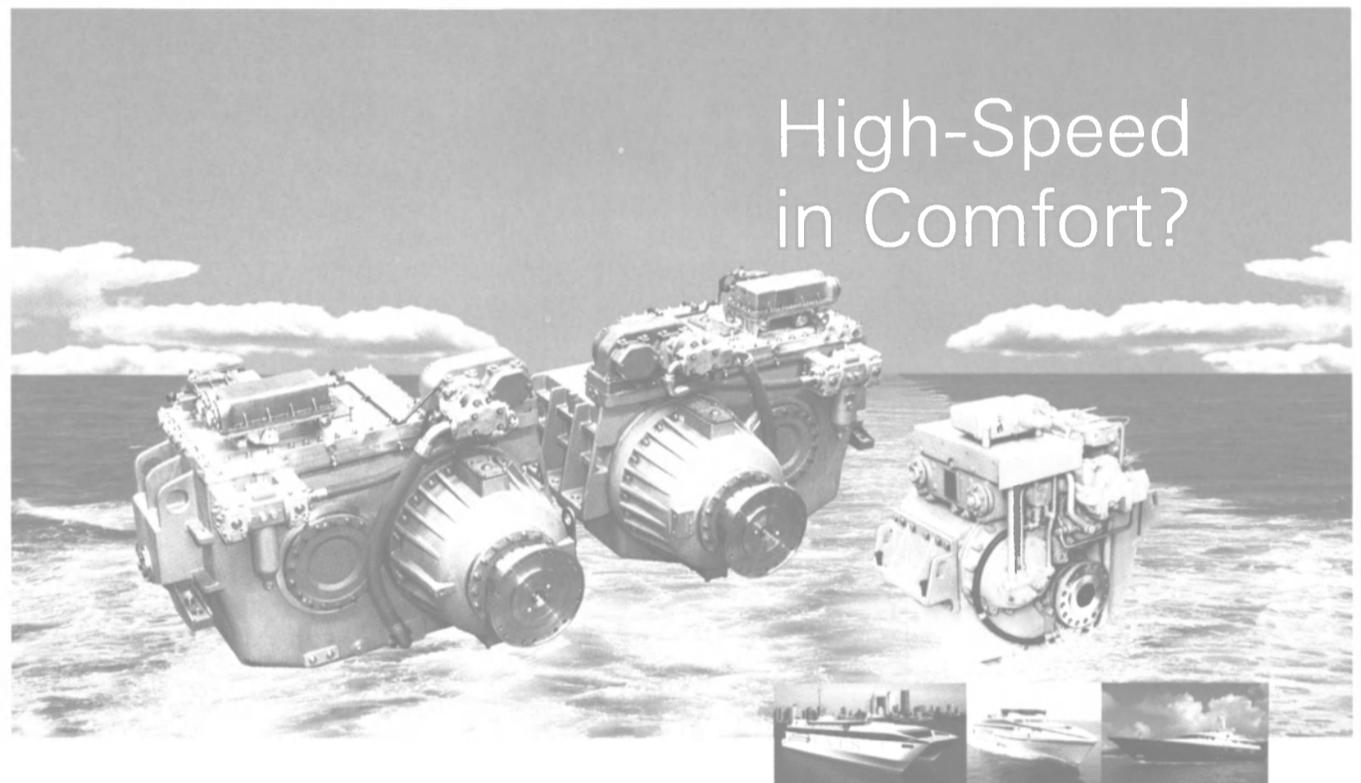
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**Scott W. Nelson** has joined ACBL as Oracle DBA Administrator and **Betty Waggoner** has been named PeopleSoft Programmer/Analyst in the Technology Department; **Sean Smith** has been named Director of Operations; and **Enrique Gil** has been named Director of Finance and Administration for

ACBL de Venezuela, C.A.

In addition, the Louisiana Dock Company LLC — a subsidiary of American Commercial Lines LLC — announced the following appointments: **Lee Schroeder** has been named Fleet Superintendent for the Harahan and Marrero, Louisiana Fleets; **Trinette M.**

**Jasmin** has joined LDC as Senior Administrative Assistant for the Gulf Coast Operations in Harahan, La.; **Riley E. Fitzgerald, Jr.** has been named Manager of Barge Repair and Cleaning at the Cairo, Illinois facility; **Jeffrey A. Davis** has joined LDC as Tank Barge Maintenance Inspector based in South

Point, Ohio; and **George S. Clark** has been named Port Captain for Gulf Coast Operations in Harahan, Louisiana.

### International Paint Japan K.K. - Open for Business

After more than 25 years of indirect involvement in Japan, International Paint has now formally joined the Japanese marine community.

At an inauguration ceremony held in Tokyo, **David French**, Sub-Business Unit Manager for Japan, Australasia and Korea, announced that International Paint Japan has commenced full business operations.

The ceremony was attended by guests from the Japanese marine community and included representatives from NYK, MOL, K-Line, MES, MHI, KHI, IHI Marine United, Universal Shipbuilding, Idemitsu Tanker and Evergreen. Speaking at the ceremony, French said, "Our commitment is to provide the level and quality of service which Japanese and worldwide marine customers have come to expect both locally and globally. Our aim is to fully understand individual customer requirements by working in close partnership with shipbuilders and ship operators to fulfill our global policy of providing customer focused solutions".

The latest addition to the International Paint family - the world's largest supplier of Marine and Protective Coatings - International Paint Japan K.K. was established as a legal entity on April 5, 2004, and currently has 23 employees. Six people service Japanese ship owners and operators from the Tokyo Office, which also manages all Protective Coating engineering sales. Twelve people are based in the Head Office in Kobe which houses the newbuilding sales team, the customer order service facility and administration personnel. A team of experienced regional technical service representatives will provide a high level of technical support anywhere in Japan and expanding this team will be a business priority during the first year of operation.

"From today we are ready to supply International Paint's full range of newbuilding, drydocking and seastores products and services to both local customers and foreign flag vessels", said David. "All products will be supplied from our central warehouse near Kobe or from regional depots if required. In addition to servicing newbuilding and repair yards direct, delivery of seastores products to owners' vessels can be made to 82 locations throughout Japan, 63 of which will receive deliveries within 48 hours."

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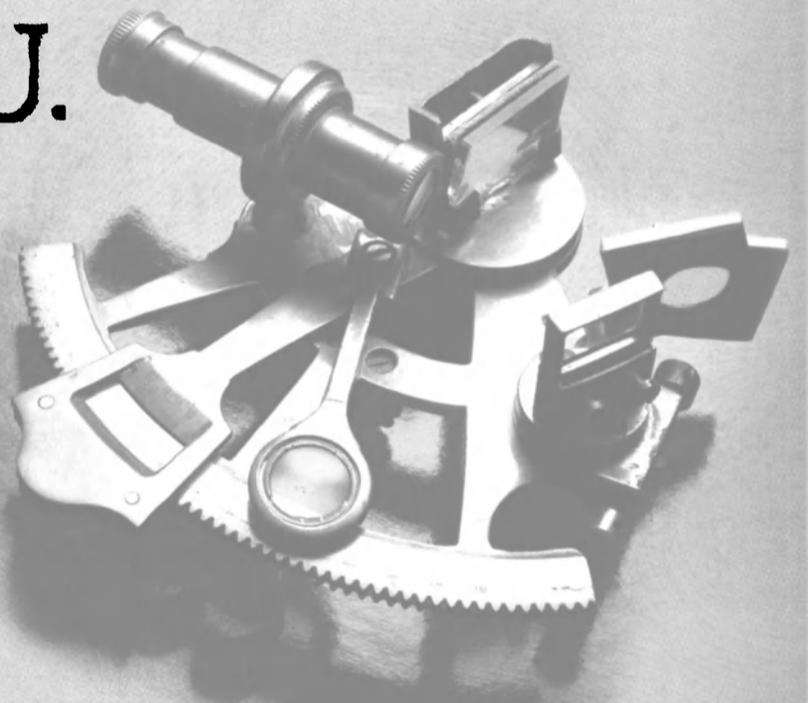


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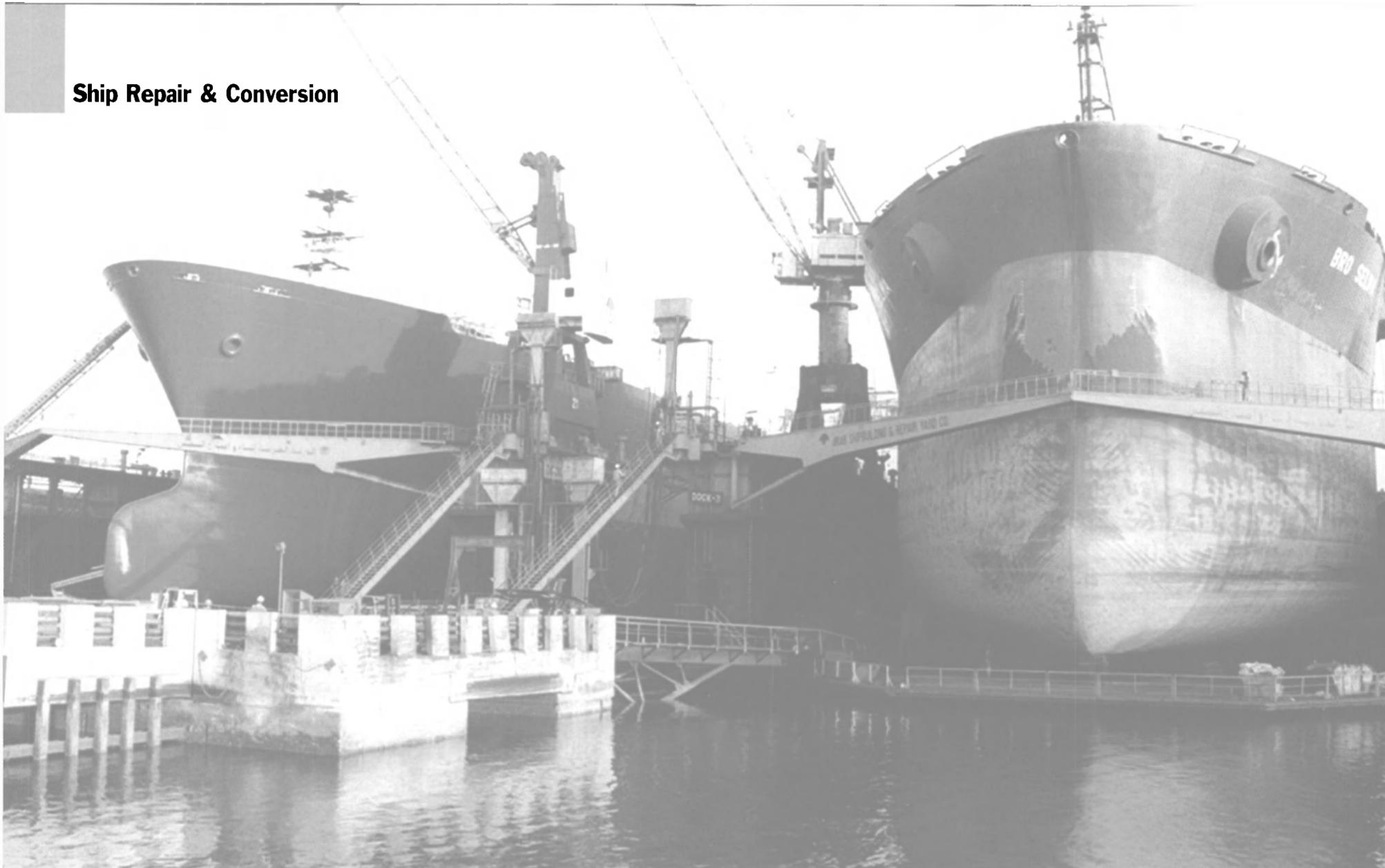
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## European Yard Initiative - Will it Work?

The European Intership initiative to breathe new life into Europe's flagging ship construction industry could provide a pointer for repair yards in the region, some believe. The seven yards in five countries have secured €19 million in EU funding and will stump up the same amount between them. They aim to win 95 percent of the newbuilding market for cruise vessels and 60 percent of contracts for ferries and RoRo passenger vessels by the end of the project, while cutting building costs by 25-30 percent and slashing ship life-cycle costs by 30-40 percent.

Meyer Werft's Thomas Witolla said it has taken a lot of planning amongst the seven member yards even to reach this stage, with yards working closely on the initiative for some years before the four-year EU-funded project was launched in November 2003. The Intership grouping consists of Chantiers de l'Atlantique, Estaleiros Navais de Vian do Castelo, Fincantieri, Flensburger Schiffbau, Izar Construcciones Navales, Kvaerner Masa and Meyer Werft. Through a series of working groups co-operating closely

with some 60 technology suppliers from 13 EU countries, 19 projects have been designed to assess the potential for improving efficiency in areas such as early ship design, knowledge and quality management, hull production and modularisation, pre-fitting and out-fitting, logistics and e-procurement.

One key area that will come under study is an assessment of the means by which ship construction periods can be reduced. In today's buoyant market, this is particularly relevant as owners look to lesser-known newbuilding yards in Eastern Europe, for example, for prompt deliveries.

Some 13 of the Intership projects will commence in the first two years of the four-year initiative, with the remaining six undertaken later, being largely dependent on the outcome of those 13. Six research clusters will involve 250 individual researchers from the seven partners, which will exchange and exploit the results. While Intership will have common ownership of the project results, the yards are expected to make available their findings to other ship-

builders in the EU. This is likely to take place in the future through a series of workshops and seminars, perhaps on a twice-yearly basis.

Scope for the introduction of new procedures in ship repair is constrained, to some extent, by the fact that it remains a largely "spot" business, with owners calling the shots on complicated repair specifications, required yesterday, and thus providing limited opportunity for repair yards to plan their forward books effectively. However, this could change, certainly in some sectors of shipping, as owners plan further in advance and require more sophisticated services from their repairers.

Some yards are already looking at more modern project management procedures. Block bookings are a relatively simple case in point. Maintenance partnerships between repair yards and owners are another area believed to offer potential. And, of course, as more super post-panamax container vessels join the fleet, fewer repair yards will be capable of taking on such work and will have to make available advance repair teams,

while offering precise dates and times and a comprehensive after-sales service.

But there is a range of other challenges faced by repair yards. Waste management, for example, is of increasing concern, with suppliers supposedly responsible for the removal and, in some cases, recycling of waste packaging. How often this happens in practice is dubious, say industry insiders. Then there are questions such as the environmental impact of blasting and painting. Experts say there could be significant scope for the sharing of analytical work in such areas, but for the moment, no means of doing so.

### The Shipping Lottery

Seasoned shipping executives can be forgiven a smug smile or two as plummeting stocks have left share speculators reeling with the speed of their descent. Having reached record levels a recently, both U.S. and European shipping shares have come tumbling down, following warnings from U.S. analysts. Amongst them are leading tanker companies like Frontline — down from

almost \$55 to just under \$48 in a week. General Maritime was sharply down too, registering a fall of almost 14%, from over \$40 to about \$35. Other leading shares were sharply down too, including Teekay, Knightsbridge and Tsakos Energy Navigation in New York and P&O Nedlloyd, A.P.Moller-Maersk, Norden and Torm in Europe.

And, as oil prices continue to rise the effects on the world's economy will soon to be clear to see. If energy prices stay at their present levels, analysts believe global growth could be cut by 0.5-1%. Add to that the largest ever world merchant vessel order book extending years ahead, with recent contracts booked at near record prices, and you could have the ingredients for a spectacular crash.

London broker Clarkson sounded a note of caution less than a week ago. In a weekly report, the firm's analysts noted four key points. "We are at the top of a cycle and cycles are unstable. Next year supply growth will speed up. A world recession is due, so demand growth will slow down. The imbalance will drive rates down."

Of course there are always bulls and bears in shipping and Clarkson is careful to point out that there are two sides to the argument. There are still plenty of bulls who believe the Chinese boom will continue, with the momentum generated by that vast economy growing so fast that it is seemingly impossible to slow down or stop.

But other more cautious observers look at the scale of the orderbook. In tankers of more than 10,000 dwt, for example, the volume of ships currently on order is equivalent to approximately 27 percent of the existing fleet. Meanwhile bulk carrier owners have signed up for ships equivalent to a fifth of the existing while, in containers, some figures indicate that tonnage equivalent to almost half the existing fleet will be commissioned between now and mid 2008. Trends in the box



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## Ship Repair & Conversion

sector are particularly daunting, with the vast majority of tonnage contracted recently lying in the post panamax and super post panamax sectors.

Clarkson appears to hedge its bets on

the China question. The increase in seaborne trade has averaged around 3 percent since 1990, faster than the fleet and leading to today's tight supply. Says Clarkson, "In addition we have a new

player in the game, China". The broker points out that this year Chinese crude demand will have increased by about 800,000 b/d, "far more than was predicted 12 months ago". Moreover the Chinese like sweet crude from the Atlantic, a long haul which itself increases bulk demand by about 1%, according to the analyst.

## A.P. Møller-Maersk Creates Dedicated Tech Group

Denmark's A.P. Møller-Maersk Group, one of the largest shipowning groups in the world, has established a dedicated company to handle all of the technical purchasing requirements of its extensive fleet. Maersk Procurement, the new company, is now responsible for all coordinated purchasing for the various fleets; anything from paint and fuel, through main and auxiliary engines to drydockings.

The new operation, with a workforce of 40 based in Copenhagen, will be responsible for all main procurement, but not day-to-day purchasing by the vessels.

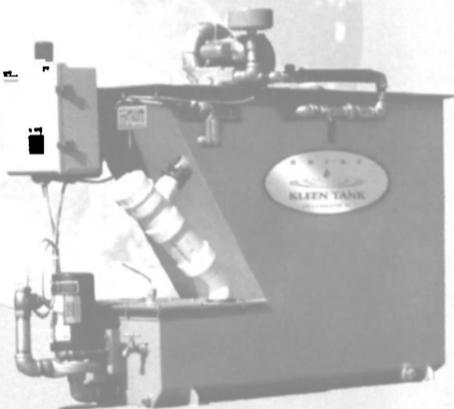
Maersk Procurement is negotiating frame agreements with selected suppliers that set out prices and other terms and conditions while staying away from day-to-day ordering. Maersk Procurement is now responsible for the technical buying for the fleets of Maersk-Sealand (containerships), Svitzer Wijismuller (tugs, offshore support vessels etc), Safmarine (containerships), Norfolk Line (RoPax's), Maersk Tankers (tankers), Maersk Oil & Gas (offshore support vessels), as well as the Odense Shipyard.

The financial savings for the group are expected to be significant.

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## R&R Marine Fabrication and Drydock To Expand

R&R Marine Fabrication and Drydock recently announced plans to expand its fabrication facilities by adding a new 19,200 sq. ft. fabrication shop and new Plasma cutting machine. Contracts were signed and the ground was broken on what was explained at one of the most state of the art shops in the area. "A shop this large will enable us to better serve our customers," says R&R President Tommy Nugier. The purchase of the Plasma cutting machine was also announced. "This machine allows us to perform tasks, that in the past, we had to contract out to Houston and other areas. This really gives our company a competitive edge now in bidding and pricing jobs." The Plasma machine will be housed in the new fabrication shop expansion. R&R Marine Fabrication and Drydock, operates two full-service waterfront sites in Port Arthur, Texas.

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### Farrell Lines Sends Ships to Malta for Fix

Farrell Lines has placed a two-ship repair contract with Malta Shipyards. The company's 31,829-dwt container-ship Endurance has just completed repairs and her sistership Endeavour recently drydocked for similar work. Meanwhile, the Marshall Islands-registered offshore drilling platform Jim Cunningham has arrived at Malta Shipyards for major repair work to fire damage sustained while working in Egypt. The scope of work includes electrical repairs, pipe work, blasting and coating and some steel renewal.

### Ship Yards for Sale

Holland's IHC Caland is aiming to sell off two of its shipyards by the end of this year in a bid to 'structurally reduce its cost levels in order to improve its competitive position.' The shipyards up for sale are IHC Holland and Merwede Shipyard.

### New Ship Management Software

Star Information Systems, a leading supplier of integrated fleet and ship management software, has announced the launch of Star IPS version 2.0. The new upgraded system provides users with improved control and distribution of key performance information. Star IPS was originally designed as a business suite for fleet and ship managers with a common user interface and an integrated data-model as a foundation. The document module of the 2.0 version offers several key advantages, including an improved control feature to distribute documents, such as updated or new procedures, to specific user groups.

Circle 46 on Reader Service Card

### Damen Shiprepair Reorganizes

There has been some reorganization in the management team at Holland's Damen Shiprepair Rotterdam (DSR). Hans Gottlieb is to leave the company by the end of the year and Steef Stahl will move to another of Damen's divisions. Willem Kruijswijk is set to take over the running of DSR, while Martin Smit will add newbuildings to his repair marketing work in the UK

### IE Awards Keppel License

Intelligent Engineering (IE) has awarded Singapore's Keppel Shipyard a license for its Sandwich Plate System (SPS) technology. The agreement, for an initial three year period, allows Keppel

O&M shipyards to use SPS technology for the repair and conversion of offshore and marine vessels and structures worldwide.

Circle 46 on Reader Service Card

### Izar Yard Secures LNG Contract

The northern Spanish yard of Izar Carenas Ferrol-Fene has secured what is being claimed as the largest contract of its type for extensive repairs to the 81,337 grt Algerian LNG carrier Mostafa Ben Boulad. Owned by Hyproc Shipping, a regular customer at Izar, the 1976-built vessel will spend five months at the yard. The scope of work, believed to be valued at \$27.7 million, involves replacing the bottom and containment system in one of the vessel's cargo tanks as well as general repairs to ballast tanks and the vessel's propulsion system. Work on Mostafa Ben Boulad will start at the beginning of 2005.

### Hydrex Fixes Bulker Crack

A 30,000-dwt, 200-m long bulker needed urgent crack repairs when it arrived in the port of Portocel, Brazil last month. Two new inserts needed to be installed in the bilge keel plating situated in the ballast tanks while some previous temporary repairs needed to be removed. DNV required that the neces-

sary work be done in accordance with class rules for permanent repairs.

Hydrex mobilized a specialized three-man diver/welder team from its headquarters to carry out hull repairs during

the vessel's stay in port. A local contractor was engaged to supply the additional labor, equipment and consumables.

An inspection in the affected tanks was done and the preparations began.



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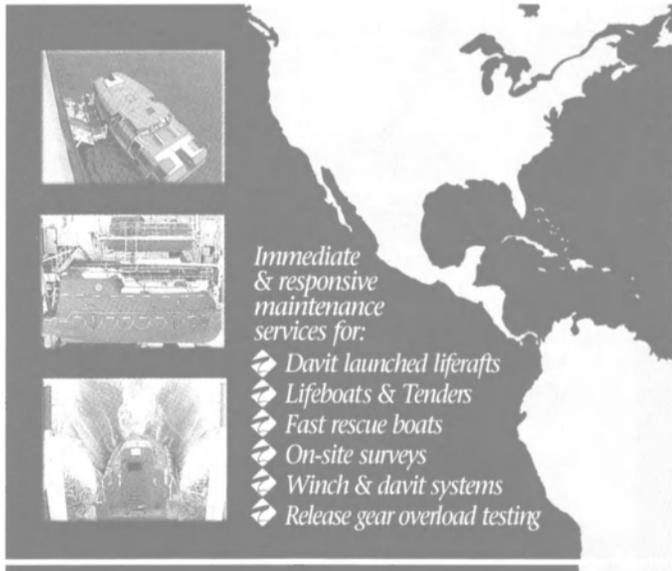


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## SembCorp Signs Breakthrough, Long Term LNG Deal

Singapore's SembCorp Marine Ltd. has announced a long-term contract from Australia's North West Shelf venture (NWS) to provide dry-docking, refit, and other marine services, for their fleet of LNG ships. This breakthrough contract signifies the first time that a major LNG consortium has committed itself to a long-term maintenance and refit contract in the region.

At a time when Singapore is preparing itself to be a major hub and player

in the LNG sector, the selection of SembCorp Marine as a refit partner of NWS is a great boost to the Singapore marine industry. The contract, signed in Perth, Australia, by **Nick Harrison**, General Manager of North West Shelf Shipping and **Ms. Lee-Lin Wong**, Executive Director and General Manager of Sembawang Shipyard Pte Ltd., commits the retrofitting and dry-docking of a number of NWS' LNG carriers to SembCorp Marine's

Sembawang Shipyard and Jurong Shipyard for a five-year term with an option for extension of the contract. Sembawang Shipyard and Jurong Shipyard are subsidiary shipyards in the SembCorp Marine Group. The NWS venture owns and operates nine LNG ships that require drydocking services every 30 months. Approximately half of the refits will be performed by SembCorp Marine, while the remainder of the refits will be per-

formed in the facilities of the original Japan Consortium builders, who have a separate agreement with NWS to provide similar type of services. In addition to the conventional refit scope work, a number of other major tasks are planned for the next five years, including among others, the replacement of halon fire fighting systems with environmentally friendly alternatives, TBT paint removal, and life extension.

Circle 52 on Reader Service Card

### Rocknes Rebuild Resumes

Work on the re-building of the stone dumping vessel Rocknes has now resumed, the vessel now due for redelivery by April 2005. Other projects currently underway in Poland's Remontowa, Gdansk include the conversion to double skin of the tankers Tervi and Palva, and the lengthening of the third and last passenger/car ferry from Red Funnel Line - the Red Eagle. The large floating dock at this shipyard has now been modified to take larger ships, the 44 m wide SeaLand Motivator, recently being drydocked (the widest ships ever drydocked in Gdansk).



Replacement inserts that had been ordered by the ship's owners were delayed so the decision was made to the available steel plates in order not to delay the vessel further. The plates were cut to the correct size while a mobdock (mobile mini dry dock - otherwise known as cofferdam) was pre-fabricated at the facilities of the local contractor. All the equipment required was then mobilized. Welding and cropping material, ventilation, as well as lighting were installed in the port side tank and the actual repair operation began. The bilge keel, which was over the area that needed to be repaired portside, was cropped and grinded as recommended by DNV.

The pre-fabricated mobdock was positioned and secured. Inside the tank, part

of the framing was in the way, and so this was cropped. The hull plating showed a vertical crack of approx 110 mm and the area surrounding this was cut out. The rolled and prepared insert plate, measuring 300 x 200 x 16 mm, was then inserted and the standard welding procedure was followed. The frames were then re-installed after completion of the welding operations. Similar work then had to be done on the starboard side to deal with a similar problem. This time the crack was 180 mm.

The same procedure was carried out to a successful completion. After finalizing all repairs an underwater inspection was done using CCTV equipment. Both insert plates, and bilge keel modifications were recorded on video and the work was given a pass.

Circle 44 on Reader Service Card

### Bids Out for Marathon Oil Tanker Conversion

Tenders are currently being sought for the conversion of the Norwegian owned 2001-built, 91,676 dwt crude oil tanker Odin into an FPSO for operation in Marathon Oil's Alvheim oil field development project in the North Sea. Marathon Oil expects to announce the shipyard that will convert the vessel in the early part of next year. Conversion of the Aframax tanker will result in an FPSO with an oil storage capacity of 560,000 barrels.

The Alvheim field is expected to begin operations in 2007.

### Hyundai-Vinashin Inks Ship Lengthening Deal

Vietnam's Hyundai-Vinashin Shipyard (HVS) has secured a major ship lengthening contract from one of the world's leading operators of PCTCs (pure car/truck carriers), Sweden's Wallenius

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## A&P Tyne Re-Delivers FPSO Haewene Brim

A&P Tyne re-delivered the FPSO Haewene Brim to Holland's Bluewater following an extensive upgrading to its process plant and hull maintenance period refit. The vessel will now return to the Pierce Field in the U.K. sector of the North Sea under charter to Shell U.K. The contract was won in a partnership between A&P Tyne Limited and McNulty Offshore Contractors Limited of South Shields, who were the prime contractor. The Pierce field is 150 miles due east of Aberdeen in the UKCS (U.K. continental shelf) with a 85 m water depth.

Shell's requirement was to upgrade the production output and the field life of Pierce by injecting treated seawater to sweep down dip oil and sustain field pressure. The water will be injected via a retrofit dynamic riser and new flowlines running from a new riser base out to four new horizontal valve injection wells. The work scope involved in the upgrading and dry-docking of Haewene Brim as follows:

- Fabrication of 300 tons of module steelwork. Four skids were produced in the fabrication shop, weighing up to 100 tons each. These were then blasted and painted before being delivered to the assembly area adjacent to the drydock for addition of the mechanical and electrical equipment.



- Assisting McNulty Contractors Limited in the assembly, installation and commissioning of modules. As part of the agreed scope of work A&P Tyne were contracted to provide support to the many activities carried out on site by McNulty Contractors Limited, the Topsides contractor.

- Addition of Water injection, chemical and filtration skids to the process plant on deck. The process equipment added to the skids took the maximum single lifting weight up to 450 tons. Compressors, pumps, filtration equipment, de-aeration equipment, pipework, controls and instrumentation were added to the skids prior to lifting these on board the vessel. This lifting task commenced one week after the vessel's arrival.

- Drydocking & marine systems upgrade of various marine systems.

- Hull blasting and painting. Removal of about 15,000 sq. m. of TBT coatings on the vessel's hull and recoating with a 10-year life tin-free alternative was an important task in the docking period.

- Tank blasting and painting. A full blasting and recoating task was undertaken in both slop tanks on the vessel. This entailed removal and recoating of some 4,500 sq. m. of tank coatings.

This vessel has a long history with A&P Tyne, as it was originally converted at the Hebburn facility from the Multi Service Tanker (MST) Berge Hugin for use the BP Pierce field in 1998.

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Lines. The Far East yard will jumboise Wallenius' five Boheme-class of PCTCs next year by 28 m. The lengthening will increase each vessels overall length to 228 m and car capacity by 20% to 7,100 cars. The five PCTCs are the 57,018 grt Boheme, Elektra, Manon, Mignon and Undine. All were built in 1999, except Undine which was delivered in 2002.

### Keppel Batangas Completes SemiSub Repair

Keppel Batangas completed repairs to the Attwood Falcon, a semi-submersible rig owned and managed by Atwood Oceanic Inc, Houston. This yard has also been involved in the repair of two ships involved in a collision off the Philippines coast. The Sea Celebrity, a cargo ship owned by Sinsimon Navigation Thailand, suffered severe bow damage. Meanwhile, the Joseph the Worker, a passenger/cargo ship owned and managed by Negros Navigation, Philippines suffered damage to the side shell plating and stiffeners with a total weight of 30 tons. Keppel Batangas also recently repaired another of the Negros Navigation fleet, the St Peter the Apostle.

Other ships recently repaired include two bulk carriers from V Ships (Switzerland) - the 46,513 dwt Glarus, and the 45,269 dwt Luzern, with the 45,300 dwt Unterwalden, from the same shipmanagement company due to arrive in late October. Two cement carriers from Taiwan's U-Ming Marine Transport Corp were also recently repaired — the 19,651 dwt Asia Cement No.7 and the Asia Cement No.1. The passenger/car ferry Super Ferry 2, which is operated by Aboitiz Jebsens, Philippines, recently underwent an emergency drydocking.

### ASRY Up 7% in 3Q

Following on from the earlier success of the first half of this year, Bahrain's ASRY, has turned in a successful third quarter series of results with an increase in business and sales, which were up some 7 percent on the previous quarter. In all some 28 vessels were in the yard for repairs and refurbishment, with 30 percent being in the tanker class with the majority being ULCCs and VLCCs. The yard was also kept extremely busy with other classes of vessels ranging from lpg carriers, livestock carriers through to RoRos, dredgers and general cargo. During this third quarter over a hundred specifications were received from owners around the world with a contact award success rate of 26%.

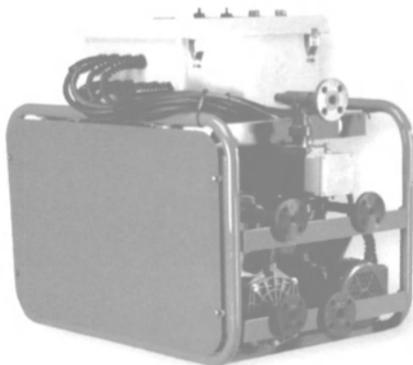
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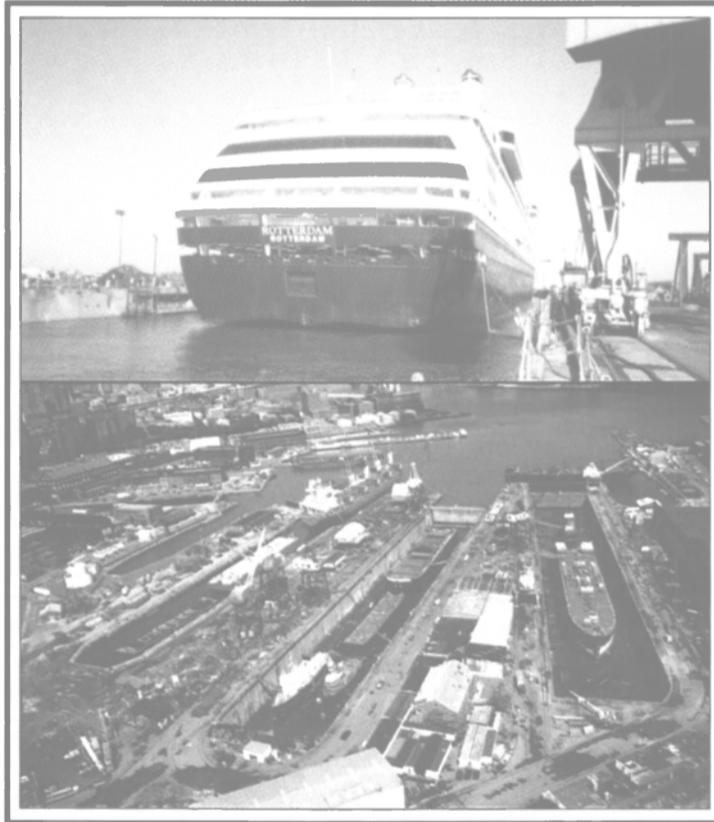
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## Crane Materials Launches TimberGuard

Crane Materials International (CMI) launched the TimberGuard product line, an innovative patent pending coated wood system. TimberGuard is designed to pair nature and technology by combining standard treated wood timbers and pilings with a polymer encasement

to create a durable and long-lasting product for the marine environment. TimberGuard's polymer encasement protects the wood from attack by marine borers. These relentless creatures are known for eating through wood pilings used in the waterways to support bridges and piers. Marine borers began to flourish as an unintended consequence of the

Environmental Waterways Act of 1975 in which the federal government mandated the clean up of our waterways. As water quality improved, so too did the environment for marine organisms, causing an explosive growth of marine borers that feast on timbers located in the water.

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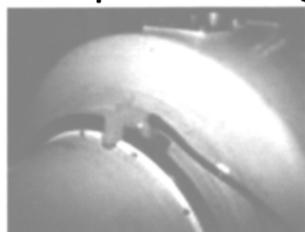
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Above: The multiple slot interrupter (black) is passing through the fiber optic sensor (orange).



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## New Flat-Screen Desktop Marine Radars

Northrop Grumman Corporation introduced new models of desktop marine navigation radars with state-of-the-art, high-resolution, color LCD flat-screen displays. With the introduction of the new flat-screen 180 and 250 models, the entire line of BridgeMaster E radars has now been switched over from CRT to LCD displays, according to John Robinson, strategic business unit director for radars at the company's Sperry Marine business unit. The new radar models are available in S- and X- band applications and are fully type approved and CE wheelmarked to the latest IMO specs.

Circle 4 on Reader Service Card

## Fincantieri Orders Water-Lubed Shaft Bearings



Fincantieri Cantieri Navali Italiani SpA has ordered Thordon COMPAC propeller shaft bearing systems for a new cruise ship (Hull No. 6100) being built for Princess Cruises at the Monfalcone Shipyard in Italy for 2006 delivery. This will be the seventh Princess Cruises vessel fitted with water lubricated COMPAC bearings since the first installation in 1998 on Grand Princess. Thordon Bearings is supplying its unique Single Key Design Bearings for the twin screw vessel. The tapered Single Key Design allows the bearings to be easily withdrawn from the bronze carrier, inspected and re-installed with the shaft still in place. The COMPAC elastomeric polymer alloy bearings for the 642mm (25 in.) diameter propeller shafts are designed to promote hydrodynamic operation at low shaft speeds and provide long wear life. A source of seawater will be provided to the bearings to ensure sufficient flow for bearing lubrication and cooling for this pollution free propeller shaft bearing system. By completely eliminating oil from the stern tube, Thordon's COMPAC system ensures there is no risk of pollution or subsequent environmental violations that could result from stern tube oil leakage, however small.

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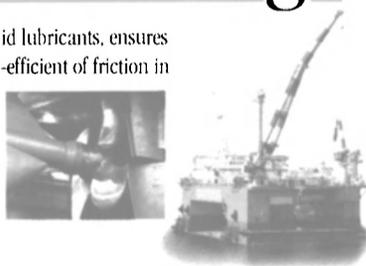
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## HS 740 Series Marine Halogen Lamps

Sunnex offers the HS 740 Series of lamps for marine applications. The Sunnex HS 740 series halogen lamp is essential for illuminating maps and other important documents, instrument



panels, and engine rooms on all sized boats. The Sunnex HS 740 series halogen lamp has a moisture-resistant lamp head that protects from water, oils, and chemicals, and features a sturdy gooseneck arm that resists vibration and maintains its shape for the life of the lamp. The HS 740 lamp features a compact, saving space design, which allows it to be mounted in hard-to-reach areas. It is a low voltage lamp available in 12V or 24V, and features options for a 12V power adapter and a quick disconnect lamp head for mobility.

Circle 15 on Reader Service Card

## Simrad Launches New Chart System

Simrad launched a new electronic chart system (ECS) range for a broad selection of applications. The CS50 and CS60 series chart systems have been designed to fulfill different navigation needs from full route planning on the go, to fixed routes for high-speed craft, workboats and superyachts. The CS50



Series is primarily designed for operation on coastal ferries and High Speed Craft and is available in two versions. The CS55 features a compact Simrad Marine Computer (MC) with up to four interface ports while the CS56 version comes standard with a Simrad MC that can offer up to 10 serial interface ports. The CS56 is also available with a RAID solution to enable uninterrupted operation should a hard disk failure occur.

Circle 24 on Reader Service Card

## Bilge Water Treatment Unit Approved By LR

Lloyd's Register has certified the first ever bolt on bilge polishing system designed to bring poorly functioning shipboard oil/water separators (OWS) into compliance with the strictest discharge requirement. The Mycelx Technologies "SUB 5" Systems were

awarded a LR Type Approval Certificate for being able to bring the strong oil emulsion specified by the International Maritime Organization's (IMO) MEPC 107(49) Type C Oily Bilge Emulsion down from 3,000 ppm to 0-5 ppm at flow rates up to 2.5 cu. m./h.

As of January 1, 2005, the IMO will

require that all newly built vessels over 400 gt carry an OWS, which meets their stringent new standards.

The standards will also apply to all new installs and major retrofits of oil water separators on existing vessels. The two Mycelx "SUB 5" systems, MCB1.0 and MCB2.5 were perform-

ance and capacity tested at flow rates of .5 cu. m./h, 1.0 cu. m./h, 1.5 cu. m./h and 2.5 cu. m./h under the supervision of Lloyd's surveyors using the Type C Emulsion of MEPC.107(49) and were found to outperform the standards set by IMO.

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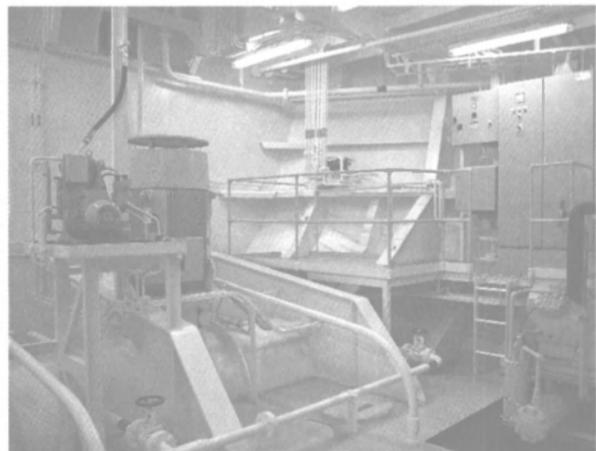
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Circle 345 on Reader Service Card

# Electric Propulsion for Coastal Ships

According to many specialists electric propulsion is the best to have but worst to buy, with the argument that the investment is too high and the system does not pay itself back. Therefore a challenge and an opportunity for development to prove otherwise. Former investigations show an ongoing misunderstanding between shipbuilders, diesel engine suppliers, propeller suppliers and suppliers of electrical equipment towards electric propulsion. The history of shipbuilding put the suppliers of diesel engines in a prominent place in ships propulsion. Diesel engines became the most economic solution for driving the propeller. The diesel engine manufactures put a lot of effort in optimization of their engines to create higher available power and efficiency. Propeller manufacturers base their selection criteria on diesel engines. A diesel engine still is a stable value for the most of them. The main problem however, was the disappointing attitude of the suppliers of electrical equipment for propulsion. They didn't put up the same amount of effort as the diesel engine manufacturers did. Following the lead of the shipbuilding industry, they offered installations which were overdone to virtually eliminate risk. The consequences were high prices and low efficiency. Van der Leun BV has long been active in shipbuilding, and automation, electrical drive systems and electric installations onboard of ship are the company's main skill. In evaluating the process of propulsion of a ship, the company concluded that things had to change. The ship, the propeller and its driving system should work together boosting new possibilities. Therefore the point of view should be changed; parameters had to be revealed. Van der Leun BV started off putting the electric drive system there were the diesel engine used to be. Now the optimization could be seen from the electrical point of view, not hindered by the existing boundaries of the diesel engine.

Parameters of propellers are mostly derived from computer based analytical models. These models are often the result of a matrix series of tank test and therefore close to truth. So far there is nothing to worry about in relation to electric propulsion. The problems starts when the academic view on propellers is gone and selection guides of manufacturers are based on the

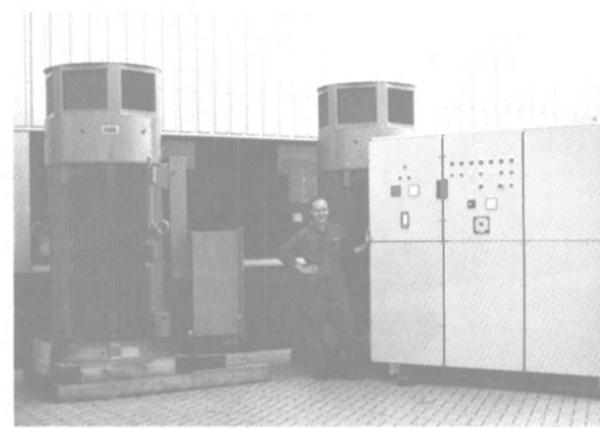


restrictions of diesel engines. Of course there are restrictions on electric propulsion as well, but these restrictions are far less compared to diesel engines. Acknowledging the extra possibilities, we designed a specific guideline to overcome the standard selection guides of propeller manufacturers. This specific guideline is based on the new electric propulsion concept of Van der Leun BV. The electric propulsion concept of Van der Leun BV offers a very special feature called "active slip compensation." Due to this the installed power for propulsion can be reduced without affecting the desired thrust capability of the propeller. A reduction of approximately 20 percent in power (not in thrust) can be achieved in every type of ship with a regular speed. The reduction on high speed vessels is even higher. The desired power is derived from smaller gensets. This means that besides the smaller investment in diesel engine power, savings can be achieved in installation and auxiliaries. This is often forgotten while comparing direct driven propulsion with electric propulsion. Finally the engines are running in optimal load conditions causing less fuel consumption and less "wear and tear." Specific fuel consumption is higher in the lower load conditions of engines.

Looking at the improvability of the hull, our conclusion was not a surprise. Nowadays shipyards try to sell as many copies as possible keeping the overall costs down. Creating a new hull form is time consuming and expensive. A lot of new drawings need to be made and cutting the steel needs to be programmed. All this is not necessary using an earlier hull form. Shipyards also tend to stay away from the unknown electric propulsion as long as possible. Ship owners specific demand is nearly always the final reason to make the step. And then they hit the above problems.

Electric propulsion, however, creates possibilities for optimizing the hull form. The components are relatively small and most of them are not dedicated to a certain position. The improved natural stability of the ship together with the improved water flow will lower hull resistance boosting efficiency even up to 115 percent compared to direct driven propulsion hull form. As the electric installation is the sole responsibility of the supplier, he gets to be responsible for a huge part of the propulsion as well. Van der Leun BV acknowledges the position it has to take: a position in the process: right where the diesel engine supplier was before. That is the only way to achieve an integral adoption of the 'new' system in the ship. As an eye-opener we have taken a simple but actual example of the use of electric propulsion. A harsh example for electric propulsion because ships with no high auxiliary power demand were considered to be a no go zone. The ship has two 1,000 kW thrusters according to the normal propeller selection guidelines. Electric propulsion is, according to the Van der Leun concept, using active slip compensation.

Hull improvement efficiency is kept on a low 105 percent for electric propulsion. This value is easy to get



with small modifications on existing hull forms. As a voyage consists of various conditions, we separated 100 percent (power) sailing, 50 percent (power) sailing and cargo operation. The amount of voyages with the conditions can be found in the table.

Electric propulsion is an interesting feature for a lot of ships. The example shows the efficiency of electric propulsion being 91 percent compared to direct diesel engine. This might even get higher when large electric consumers for e.g. cargo handling are on board. Honesty, however, forces us to point out some disadvantages as well. Some advantages and disadvantages as an addition to the ones you all ready know:

#### Advantages

- In many cases more efficient
- Less service
- Natural stability possibilities
- Less vibrations in the ship
- Less complex hull forms possible
- Ready for fuel cell technology
- More redundancy possible

#### Disadvantages

- Return on investment sometimes too long
- More complex systems on board
- Unknown by a lot of people
- Not much evidence from the market (due to above reasons)
- Still too few parties with necessary overall knowledge

There certainly is an economic basis for selecting electric propulsion, even in regular ships. Electric propulsion is central to environmental issues, such as CO<sub>2</sub> reduction. Still, profitability is the driver in the end, and electric propulsion can make it easier. When electric propulsion is used to replace the existing way of propulsion for your vessel without adding fancy features, a lot of possibilities are there all ready. If you consider the use of electric propulsion for any of your ships, find yourself a solid supplier of electric systems who is familiar with of electric propulsion. Provide him with actual figures about the normal voyages of your ship and he should be able to show you if electric propulsion is a serious opportunity. Most of them will initially help you for free. I am sure you will be surprised!

*The preceding was authored by  
J. van Tilborg, Van der Leun BV*

## ALSTOM Wins \$102M Navy Deal

ALSTOM has won a second order of around \$102 million to supply an integrated electric power and propulsion system for the Royal Navy's Anti-Air Warfare Type 45 Destroyers. Following on from the first contract in April 2001 for batch one, this order is for batch two vessels and was awarded by BAE Systems Type 45 Destroyer Prime Contract Office. The order for the integrated electric power and propulsion system also includes the supply of major items of equipment including: 21 MWe alternators, 2MW diesel generator sets, HV switchboard, service transformers, VDM25000 PWM drives, 20MW 15 phased advanced induction motors (AIM), harmonic filters and the electrical power management system. Integrated electric power and propulsion offers the potential benefits for through-life cost, reduced maintenance and greater operational flexibility. The T45 vessels will be the first front-line warships in the Royal Navy to have this type of system which has undergone successful extensive testing at ALSTOM's Electric Ship Technology Demonstrator (ESTD) in Whetstone, near Leicester, U.K., as well as being the first-of-class propulsion converters and advanced induction motors tested in back to back configuration.

## Offshore & Marine Chose Vacon AC Drives

In close cooperation with the Norwegian system integrator, Offshore & Marine ASA, Vacon will deliver four liquid-cooled 2.5-MW AC drives to an accommodation support unit with a capacity for 400 persons, to be stationed in the Gulf of Mexico.



Vacon AC drives will control four azimuth thrusters that enable dynamic positioning of the accommodation unit, i.e. safe operation alongside a fixed platform without the use of a conventional anchoring system. Dynamic positioning is empowered by Vacon AC drives that continuously change propeller rotation speed and direction. The four azimuth

thrusters are located in the corner columns, where also the Vacon AC drives are squeezed into. As space is extremely limited inside the stability columns, the compact construction of Vacon AC drives brings space-saving benefits: A 2.5-MW drive, including a liquid/liquid heat exchanger with dual

pumps and their control, requires an area of only four meters in length and one meter in depth. The converters are fed with 12-pulse transformers and the motors have two separate windings. This arrangement gives a low harmonic distortion and allows partial use of converters. In case of problem either in the

motor, power supply, cooling or in the drive, half the power is still available. The redundancy in this setup is excellent. This semi-submersible accommodation unit is built by Keppel FELS in Singapore and will be delivered in the end March 2005.

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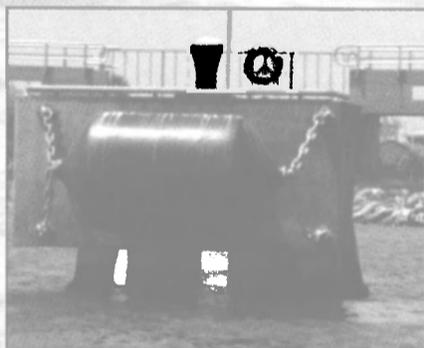
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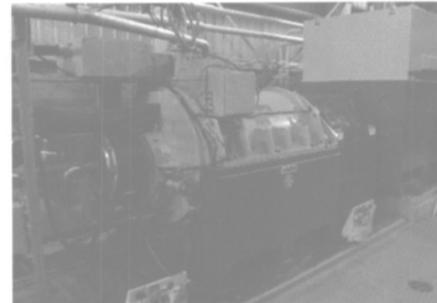
## Successful Full Load Operation of 5-MW Ship Propulsion Motor

American Superconductor Corp. announced that its prototype 5-megawatt (MW) High Temperature Superconductor (HTS) ship propulsion motor has been demonstrated successfully at full load, under steady state operational conditions, at the Center for Advanced Power Systems (CAPS) at

Florida State University in Tallahassee. The motor was developed under contract with the U.S. Navy's Office of Naval Research (ONR) to prove the viability of HTS technology for both military and commercial marine propulsion. After the 5-MW motor completes load and ship mission profile simulation tests

at CAPS, it will undergo additional performance testing at the Naval Surface Warfare Center, Carderock Division in Philadelphia. The Navy will then define further land-based and at-sea testing for this motor.

"We continue to be pleased with these new test results on the 5-MW supercon-



ductor motor," said Rear Admiral **Jay Cohen**, Chief of Naval Research. "The HTS ship propulsion motors we have been developing continue to perform above our expectations and are providing an important new option for future Navy propulsion systems."

HTS motors are ultra-compact, measuring as little as one-third the weight and one-half the size of copper-based motors of the same power and torque rating, which means Navy ships can carry more fuel and munitions and have more room for crew's quarters and weapons systems, and commercial ship owners and operators can carry more passengers and cargo.

### Technical Background

Significantly, the HTS motors being developed by AMSC involve no major changes in fundamental motor technology. The machines operate in the same manner as conventional motors, gaining their substantial advantages by replacing copper rotor coils with HTS rotor coils. The rotors of HTS motors run "cold," so they avoid the thermal stresses experienced by conventional machines during normal operation. The inability to achieve proper thermal management has been a key impediment in developing power dense, high torque motors required for naval and commercial marine applications.

AMSC's 5-MW (6,667 shp) HTS propulsion motor rotates at 230 rpm and generates 200,000 Newton-meters of torque at full power. This power and speed rating are typical for copper-based electric propulsion motors currently used in ferries and small cargo ships around the world. This class of superconductor motor also is expected to become a standard power rating for certain military ships.

The 5-MW HTS motor is a subscale version of the 36.5-MW (49,000 hp), 120 rpm HTS motor currently being built by AMSC and Northrop Grumman under a \$70M three-year contract from ONR. The 36.5-MW motor, which will produce 2.9 million Newton-meters of torque, is due to go through a Detailed Design Review with the Navy in

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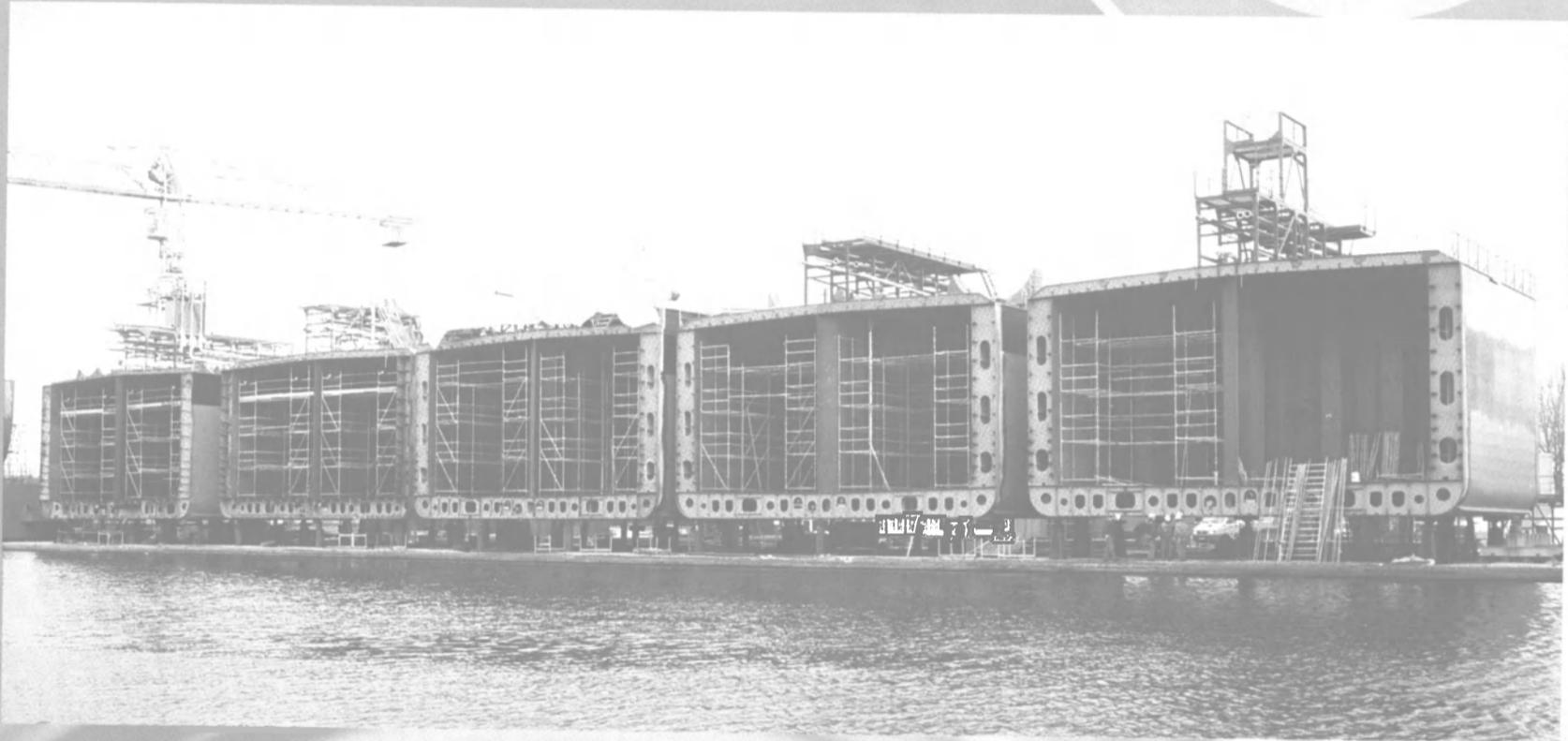
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October - the next major step in its development. Scheduled to be delivered in the spring of 2006, the 36.5-MW motor is being specifically designed to provide propulsion power for the next generation of Navy warships. A motor of this scale also has direct commercial

application in large cruise ships and merchant vessels. As an example, two 44-MW conventional motors are used to propel the famous Queen Elizabeth 2 cruise ship. These motors each weigh over 400 metric tons; the 36.5-MW HTS motor will weigh approximately 75 met-

ric tons. Newer vessels, such as the QE2's sister ship Queen Mary 2, which sailed on her maiden voyage in January 2004 and has a total propulsion requirement of 84-MW, are ideal candidates for HTS motors.

Circle 26 on Reader Service Card

## IPS Delivers UL891 Labeled Switchboard

Industrial Power Systems delivered a UL891 labeled switchboard to Bay Shipbuilding Company Division of the Manitowoc Marine Group for installation in the new barge being built for Moran Towing. This is the first of two under contract. Bay Engineering provided the design, which includes controls and distribution for (2) 270 kW and (1) 115 kW Ship's Service Generators. The IPS switchboard is set up for non-parallel operation. It features 4.5 in. switchboard class metering and all UL labeled, recognized, or evaluated components.



Circle 52 on Reader Service Card

## Innovative Tweendeck Patented in U.S.

Langh Ship's innovative tweendeck invention has now been patented in the U.S. The system has previously been granted a European patent, as well as patents e.g. in Taiwan and South Africa.

"This transportation method has also proved efficient in practice," said Hans Langh, Managing Director of the shipping company. "Handling of the product is speeded up considerably, which improves the turnover of stocks. Another benefit for steel factories is that the method reduces cargo damages."

Cradle tweendecks strongly affect the movements of the ship, which is designed to reduce cargo damage and enhance safety at sea. Owner of seven ships, Langh Ship has used its experience in steel transportation to focus on the development of new methods to further improve the services offered by the company. In co-operation with MacGregor, Langh Ship aims at marketing the inventions to other parties, too.

Besides the cradle tweendecks, Managing Director Hans Langh has, together with the personnel, developed and patented specialized containers and plate transportation cassettes. These new intermodal units speed up the handling of steel products and reduce cargo damage.

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## MAN B&W Records Busy Hamburg Show

According to the company, more than 5,000 guests visited the stand of the MAN B&W Diesel Group at the SMM trade fair in Hamburg. "The high number of visitors and the great interest in professional advice proved once again that the SMM is one of our most important windows to the world," said Dr. Stefan Spindler, MAN B&W Diesel Executive Board Member. One of the company's highlights at SMM was the signing of a contract with the Chinese Changjiang Shipping Group Corp. (CSC) for the 250th engine and the 50th propeller from MAN B&W Diesel. On this occasion, Dr. Spindler presented Managing Director Liu Xi with another MAN B&W engine that was small enough to fit into his luggage. This was a mini MAN engine which weighed only 10 kilos with an output of 0.3 PS and fully operational. The apprentices of the Augsburg MAN B&W works built this unique piece, which as commissioned especially for the

Chinese guests. "This long-standing and successful partnership with CSC is confirmation of our previous and intensive activities in the Chinese shipbuilding sector," emphasises Dr. Spindler. MAN B&W Diesel has profited from the shipbuilding boom by a large increase in orders and now has a market share of more than 60 percent in China with regard to medium-speed four-stroke propulsion engines.

Intensive discussions were held between visitors and MAN B&W experts about electronically controlled injection, e.g. of the ME two-stroke engine and the new common rail system for medium-speed engines. The sectional models of 16/24 GenSets with 110 kw/cyl. and the new radial TCR turbocharger as well as a sectional drawing of the electronically controlled K108 ME engine in original size were additional eye catchers.

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### Wallenius Trials Alfa Laval BWT Solution

Wallenius Marine has been closely involved with the testing of a new ballast water treatment product, EcoStream, which will be available from Alfa Laval from 2006. New IMO regulations will come into force in 2009 but shipowners are already under pressure to reduce the environmental hazards of transporting organisms from one ocean to another. The commercial launch has been set for 2006 in order for appropriate on-board installations to be made. A Wallenius Marine car carrier has been equipped with the new plant, which is being developed in cooperation with the Swedish company Benrad AB. The technology is based on advanced oxidation, which is different from traditional ultraviolet systems in that it uses catalysts to generate hydroxyl radicals. These destroy micrororganisms by breaking down their cell membranes.

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### Transas Demonstrates New Tech at SMM



Transas, as is its custom, rolled out new technology at SMM, technology aimed at its core mission to increase Safety of Navigation. Two central items

on display comprised three new ergonomic consoles, with multi-functional workplaces allowing visitors to operate Navi-Sailor 3000 ECDIS, Navi-Conning 3000 and Navi-Radar 3000. Track Control System is one of the novelties to be demonstrated. The route plan for the system is generated in the Navi-Sailor 3000 ECDIS-I system, while the system itself is connected to the automatic helm and is intended to keep a ship automatically on a pre-planned track under various conditions.

In the Simulator Center Transas showed the latest version of its Navi-Trainer Professional 4000 Simulator, which comprises three channels, 120 degrees of visualization and originally designed instructor console. Among the new features implemented into the Simulator recently, are the Fishing Bridge Module; built-in underwater visual representation of the different shoals, seabed and fishing gear as 3D objects with true color and high realistic texturing; joint training with ERS 4000 simulator; 30 different ship motion models adjusted; New Conning display pages for 2 and 4-stroke diesel; multiple sensor availability for all ship models; new special exercise objects for tug and mooring operations; new configurable consoles for the scenario activation and video logger, just to name a few.

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### Rotting Joins MTS

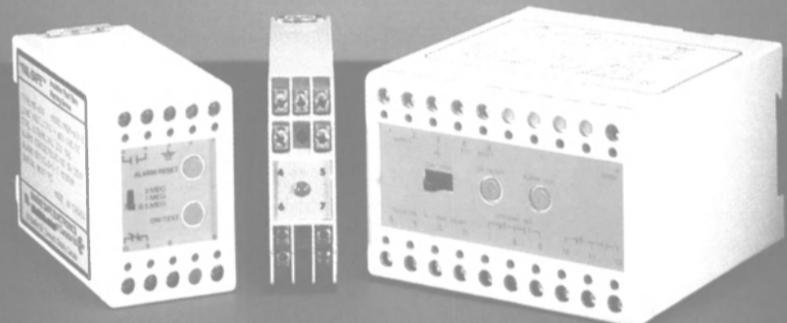
Marine Transaction Services AS (MTS) announced that **John Inge Rotting** has accepted the position as Sales Director. Rotting has worked within the marine market for 18 years and brings with him extensive experience from the marine software industry. He has held senior sales and marketing

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## SMM 2004 Wrap-Up

positions with Shipnet and Xantic.

### Kongsberg Debuts Water Ingress Detection System

Kongsberg Maritime released a new Water Ingress Detection System. Specifically designed for bulk carriers,

the system uses the new, patented GL-10 water detection sensors, which have been designed by Kongsberg Maritime to meet the carriage requirements under SOLAS Chapter XII Reg. 12 and are Type Approved by all the major classification societies. Three main components

make up the system; the operator panel (MOS), GL-10 sensors and zener barriers. It can be installed by either Kongsberg Maritime or a ship's crew for retrofit.

The newly developed GL-10 liquid detection sensors are the key to the accu-

racy and reliability of this new system. They have been designed to operate without fault in the harsh conditions found in the cargo holds and other areas of a ship where water ingress may occur.

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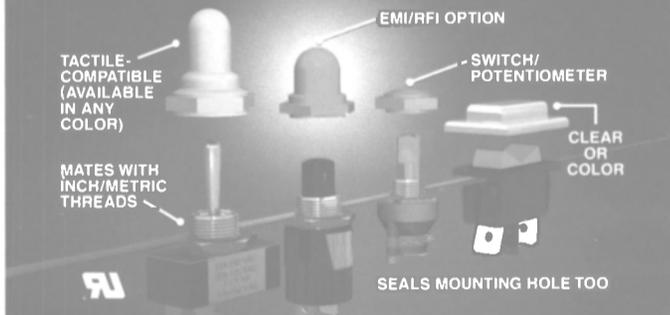
**This vessel was built by Peterson Builders of Sturgeon, WI and received major hull work that was completed in November 1996.**

For information or to arrange a visit, contact: **Todd Michalik, TRG, 270 Congress Street, Boston, MA 02210. Phone: 617-482-4242; Fax: 617-482-9804; E-mail: tmichalik@trgusa.com**



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### Kongsberg Offers New Vapor Monitoring System

Kongsberg Maritime launched a new vapor monitoring system designed to meet and exceed the SOLAS standards for cargo tank venting, purging, gas freeing and ventilation. The SOLAS regulation specifies a system consisting of pressure transducers in each tank with a monitoring system in the control room, which must include alarms for over- and underpressure in the tank.

The core component of the new system is the GT-402 pressure transducer that measures the vapor pressure in each cargo tank. To insure intrinsic safety in such hazardous environment as cargo tanks, the transducers are connected to the system via analogue input modules through zener barriers.

The GT-402 is based on a highly stable ceramic sensing element that is resistant to most chemicals. No second membrane or filling liquid is required to protect the sensing element, which eliminates a source for error and sensor degradation.

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### MegaYacht Enters Blohm + Voss Repair

On September 30, the 2003-built, 374 ft. (114 m) yacht Pelorus arrived at the Blohm + Voss Repair for an extensive refit. After several trials alongside Blohm + Voss quays the yacht will dry-dock in the sheltered dock 5 for approximately six months.

The job entails extensive refit and maintenance, as well as some major conversions. A new helicopter deck will be installed, the exhaust gas system will be converted, the stern platform and the main mast will be converted and the yacht will get four new stabilizers. A painting program will finalize the work.

The yacht is operated by the company Blue Ocean Yacht Management which will manage the extensive work, under the lead of Neil Wade, in close relation with the Blohm + Voss specialists.

### BV Launches Project Management Solution

Bureau Veritas launched VeriSTAR Newbuildings, designed to be a one-stop project management tool which allows BV clients, yards, owners, equipment manufacturers and BV surveyors and offices to manage the design review,

Maritime Reporter & Engineering News

product certification and survey at site of all aspects of a newbuilding project on line and at a glance. The database created during the newbuilding then follows the life of the ship, allowing

immediate access to product specifications for spare parts purchasing.

VeriSTAR Newbuildings was thoroughly tested across BV's global network during 2003 with training at Bureau Veritas offices around the world. Now it is going to be open to shipowners, yards and equipment manufacturers. Using the communication facility of the internet, VeriSTAR Newbuildings allows everyone involved in a project, from design stage through the life of the ship, to see all actions required by BV in terms of surveyors, inspections and approvals, and all plans, certificates and documents at a glance, and certificates can be both checked and validated on line. The system allows equipment manufacturers to track certification of their products, and allows yards to co-ordinate plan submissions and approval, and the collation of all equipment and relevant certification.

"As the world leader in marine equipment EU certification, we originally devised this system to help manage product certification internally," explained Bernard Anne. "It does that, and also cuts down on fraud and mistakes as product certificates can easily be checked for validity on line. However, it is so powerful, yet so simple to use, that we have extended it to manage design and plan approval and on-site surveys."

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### Xantic Offers New Web-Based Tool

At the SMM exhibition in Hamburg, Xantic displayed many new products and services aimed at making marine communications more seamless and cost-effective. A new web-based tool designed to make it easier for ship managers to manage vessel mailboxes from the office. It can be used anywhere internet is within reach and no special software is required. P&O Nedlloyd and many other ship managers have already expressed their satisfaction with this latest email development.

AMOS Connect Online offers easy management for total control of email costs and traffic, including adding/deleting mailboxes, editing file size restrictions and black/white lists, queue management, call/message history and reports. It is free of charge for all AMOS Connect customers. Xantic also announced the introduction of a new 128 kbit/s ISDN channel for Fleet 77

terminals. Existing terminals only need a software upgrade in order to have access to 128k ISDN speed.

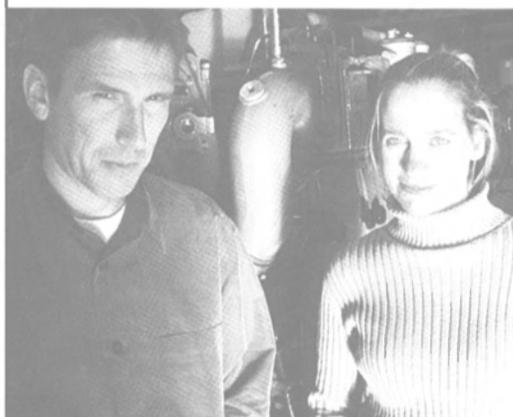
The 128k ISDN channel will only be available for Fleet 77, not for 33 and 55. It will be an additional channel, with the current 64 kbit/s channel continuing to be available. The 128 kbit/s ISDN channel is expected to be available in the first

quarter of 2005. Xantic also launched AMOS Chartering & Operations, designed to deliver to ship owners and managers a complete business management solution. AMOS Chartering and Operations was designed to maximize fleet utilization, control costs in relation to estimates, and increase profit. This is possible because AMOS Chartering and

Operations enables the company to control and optimize the entire Chartering & Operations process.

"AMOS Chartering and Operations is a fantastic product, because it provides a single solution for the commercial management of a shipping company including monitoring actual performance against the original plan. This enables

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Ulrich Freudenberger, Managing Director at Inter Seas Services and Trading GmbH, NORDERSTEDT, GERMANY

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### New AIS Targets U.S. Workboat Market

Nauticast presented an AIS solution specifically targeting the U.S. workboat market at the recent SMM exhibition in Hamburg. Nauticast Navigationssysteme GmbH has been diversifying its AIS business throughout the past year, based on the success of the X-Pack DS - the SOLAS Class A Transponder. "We are very proud to be continuously expanding our AIS business into new fields of applications," said Peter Martin, Executive Director of Nauticast GmbH. "Based on the tremendous success of the X-Pack DS, we are now following up with new innovative AIS solutions, including our X-Pack US and the X-Base, a fully IALA compliant Base Station".



#### X-Pack US - The Workboat Transponder Solution

On December 31, 2004, thousands of U.S.-based workboats will require fitting an AIS Transponder. To help fill the void, Nauticast has developed a dedicated "Do It Yourself" AIS package based on the X-Pack US AIS transponder, especially for this market. Sales and distribution of the new system commenced in October 2004.

#### X-Base - The Fully Compliant IALA Base Station

The Nauticast X-Base handles bi-directional traffic monitoring data, thereby providing an overview of vessel activity within the competence range - positioning it as solution for the surveillance tasks of maritime authorities. X-Base presents the information source, while collecting and distributing all beneficial AIS data of the surrounding area.

Its standard interfaces enable the X-Base to be easily integrated into national and regional network infrastructure systems, such as TCP/IP

Circle 6 on Reader Service Card

you to spot and resolve issues easily and proactively," said Ged Lunt, Xantic's International Product Manager. "We look forward to AMOS Chartering and Operations becoming a standard for the operation of tankers, dry bulk, and general cargo vessels."

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### Hepworth Makes a Good Show at SMM

Hepworth Marine, which now encompasses Wynn Marine, has reported excellent order results from SMM 2004. This was the first time the two companies shared stand space at a marine exhibition since they merged in June 2004.

"SMM was the perfect venue to show the industry the united front of Hepworth and Wynn," said Jonathan Eddy, CEO of B Hepworth & Co, the parent company of Hepworth Marine International and Wynn Marine. "Visitors to the stand and distributors were enthusiastic about the new structure as it is clear that we can supply wiper systems that are reliable and cost effective across all marine sectors, from Wynn's natural home of heavy duty shipping to wiper systems for coastal vessels and megayachts from Hepworth." Wynn Marine unveiled two new systems. The Type D MKIV is a new externally mounted straight-line wiper system and the Series 6000 digi-

tal control network builds on the groundwork laid by the first ever digital controller for wiper networks, the Series 3000. Hepworth Marine International also unveiled a new synchronized pantograph control system designed specifically for the coastal and luxury yacht markets.

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### New PVC-Free Alternatives for Interior Decoration

SSAB Laminated Steel AB now presents two types of PVC-free alternatives, called Dobel 2000 and Dobel 2005. Dobel 2000 is steel sheet, painted with a thin layer of Polyester paint laminated with a printed polyester film and thus both light and PVC-free.

While being competitive in price and, at the same time, twice as thick as comparable coatings, it gives, on the other hand, a limited range of varieties in appearance and is, in first place, suitable for large areas since the minimum quantity for this product is rather high. Also to bear in mind is the fact that a painted surface cannot be repaired.

Just launched at SMM 2004 in Hamburg is the new Dobel 2005. The base material is hot-dip galvanized steel, laminated with a 130 microns thick new type of PVC-free flame retardant HMP film (Highly Modified Polyester). With equally high scratch resistance as for the traditional Dobel F105 and fully repairable, the new Dobel 2005 is similar in appearance to the Dobel F105 with an equally wide range of substrate choice and colours.

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### MacGregor Debuts Remote Equipment Monitoring

New remote equipment monitoring from Macgregor was announced at SMM. Shipowners can choose from one of four "Onboard Care" packages to meet their requirements. The company now has 50 service stations providing round-the-clock support.

Part of the Onboard Care product involves the creation of service records that are continuously filed and updated. "We now have the technology and communication media that enable us to offer real time condition monitoring of our products wherever they are", the company says. "This is backed up by our ability to provide routine and preventative maintenance services worldwide."

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## CAE Sells Marine Controls Unit to L-3

CAE signed a purchase and sale agreement with L-3 Communications Corporation to sell its Marine Controls unit for approximately \$267.4 million, including \$225 million in cash and the assumption of \$42.2 million of project finance debt. The transaction is subject to certain regulatory approvals and other closing conditions, with closing expected prior to CAE's current fiscal year end, March 31, 2005.

Marine Controls' revenue for the fiscal year ending March 31, 2004 was \$129.3 million, representing approximately 15 percent of the company's total revenue.

Headquartered in New York City, L-3 Communications is a leading merchant supplier of Intelligence, Surveillance and Reconnaissance (ISR) systems and products, secure communications systems and products, avionics and ocean products, training devices and services, microwave components and telemetry, instrumentation, space and navigation products.

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## O'Day Promoted at Ward Leonard

James W. O'Day has been promoted to vice president, marketing for Ward Leonard Electric Co., the high-performance electronics engineering and manufacturing company in Thomaston, Conn. "Jim's promotion reflects his achievements as well as the growth trajectory that Ward Leonard is on," said President **Jon Carter**. During his tenure, O'Day has overseen expansion of marketing and sales efforts into new market segments, has led development of strategic partnerships with U.S. military organizations and has overseen expansion of the sales organization. O'Day has been at Ward Leonard since 2001 as director of marketing and sales. Previously he worked at Cooper Wiring Devices and Eagle Electric, both in Long Island City, N.Y.

Ward Leonard is a leading provider of electric motors and control systems for the U.S. Navy and specialized industrial applications.

## Caribbean STS Order for Kalmar

Kalmar received an order for two post-Panamax ship-to-shore (STS) container cranes from Port Autonome de la Guadeloupe (PAG) at Pointe-a-Pitre. With an outreach of 43 metres, these heavy-duty cranes will be capable of handling 16-wide containerships. The cranes are destined for Terminal de Jarry, which has a total quay length of 600 m on which three ship-to-shore cranes are already in use.

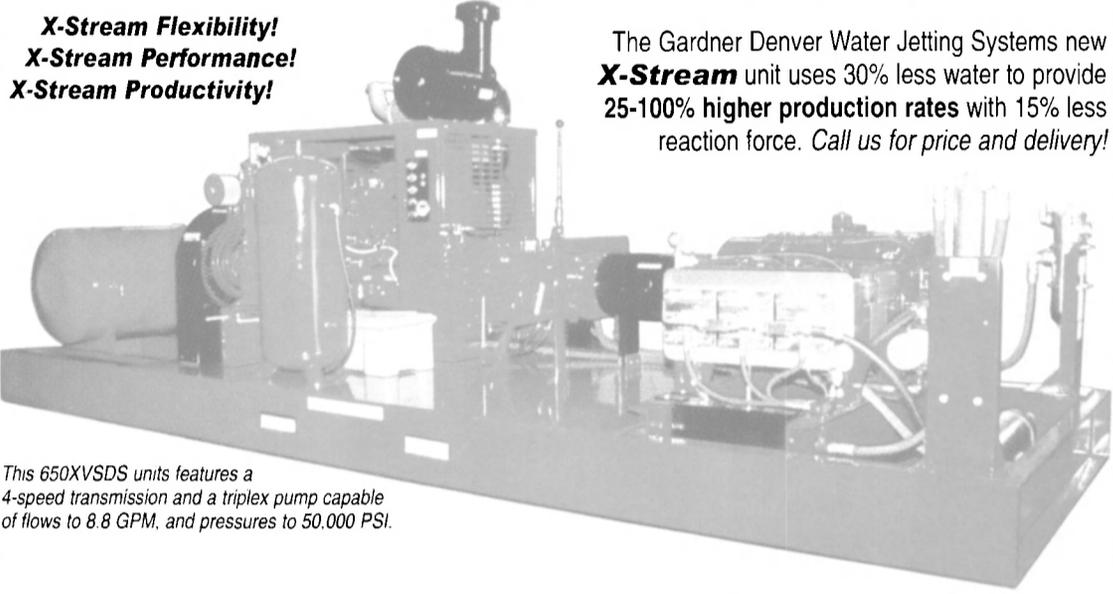
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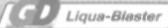
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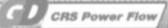
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81

Caprock:

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The marine satellite communication business has many earmarks suggesting it is set to expand rapidly, with a recent run of corporate consolidations and a seemingly endless offering of new products and services designed to emulate the speed and reliability of land-based services at sea.

Marine industry usage of communication services, particularly for data transmission and internet access, is embarked on much of the same growth curve as land-based services, as ship owners and operators are using advanced systems to meet the requirements of new security mandates, to make operations more safe and efficient, as well as to help lure and retain crews by boosting morale.

CapRock Communications, a major player in the energy and offshore market for more than two decades, has doggedly pursued additional opportunities in the maritime marketplace, and has emerged as a global presence.

While admitting that the competition in this sector is fierce, **David Myers**, Vice President of Global Marketing, said the company differentiates itself by providing a truly ruggedized, reliable and high-end turnkey satellite communications solution, backed with compa-

ny trained and maintained service around the globe. In addition, the market for seamless satcom services is growing rapidly, a trend that is not likely to end anytime soon, with increased broadband demands driven by the need for high-end video conferencing, not to mention the Homeland Security/Counter terrorism applications, which are still under development and could include any number of different measures for the full-time, real-time tracking of cargo.

Using an IP-based satellite network that converges voice, video and data, CapRock Communications delivers reliable communications to the harshest and most remote environments all over the world. According Myers, the company has been steadfast over the last few years to make the moves that are critical to the company's future, systematically expanding its reliable coverage and service capabilities to customers around the globe in some of the world's harshest and most remote locations. Some of these include:

**Acquisition:** With the acquisition of Indonesia-based Telematika Java Duta, CapRock continues this expansion and provides increased services to energy

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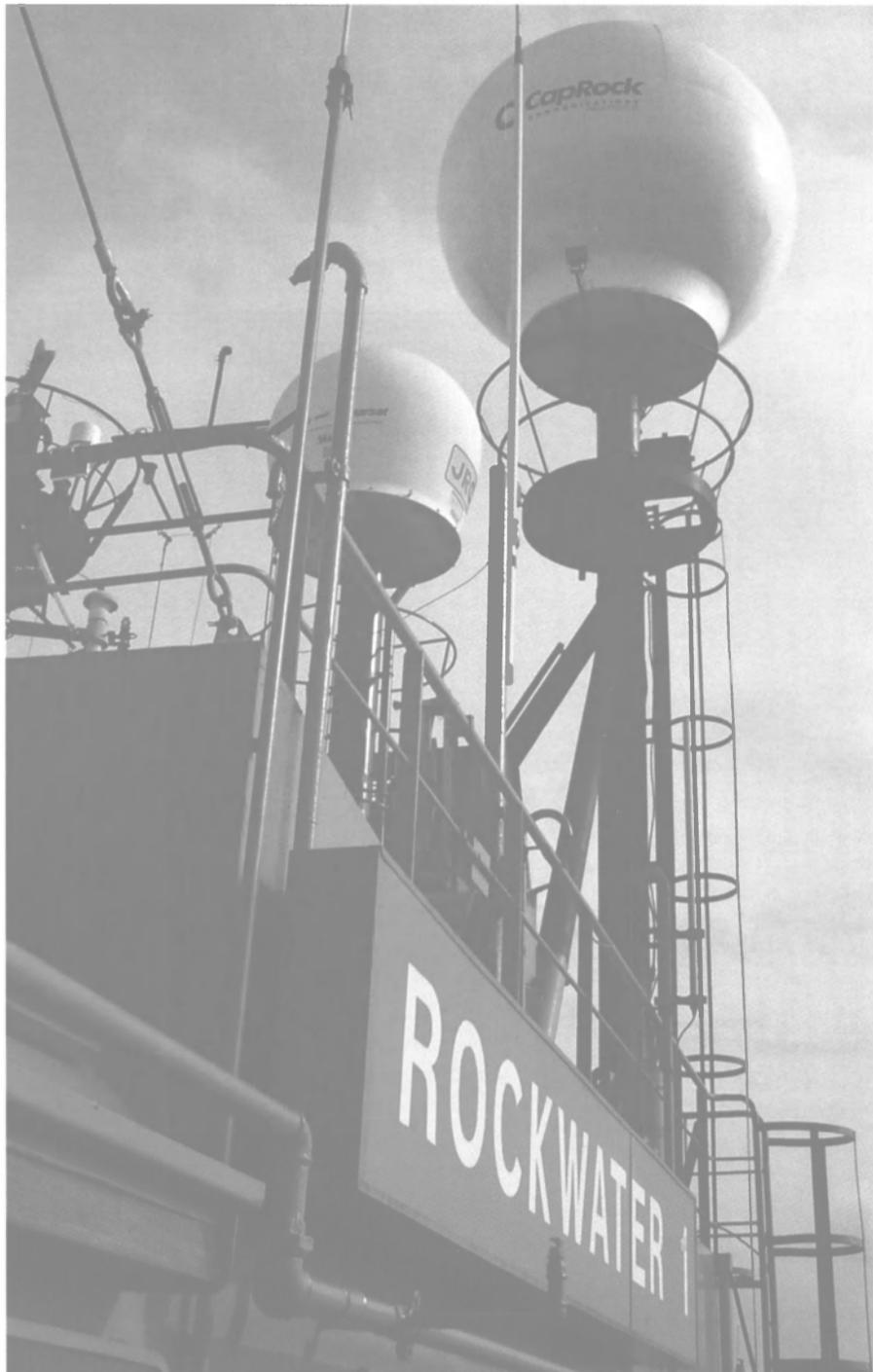
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exploration, maritime, construction, mining, forestry and government customers across Southeast Asia and the South Pacific. This was the capstone acquisition for the company as it rounded out CapRock's privately owned and operated telecommunications infrastructure, which also includes international teleports and operations centers in Houston; Aberdeen, Scotland; and Macae, Brazil.

**New Facilities:** CapRock, with the support of owners The Riverside Company and Houston-based Genesis Park, relocated its headquarters to a new 62,000-sq.-ft. facility on 6.5 acres in Houston. Its new HQ features room for an increased number of satellite hub earth stations and an advanced network operations center (NOC). With its network management capabilities, CapRock's NOC monitors, manages and provisions customer networks around the globe 24

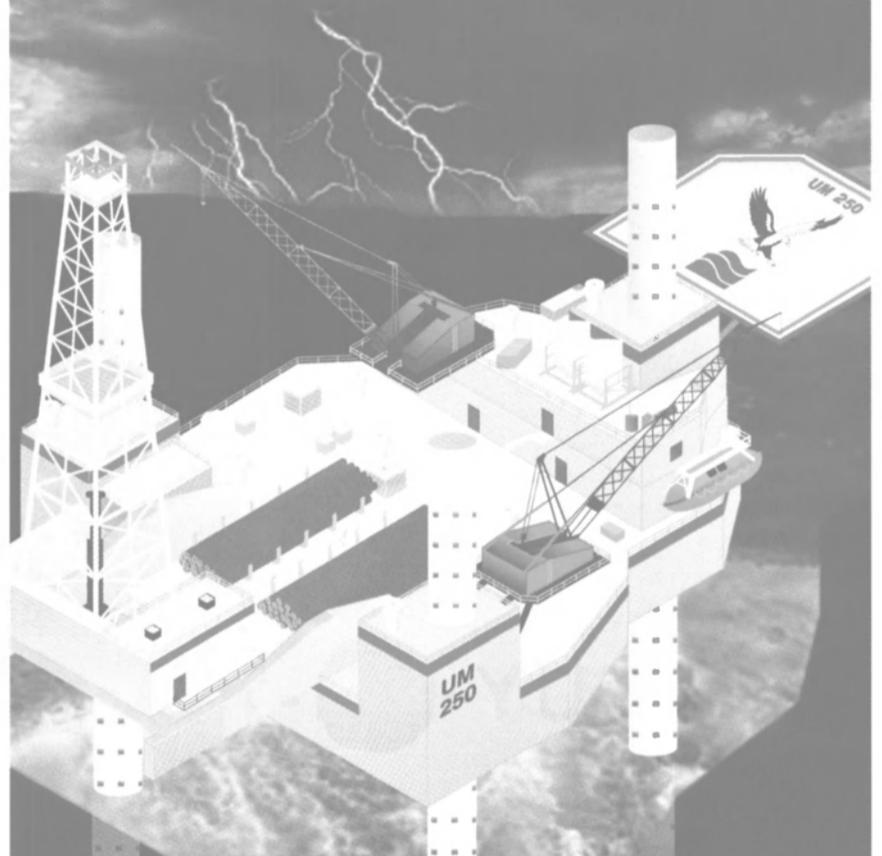
hours a day, 365 days a year.

**Alliance:** CapRock and ViaSat Inc. formed a global alliance that supports CapRock's continuing initiative to supply its customers with reliable, flexible and feature-rich satellite communications services. In addition, CapRock now serves as the exclusive oil and gas industry partner to ViaSat's VSAT Networks division. The alliance enables ViaSat to leverage CapRock's global network, reputation for reliability and industry relationships.

According to Myers, another key plank in the commercial maritime expansion was the deal to provide satellite services to Subsea 7. The long-term multi-million dollar agreement with Subsea 7 provides for worldwide data and voice communications services on CapRock's global network. The contract is a milestone in CapRock's multi-year

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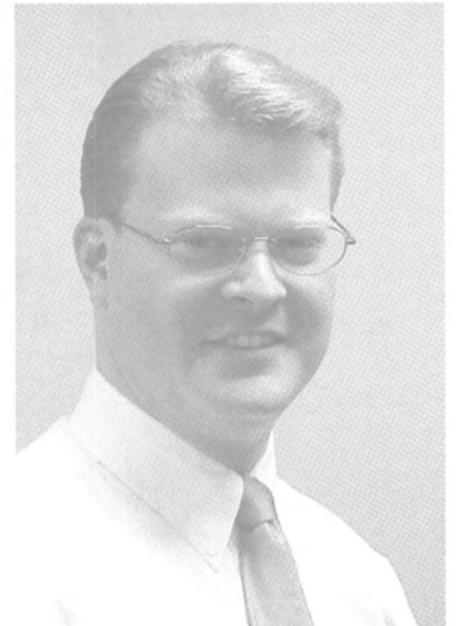
plan to expand its presence beyond the Gulf of Mexico, following its customers around the world with turnkey communications.

CapRock will provides global interconnectivity via satellite for the Subsea 7 fleet of ships, which offer construction, diving, ROV/survey and pipelay services to customers who operate in

harsh and remote marine environments all over the world. "Working from a ship for any length of time is considerably more efficient with reliable broadband communications to the outside world," said Subsea 7 Global IT Manager Anders From. "We chose CapRock Communications based on their track record of reliability and their

ability to demonstrate significant savings. They gave us a system with unparalleled quality, creating value for our customers and employees who can easily work from any vessel in the Subsea 7 fleet with communications tailored to their project needs."

CapRock will provides both dedicated and Bandwidth-on-Demand connectivi-



**David Myers**, CapRock's Vice President of Global Marketing

ty to enable flexible ship-to-ship and ship-to-shore communications for customers and crew aboard Subsea 7 ships. CapRock's highly flexible network will allow voice and high-speed data connections to be provisioned on an as-needed basis from CapRock's network operating center (NOC) in Scotland, providing dedicated lines to Subsea 7 and its customers.

Another significant deal was renewing its satcom services deal with drilling giant Transocean. CapRock has been providing Transocean's communications services successfully for nearly a decade, and the drilling company decided to extend the agreement for an additional four years. CapRock will migrate Transocean's network to the fully managed CapRock IPxpress network. With this network, Transocean will experience the benefits of voice over IP (VoIP), which takes advantage of the efficiencies of Internet Protocol to deliver high-quality voice and data communications more efficiently and more cost-effectively than traditional satellite telephony.

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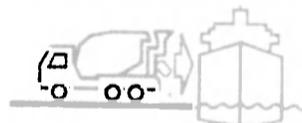
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### Caprock at a Glance

- Network Services**
- Voice and Data Communications
  - VoIP
  - Wireless Networks
  - Broadband Internet
  - VPNs
  - Video Conferencing/ Monitoring
  - PBX Access

### Satellite Program Management Operations

- Small/Large Installations
- Engineering design
- Network Management
- Site Monitoring
- Optimizing Network performance
- Information Security
- Emergency Response (disaster recovery)

## IPS Marine Lands New Blue Chip Casino

Jamestown Metal Marine Sales, Inc. of Boca Raton, Fla., has awarded Industrial Power Systems, Inc. of Jacksonville, Fla., a contract for the Main and Propulsion System Switchboard, Emergency Switchboard, Propulsion Motors, and Propulsion Drive Systems for the New Blue Chip Casino Vessel in Michigan City, Ind.

The systems will provide fully integrated and automated control for (4) 1,825 kW diesel generator sets and (4) 1,500 kVA shore power connections. Work is well under way at IPS Marine's Jacksonville, Fla., facility with delivery of the Main Switchboard scheduled for mid-December, 2004. The propulsion motors and drives will follow within a few weeks and the emergency system will be shipped in mid-2005.

The IPS Marine system follows the design of Guido Perla & Associates and will be UL labeled. It incorporates automatic parallel operation among the generators and shore power sources. A unique feature is the integral but separate propulsion bus. It will include paralleling components from Woodward Governor, protective relays from Basler Electric, ground detection systems by Selco and IPS Marine, circuit breakers by Siemens, propulsion drives by EPD/Siemens, remanufactured GE 752 drive motors, and switchboard instruments from Crompton and Power Measurements, Inc.

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charge person, capable of providing critical data and important statistics, which are essential in the analysis of business forecasts and investments in our capital asset inventory. We are fortunate to have him on the executive management team."

Harkness has been involved in the marine services industry for over fourteen years, and spent the last seven, prior

to joining Rigdon Maine, as the Financial Controller for Europe and Africa for a major offshore energy support company.

He has also held financial management positions for that company in Egypt, Angola, Cameroon, Equatorial Guinea, Congo, Ivory Coast, Nigeria, and the North Sea. He earned his Bachelor of Science in Accounting from

Washburn University, and his Masters of Business Administration from Our Lady of the Lake University.

## ACL Sells Global Materials Services to Mid-South Terminal

American Commercial Lines LLC sold its ownership interest in Global

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## Oceaneering Acquires Fugro ROVs

Oceaneering International, Inc. acquired from Fugro (USA), Inc. 10 work class ROVs and related assets in North America. Seven of the 10 vehicles are under contract - four in Mexico, two in Canada, and one in the U.S. Gulf of Mexico. The purchase price was \$16.5 million.

## Rigdon Marine Promotes Harkness to CFO Post

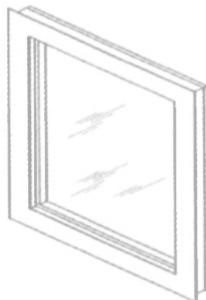
James (Jay) A. Harkness was appointed Vice President and Chief Financial Officer of Rigdon Marine. Harkness is responsible for the financial management of the company, including fiscal controls, insurance placement and claims management and financial reporting.

"Jay is a very capable individual with an astute background in all financial procedures of a vessel operating company," said Larry Rigdon. "He is a take

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Materials Services LLC to Mid-South Terminal Company, L.P. for \$14 million cash.

This transaction gives Mid-South Terminal Company, L.P., headquartered in Memphis, Tenn., 100 percent control of Global Materials Services' network of 24 river-served terminals in the United States and one in Europe. Richard L. Huber, Chairman of ACL, said "We are

pleased that we were able to transfer our interest in this operation to our partner. This transaction allows us to continue our progress toward emerging from Chapter 11 with a focus on our core business.

The proceeds from this transaction will be used to pay off the remaining balance of our DIP term loan financing."

## Austal Wins Ferry Contract

Austal announced a contract for a 220 ft. (67 m) high speed vehicle-passenger catamaran for Virtu Ferries of Malta. The new vessel is scheduled for delivery to Virtu Ferries in time for the European 2005 summer season and will have the capacity to carry 600 passengers and 65

cars or 95 lane meters of trucks plus 35 cars. Established in 1988 Virtu Ferries operates fast ferry services between Malta and Sicily. The ferry will be powered by six MTU 16 cylinder diesel engines driving a Kamewa propulsion system through six ZF gearboxes.

Length, o.a.	220 ft. (67.5 m)
Length, waterline	192.2 ft. (58.8 m)
Beam, molded	59.7 ft. (18.2 m)
Hull depth (molded)	20.6 ft. (6.3 m)
Max. hull draft	8.5 ft. (2.6 m)
DWT, max.	260 tons
Passengers	600
Cars	65 cars
Heavy vehicles	95 truck lane-metres (plus 35 cars)
Main engines	6 x MTU 16V 4000 M71
Gearboxes	4 x ZF 7550 NRH and 2 x ZF 7550 NRB2
Waterjets	4 x Kamewa 80SII and 2 x Kamewa 90SII
Speed	35 knots

## Tidewater: Effects of New Tax Bill Are Positive

Tidewater said that certain provisions of the newly enacted "American Jobs Creation Act of 2004" could have a significant positive effect on its future earnings and cash flows. The Act, which has been approved by both the United States Senate and House of Representatives, was at press time expected to be signed by the President. Under its current operating structure, the Act will afford Tidewater the ability to omit the majority of future international operating income from then current U.S. taxable income. The particular relevant provision, to be effective for Tidewater as of April 1, 2005, would thus enhance future cash flow as well as reported financial earnings by removing such international income from being subjected to the current United States statutory tax rate of 35%. However, such international income has historically been taxed in the relevant foreign jurisdictions at a rate that approximates 18-19% annually, which should remain unaffected by the passage of this legislation. In recent fiscal years, substantially all of Tidewater's income has been generated by its international operations. "The Act," said Chairman and CEO of Tidewater, Dean E. Taylor, "will go a long way toward achieving the goal of putting worldwide competition for United States shipping companies on a level playing field by instituting a taxing scheme similar to that enjoyed by most of our international competitors." Tidewater Inc. owns and operates nearly 570 vessels, the world's largest fleet of vessels serving the global offshore energy industry.

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Submit SPS draft papers to Dolly Pelto at [pelto@aticorp.org](mailto:pelto@aticorp.org)

Author instructions can be found at [www.sname.org](http://www.sname.org)

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# Bollinger to Design, Build Five DH Hot Oil Barges

Bollinger Shipyards, Inc., Lockport, La., signed a contract to design and build five 297.5-ft., 30,000-barrel (BBL), double hull, hot asphalt tank barges for Horizon Maritime LLC, Houston. They are being built at Bollinger's Marine Fabricators (BMF), Amelia, La., with deliveries planned for the first and second quarter 2005. Lynn Falgout VP of BMF said, "These new barges will be similar to, but not identical to other hot oil barges we built for another customer. They will be built at BMF as we have increased production capacities there for both inland and off-shore tank barges, as well as large off-shore deck barges and boats."

Overall, each of the four raked and one boxed barges will be 297.5 feet long with a 54-foot beam and 13 foot depth at



Artist drawing of the raked design 297.5-ft., 30,000-barrel (BBL), double hull, hot asphalt tank barges Bollinger is building for Horizon.

the sides, with trunks of 3.5 ft. As the barges' cargoes must flow in and out of

its tanks at high temperatures, each barge will be equipped with a 6 million BTU Hopkins Volcanic high efficiency model HF602 heater to maintain the ability to load, heat and discharge liquid cargo. The hot cargo from each of the barges' six tanks can be loaded and unloaded from either side. Pump One will be a three stage deep well type Byron Jackson 12-in. model LS16GH and Pump Two will be an IMO model 4131C-800JD, deep well screw pump. Owner furnished 530-hp Tier II John Deere diesel engines will power the pumps on each barge. Each pump will be capable of discharging any of the cargo tanks. The barges are being designed and built in accordance with

(Continued bottom next page)



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## B+V Wins Passenger Ship Contract

Germany's Blohm + Voss Repair GmbH (B+V) signed a contract with Norway's Red Band AS, Oslo, for the repair and extensive alteration work onboard the 28,670-grt passenger ship Black Watch. The 1972-built vessel will

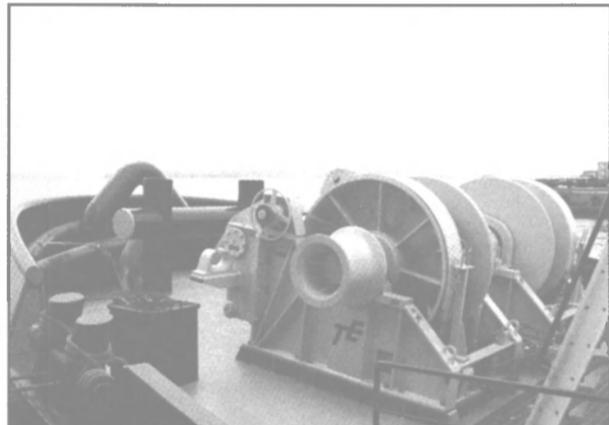
arrive at B+V during April 2005, the first time she has visited the yard since November 2003. The remodelling and modernization work will concentrate on reducing the vessel's noise and vibration level. A complete new propulsion sys-



Black Watch will make a return visit to Blohm + Voss in April 2005.

tem with four MAN/B&W 7L32/40 diesel engines, each with an output of 3,500 kW at 750 rpm, will be installed. The repair will also include the installation of new Renk double step-down gear units, NDSL-2800, and two MAN/B&W 8L21/31 Gensets for the generating power supply. The two existing exhaust boilers for steam production will be replaced by four new units. The Black Watch will receive a completely new propulsion checking system to run the new units in combination operation. A new Power Management system will be installed to optimize the energy supply. Extensive modernization work will also be carried out on safety devices, cabins and public areas. After a 57-day stay in the shipyard - including a two-day test drive to check the functionality of the new driving unit and systems - the Black Watch will leave B+V en route for Southampton. "It's a major achievement for Blohm + Voss Repair GmbH to have asserted itself against international competition with a tender of only 57 days for this complex and fastidious repair order", said Gerhard Kempf, Managing Director of Blohm + Voss Repair.

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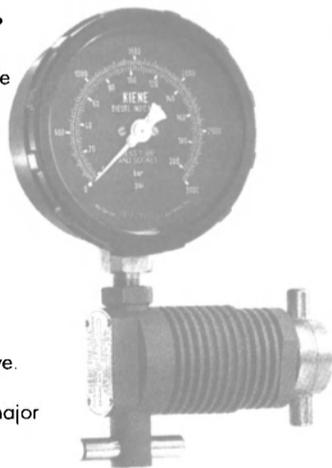
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(Continued from previous page)

current ABS 'Rules for Building and Classing Steel Vessels for Service on Rivers and Intracoastal Waterways'. They will be certified by the U. S. Coast Guard for rivers, lakes, bays and sounds service for carriage of Grade A products and less, in accordance with 46CFR subchapter D with an endorsement for type II and III hulls meeting the hull strength, subdivision and intact stability requirements according to 46CFR subchapter O. Design of the hull and cargo tanks will allow carriage of liquid cargoes having a vapor pressure of up to 3.0 psi.

Maritime Reporter & Engineering News

## Gulf of Mexico Guide

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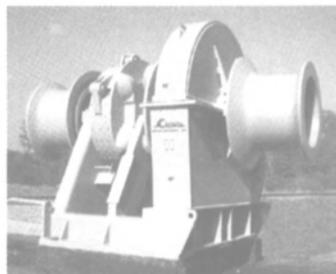
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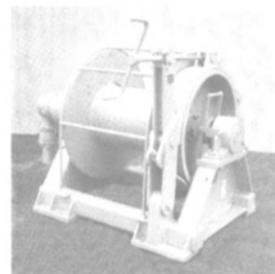
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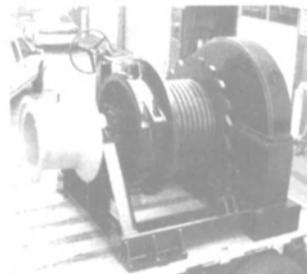
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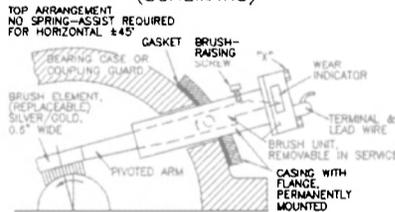
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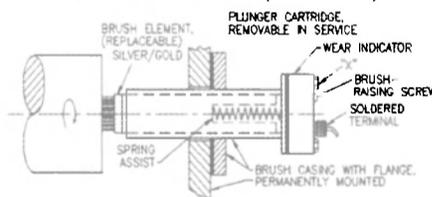
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## In Remembrance: Captain Fred Kosnac Jr. (1928-2004)

By Don Sutherland

Capt. Fred Kosnac was the first tugboat I ever met. If a career can be considered in spiritual or symbolic or abstract terms to be "a life," then Fred Kosnac would rightly be called the patriarch of mine, as a writer and photographer and admirer of tugboaters and tugboats. The matriarch was of course a tugboat proper, the Hay-De, which Capt. Kosnac, based on a phone call out of the blue in 1980, made available to a curious and impressed young journalist. You mean something that works so hard, and has been at it since 1887, is still intact? I was fascinated, awed even, and saw a thousand idealistic morals in this particular tale. Capt. Kosnac, on that summer afternoon at his Wall Street yard, was indifferent to my awe. He'd grown up around a lot of old junk, and this was merely older. But he was also indulgent as I scrambled around the boat, sticking my lens through windows, setting the angle of the deck in a way that would tell about tugboats - asking for the first time an ongoing question: if there's a soul in a tugboat, how do you get it on film?

The article I promised Capt. Kosnac didn't run, or at least wouldn't for another 22 years. My editor was fired before it was finished. Still, in what I would call an involuntary pattern, I kept bump-

ing into old tugboats. The next was then called the Eileen Ann, three years older than Hay-De but, as I later found out, built in the same yard. I became conscious of the infatuation in 1998, standing on the Museum pier at Hyde Street in San Francisco, where the beautiful and romantic square-rigger Balclutha sat, diagonally opposite the decorous Victorian-style sidewheel ferryboat, Eureka. Both were a vision. But it was the one in between them that I couldn't take my eyes off, the large and regal tug Hercules. She was built in 1906, also in the same yard as Hay-De. The article I'd promised Capt. Kosnac, I then realized, was still being written.

The next chapter began a couple months later, driving along the Staten Island shore. But isn't that the old Hay-De tied at that dock, there? The boats tied around her all had big K's on their stacks, and that was a clue. Was I being followed? Who was following whom? By the year 2000, for a publisher in Canada, I was making a video about New York tugboats. I contacted the Tugboat Enthusiasts Society to root around for background, and was invited to their convention. After I accepted, I found out that Capt. Kosnac and Veronica would be attending.

Yeah, that was his name, Fred Kosnac. I looked forward to meeting his wife,

and continuing a 20-year-old interview. But when we were introduced at the TES banquet, it was a younger Fred Kosnac, and his sister. Still, could I go on the tour the next day on their boat? The Margot? If the older Fred Kosnac had been sort of a spiritual father, equally these would be my spiritual step-brother and stepsister. I wanted to get acquainted.

I finally met the original Fred Kosnac, Fred Junior as they called him, at the beginning of this year, 24 years after that meeting at Wall Street. It was amid his friends, his family, and the families of his family at a party in his honor. I remember saying, when I shook his hand, that we'd begun talking way back in '80. I don't remember what exactly I said next, but it was probably like "and look, I've become such a hotshot that they asked me to photograph your 75th birthday!" Was I trying to please him?

We met for the final time a couple months later, in a Staten Island restaurant, to wind-up the interview. Fred III and Veronica and their mother June had had to talk Capt. Kosnac into coming, as he'd had a few mild strokes and was sometimes forgetful. His family said he was afraid he'd be embarrassed by any lapses. But lapses are fine, I'll take 'em. It's not the parts you leave out in a tale like this; it's the parts you keep in.



Fred Jr., his mom Vera, and Fred Sr.

Capt. Kosnac passed away from a larger stroke the day before the story went to press. I would have liked him to see it in print, to show that I keep promises. But I imagine he'd have been no more impressed than on that day when I first climbed, all enthused, all over a tugboat. Lots of people had done the same with the same enthusiasm, and plenty of them wrote stories. She was a piece of junk, but she was a good piece of junk.

As for keeping promises?

Plenty of that has been done, too, maybe by more people than he knew. Promises kept, and stories told. For anyone steering out of the harbor, it should be a satisfaction to think such came to port under his tow.

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to reading CM-93/3 electronic charts, it offers a variety of additional modules including: Conning Display, Planning Station, Automatic Navigation and Track Keeping System, Vessel Advance Prediction, Voyage Data Recorder and Vessel Optimization and Safety. In March 2003, APL China completed her changeover to a U.S. flagged vessel and a few months later had her Sperry VMS upgraded to C-MAP CM-93/3. Watch officers immediately noted an increase in available information, improvement in chart coverage on their trade route and better display quality. "I have no doubt that with our new C-MAP charts, navigational safety has been improved, as well as the effectiveness of the bridge team in congested waters," said Captain Remijan. "Their continued expansion into the foreign Asian ports has been especially rewarding for us as our global coverage for this part of the world is as up-to-date as any other developed port area," said C-MAP/Commercial Operations Manager, Eric James. "We count on C-MAP and our Sperry VMS as an important supplement to our paper charts," added Captain Remijan. All C-MAP CM-93/3 subscription customers are entitled to unlimited access to the C-MAP Real Time Updating (RTU) service to download important changes like Notice to Mariners updates from anywhere around the globe.

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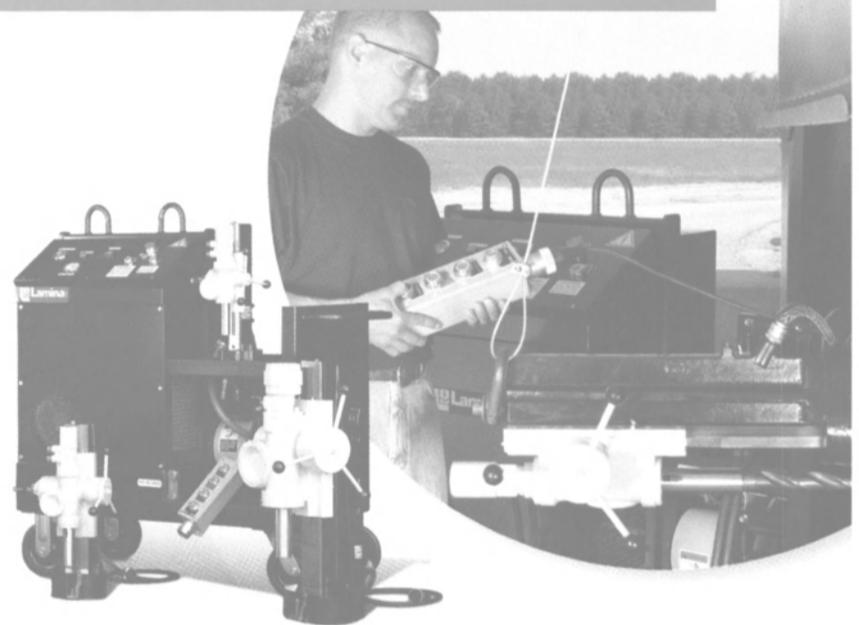
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# Electric Boat Optimizes Nuclear Sub Repairs

The shipbuilding and repair industry faces many challenges given the mission-critical complexities of maritime projects, as well as some misperceptions. The industry faces a challenge: how to find more efficient ways to build new ships as well as to repair and

upgrade aging ships. One leading resource, General Dynamics Electric Boat, has implemented a solution that, in addition to expediting project tasks, also demonstrates the dynamic side of this industry. Electric Boat is a premier designer and builder of nuclear sub-

marines, and also provides a full range of repair, overhaul and lifecycle support activities. A recent project demonstrates the company's adherence to maintaining excellence.

Electric Boat turned to Climax Portable Machine Tools (Newberg,



Ore.) to expedite one of its more important responsibilities: performing maintenance on submarine missile tubes for the U.S. Navy. **Bob Johnson**, Senior Test Operating Engineer for Electric Boat, initiates these maintenance projects. He manages the test measurement program which determines exactly where a piece of equipment must be installed to tackle a job, or what modifications must be made to ensure the tool will fit. Johnson describes the challenges found in the maintenance tasks on the missile tubes.

"Setting up our old boring system took several man-days before we could start the actual work," he said. "We had to weld in blocks to hold the machine, and continually chalk it to offset drifting during the bolt-down process. We also had to test to make sure no damage was caused to the surrounding material by welding in and later cutting out those blocks. Later, we needed to repaint the entire work area."

All these steps were not only time-consuming, but required the involvement of numerous personnel, from machinists and riggers to specialists able to safely handle lead-based paints.

"Completing work on just one missile tube could take 10 full days with three shifts working eight hours," said Johnson. "Considering that the average boat has 24 tubes to maintain, the time and expense involved was incredible."

After hearing favorable reports from colleagues, Johnson contacted the team at Climax.

"Climax came up with a design for a custom machine based on its standard boring bar system, and instructions on how it would operate. Down in the tube, I went through the motions of what we would do and how it would work. The time savings were quickly apparent."

The missile tubes are re-bored as part of the year-long maintenance routine every submarine undergoes every 10 to 20 years. Sea pressure from frequent diving causes the tubes to get out of round. The tube Electric Boat worked on for its test case, however, was extremely "ovalized" as Johnson put it.

"It was a challenge to set up," Johnson said. "We basically learned in a worst

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case scenario situation, but our new machining system managed it beautifully."

Johnson reported his findings and recommendation to Electric Boat's home office, and received approval for eventual purchase of six Missile Tube 5656 Boring machines which, thanks to on-site training and support from Climax proved successful from the start.

The new tool eliminates the need for set-up welding, cutting out blocks, damage testing, and repainting. There's also no need for constant chalking to keep the machine in position. "The Climax machine is already set up," said Johnson. "You just snug it into place, and

boring can begin." Electric Boat has seen a savings in time and manpower, as the new system is more than six times faster. Set-up takes just four hours, compared to 18 hours with the old system. And instead of 10 three-shift days, maintenance on a missile tube now takes a single shift just four to five days.

Three boring systems are in use in the Puget Sound Naval shipyard to maintain both SSGN and SSBN submarines. Three other machines are available at the Norfolk naval yard pending the completion of training sessions Johnson is currently conducting. In addition, the Puget Sound location is considering purchasing a

second model for the lower part of the missile tubes.

Johnson cites cost savings, ease of operation and simplicity of design as benefits that any type of ship-building or repair operation could look forward to by putting a similar machine to work.

"This type of tool would be effective in any type of work involving water tight boundaries, such as a door, a hatch area, or valve seats," Johnson said. "A Climax machine would work great in maintaining any area that takes a great amount of sea pressure, on any type of submarine or ship."

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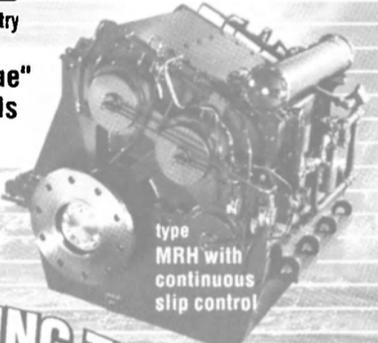


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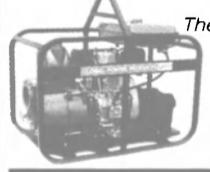
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Circle 337 on Reader Service Card

## People & Company News

### Leukhardt Named Northrop Grumman CFO

Northrop Grumman Corporation appointed **Linda M. Leukhardt** as CFO and vice president of business manage-



ment for the company's Electronic Systems sector. Leukhardt, 46, who most recently served as CFO and vice president of business management for the company's Newport

News sector in Va., will be responsible for directing the Baltimore-based Electronic Systems sector's business strategy and processes.

### Oceaneering Acquires ROVs From Fugro

Oceaneering International, Inc. acquired from Fugro (USA), Inc. 10 work class ROVs and related assets in North America. Seven of the 10 vehicles are under contract - four in Mexico, two in Canada, and one in the U.S. Gulf of Mexico. The purchase price was \$16.5 million.

### Titan Awarded NAVSEA Contract

Titan Corp. won an indefinite delivery/indefinite quantity (ID/IQ) Multiple Award Contract for engineering and technical services to the U.S. Navy's NAVSEA Shipbuilding Office (NAV-SHIPSO). As a multiple award five-year contract (one base year and four one-year options) having a potential ceiling value for Titan in excess of \$1.05 billion, Titan will compete against seven other companies for task orders to provide NAVSHIPSO habitability, propulsion, electrical, auxiliary and electronics systems engineering and technical services for ships, as well as shore stations.

### APC Opens New Facility in Brazil

On September 30, 2004, Alstom Power Conversion (APC) opened its new Marine and Offshore Service in Macae, RJ, it was announced at Rio Oil & Gas 2004. APC has a large installed base in the Brazilian offshore market, including systems for Tidewater, Noble, Transocean, Frontier Drilling, Petrobras and CBO. The Marine & Offshore Service facility will provide a dedicated local response from fully trained Alstom engineers for support of APC's Marine and Offshore products and systems including Dynamic Positioning,

Automation, Drives and Power Systems. The new office can be reached at tel: +55 22 2762 3944 or marine.services@powerconv.alstom.com.

### MEP Achieves Milestones

Marine Environmental Partners, Inc. (MEP), a U.S.-based developer of ballast and wastewater process systems, was recently awarded ISO 9001:2000 certification by Det Norske Veritas (DNV) Certification, Inc. In unrelated efforts, the company also has the first application accepted to the United States Coast Guard (USCG) STEP Program for ballast water treatment study, and has received a National Oceanic and Atmospheric Administration (NOAA) 2004 Sea Grant Award in partnership with Nova Southeastern University for the development of protocols for the testing of ballast water systems. "The achievement of ISO 9001:2000 Quality Management System Certification recognizes our manufacturing and administration processes as efficient and effective in producing a superior product for customers," noted MEP CEO and President **Charles P. Gallopo**.

Circle 17 on Reader Service Card

### Radio Holland Group Buys Majority of S+L Marine

Radio Holland Group announced that it increased its share in the company S+L Marine, with branches in Hamburg and Rostock. This means Radio Holland Group is now major shareholder (80 percent) in the company. To make clear that the company is truly a part of the Radio Holland Group, it was decided to change the name into Radio Holland Germany. **Henk Aardse**, former manager of Radio Holland Delfzijl (Netherlands), has been appointed as General Manager and **Michael Slachcinski** as Deputy General Manager of Radio Holland Germany.

Circle 18 on Reader Service Card

### LR Wins Navy Contract

Lloyd's Register Asia has signed a contract to provide classification services for the design study phase of the Royal Australian Navy's air warfare destroyer (AWD) project. This project will deliver a new class of at least three ships capable of air defense, with entry into service expected to take place in 2013. The ships will provide a significant enhancement to the Royal Australia Navy's air defense capability and will include the AEGIS combat system with helicopter, gun and vertically launched missile weapon systems.

Circle 17 on Reader Service Card

### Bludworth Marine Opens Two New Repair Centers

Texas Pump and Repair, a new Bludworth Marine division, specializes in the repair and sales of all types of pumps and rotating machinery such as deep well vertical pumps, centrifugal pumps, gear pumps and winches in ship, tug and barge applications, process plants, municipalities and commercial/industrial sites. **Brian Wilson** and **Kevin Maher** have more than 30 years in pump and rotating pump and rotating equipment repair and sales. Bludworth Marine — Galveston Topside Repair opened a permanent waterfront repair and fabrication facility at 6800 Harborside Drive in Galveston, Texas. The new shipyard can accommodate up to four inland barges or numerous inland tugs. The new facility has more than four acres of stabilized surface to accommodate large fabrication and load out projects. **Larry Burrows** and **Linwood Boudreaux** will oversee fabrication and repair jobs at the Galveston facility.

Circle 16 on Reader Service Card

### Navy Ships Receive Power Upgrades

FDGM, Inc. has completed refurbishment and upgrades to diesel engines on the U.S. Navy's USS Warrior MCM-10 and USS Gladiator MCM-11. Work was performed in the Ingleside, TX, area by FDGM's Gulf Coast Operation.

"I am thrilled with the results of this overhaul. All work was complete ahead of schedule and all seven of the engines are now fully operational, and gives the ship an incredible head start to the upcoming training cycle. With FDGM's support, I can concentrate on operations and training instead of maintenance problems," said Lieutenant Commander **Doug Stuffle**, Commanding Officer, USS GLADIATOR (MCM 11).

Circle 28 on Reader Service Card

### Rickmers Relocates

Rickmers-Linie has relocated its U.S. office to Houston, Texas. Contact details are: Rickmers-Linie (USA), 350 Glenborough Dr., Suite 180, Houston, Texas 77067; Tel: (281) 453-7500; Fax: (281) 453-7501; E-mail: houston@rickmers.net

### DOD Exercises Option

Iridium Satellite LLC, provider of secure global satellite voice and data communications, said that the U.S. Department of Defense (DoD) has exercised an option on its airtime contract. The Defense Information Systems Agency (DISA) manages the contract under the Enhanced Mobile Satellite Services (EMSS) Service Manager's Office.

Circle 36 on Reader Service Card

### World Wide Metric Opens in Ft. Lauderdale

World Wide Metric has opened a new office in Ft. Lauderdale, Fla. This is the fourth distribution center in the U.S. This office will be a sales and full stock-

ing location serving the South Eastern region of the U.S., Caribbean and South American market. Contact details are: World Wide Metric, 3406 S.W. 26 Terrace Ste. C-6, Ft. Lauderdale, FL 33312, Tel: 954-321-0784, Fax: 954-321-2591, E-mail: FL@worldwidemetric.com

### Type Approval Granted For Compass System

Northrop Grumman Corporation received type approval from the German certification authority Bundesamt für Seeschifffahrt & Hydrographie (BSH) for the Sperry Marine NAVISTAR satellite compass system. The system is designed to provide a stable heading reference input for radars, autopilots, chart plotters, scanning sonars, automatic identification systems, voyage data recorders, steerable antenna arrays and other devices.

The computer continually compares the GPS heading against the magnetic heading sensor. If the GPS data is lost or degraded, the system switches to the magnetic heading from the integral magnetic field sensor to ensure uninterrupted navigation.

Circle 38 on Reader Service Card

### Obituary: Robert Allen Steeber

Robert Allen Steeber, 74, former President of Portable Light Co., died suddenly at his home in Friendswood, Texas. For close to 50 years, Mr. Steeber held executive and consulting positions in the maritime industry. After graduating from Colgate University in 1950, followed by graduate work at the Wharton School of Business, he joined the USMC to become an aviation officer.

### Sonsub Appoints Coates

**Aimee Coates** has joined the Sonsub Regional Sales Team in Houston, TX.

Maritime Reporter & Engineering News

# Kramek, Liu Snare Top SNAME Honors

The Society of Naval Architects and Marine Engineers (SNAME) awarded its Admiral "Jerry" Land Medal for outstanding accomplishment in the marine field to ABS President and COO **Robert Kramek** at the society's Annual Banquet during the SNAME Marine Technology Conference and Expo in Washington, D.C. Kramek, a naval architect and marine engineer, provides leadership to over 1,700 ABS employees working from more than 150 offices in 60 countries. Prior to joining ABS in 1998, he served as the Commandant of the United States Coast Guard from which he retired as a Four Star Admiral. "This honor recognizes Admiral Kramek's accomplishments and is evidence of his stature in the Society," says **Philip B. Kimball**, SNAME Executive Director who notes that award recipients are chosen by their peers.

Kramek, an honors graduate from the United States Coast Guard (USCG) Academy with a B.S. in engineering, attended postgraduate schools at the University of Michigan, Johns Hopkins University and the University of Alaska. He also earned Master of Science Degrees in Naval Architecture and Marine Engineering, Mechanical Engineering and Engineering Management. Kramek also attended the U.S. Naval War College, graduating with highest distinction. He received an Honorary Doctorate in Public Administration from the Massachusetts Maritime Academy.

The SNAME Land Medal represents Kramek's life-long dedication to the marine industry. During his career he has been named recipient of the Reserve Officers Association Minuteman Hall of Fame Award, NAACP Meritorious Service Award, Seamen's Church Institute Distinguished Service Award, U.S. Navy League Distinguished

Service Award, Society of the Naval Order Sea Service Award and was recently inducted into the United Nations Maritime Hall of Fame. His military awards include: Distinguished Service Medals from the United States Department of Defense, Transportation and Coast Guard. Kramek is a Fellow of the Society of Naval Architects and Marine Engineers (SNAME), member of the American Society of Naval Engineers (ASNE), member of the U.S. Navy League, and a life member of the Reserve Officers Association. He serves on the advisory board for several higher education institutions, including the Webb Institute Board of Trustees and the University of Michigan School of Engineering Board of Advisors.

## Liu Awarded David W. Taylor Medal

The Society of Naval Architects and Marine Engineers (SNAME) awarded their highest honor, the **David W. Taylor Medal** for notable achievement in naval architecture or marine engineering, to recently retired ABS Executive Vice President and Chief Technology Officer **Dr. Donald Liu** at the society's Annual Banquet during the SNAME Marine Technology Conference and Expo in Washington, D.C.

Liu, a 37-year veteran of ABS and the "Father of ABS SafeHull", believes "technology is the servant of safety." Liu, and the technology team at ABS, first developed the Dynamic Loading Approach (DLA) to assess the structural strength of vessels, and then extended that pioneering approach with the development of the



Donald Liu



Robert Kramek

innovative SafeHull system.

"Liu has played a key role in building the technological foundation for the modern ABS Rules," said SNAME President **Bruce S. Rosenblatt**. "Ship classification is based on fundamental analysis of the loads and structural response to those loads. In an era of rapid change in ship size and structural arrangements the fundamental work and research and development that has taken place under Dr. Liu's decades of technology leadership at ABS has contributed significantly to safety in the shipping industry." Dr. Liu graduated from the U.S. Merchant Marine Academy at Kings Point and began his career by sailing as a deck officer. With

the support of SNAME scholarships he earned BS and MS degrees in Naval Architecture and Marine Engineering from the Massachusetts Institute of Technology (MIT).

Upon graduation, Liu joined ABS as

a Surveyor. In the early 1970s he was selected to represent ABS at the University of Arizona to work on a joint ABS, Chevron Shipping and University of Arizona research project to develop computer software to analyze very large tanker structures. During this time, Liu earned a PhD in Mechanical Engineering from the University of Arizona focusing his research on Finite Element (FE) Analysis of ship structures. Dr. Liu has authored or co-authored more than 35 papers, reports and book chapters dealing with FE analysis, structural dynamics, ultimate strength, hull loading, structural stability, structural optimization and probabilistic aspects of ship loading and strength. He has been an active participant in key national and international organizations concerned with ship structures research, development and design. Liu served as the ABS representative on the interagency Ship Structures Committee, a member of the Standing Committees of the International Ship and Offshore Structures congress (ISSC) and conference member on Practical Design of Ships and Mobile Units (PRADS).

## Mark Your Calendar

The SNAME Annual Meeting & International Maritime Exhibition is set for October 20-21 in Houston, Texas. Watch these pages, or visit [www.sname.org](http://www.sname.org) for program details. To book a booth in the expanded exhibition hall, contact Rob Howard at tel: 561-732-4368 or e-mail: [howard@marinelink.com](mailto:howard@marinelink.com)

## San Francisco, California - Nov. 22<sup>nd</sup>

The 650 ft DRYDOCK # 1 broke loose from its berth at pier 70 due to 70 mph winds. The drydock drifted across San Francisco Bay to Yerba Island, where it went hard aground.

### Response & Results:

Titan was awarded the contract and immediately sent a Salvage Master, Salvage Engineer and a six man dive team to the scene. Titan began patching and dewatering tanks. Refloating was accomplished in 15 days and the vessel was towed back to the Port of San Francisco at Pier 95.

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# MARITIME REPORTER AND ENGINEERING NEWS

# MARITIME OPPORTUNITIES

## 2005 - MARITIME REPORTER EDITORIAL CALENDAR

January Ad Closing: December 10

**Feature** Passenger Vessel Yearbook - The passenger vessel market is poised for rapid expansion, and MR delivers details on trends in size, speed, and outfitting.  
**Technical** Fast Ferries - Speed is nothing without performance. Focus on products and technological solutions designed to ensure vessels are fast, efficient, and safe.  
**Product** Marine Electronics - Maritime Security Products, including SSAS, AIS and SatCom Equipment.  
**Directory** Marine Propulsion Directory - Diesel Engines, Gas Turbines, Gears, Propellers, Waterjets, Shafts, Podded Propulsion, Rudders and Turbochargers.  
**Country Focus** Australia

**BONUS DISTRIBUTION**  
**PVA Ferry Conference at MarITrends 2005**  
 January 29-February 1 • Tampa, FL  
**ShipTech 2005**  
 March 1-2 • Biloxi, MS  
**Seatec 2005**  
 February 3-5 • Italy

Maritime Security

May Ad Closing: April 8

**Feature** Marine Environment Edition - Emergency Response & Recovery: All significant hot topics and the engineered solutions.  
**Technical** Maritime Safety Products - Review of Marine Fuels, Lubricants and related products for the marine industry.  
**Product** Marine Propulsion: Spares and components designed to keep propulsion systems running.  
**Directory** Marine Propulsion: Spares and components designed to keep propulsion systems running.  
**Country Focus** Norway

February Ad Closing: January 7

**Feature** Tanker Technology - Technologies to advance the transportation and handling of LNG, LPG and CNG continue to evolve. MR profiles the companies leading the way.  
**Market** Training & Education - Review of investment in training & education facilities around the world.  
**Technical** Marine Electronics - Evolution of the Modern Ship's Bridge.  
**Product** Coatings & Corrosion Control Products - Products and systems designed to ensure long life for a vessel's coatings.  
**Directory** Maritime Security Systems & Solutions  
**Country Focus** Italy

**BONUS DISTRIBUTION**  
**Underwater Intervention 2005**  
 February 14-16 • New Orleans, LA

June Ad Closing: May 13

**Annual World Yachting**  
 World's Largest & Most Informative Yachting Directory  
 International Shipyard Directory • Insightful Tanker, Bulk Carrier & Workboat Market Reports • The World Orderbook  
 Offshore Production Analysis & Statistics • RIB Report  
**Market** RIB Report - Preview of the boats and equipment.  
**Directory** Training & Education - A-to-Z of education facilities.  
**Country Focus** United Kingdom

March Ad Closing: February 7

**Feature** The Cruise Shipping Edition - The cruise rebound continues, and MR offers an insider's view of the technical issues and customer demands that will define the World Cruise Fleet for a generation.  
**Technical** U.S. Navy Report  
**Product** Sea Technology - New products designed to help investigate the vast area beneath the seas has significant security, commercial and scientific ramifications.  
**Directory** Satellite Communications - Directory of SatCom Service and Product Suppliers.  
**Country Focus** Spain

**BONUS DISTRIBUTION**  
**Seatrade Cruise Shipping Convention**  
 March 14-17 • Miami Beach, FL  
**CMA - Shipping 2005**  
 March 21-23 • Stamford, CT  
**Sea-Air-Space Exposition 2005**  
 March 22-24 • Washington, DC  
**Corrosion 2005**  
 April 3-7 • Houston, TX

Maritime Security

July Ad Closing: June 10

**Feature** The Satellite Communications Edition - Satellite communications are essential to efficient maritime operations.  
**Technical** Maritime Security: Cameras at Sea  
**Market** U.S. Navy Report  
**Product** CAD/CAM - Latest products from the industry.  
**Directory** 2004 Diesel Engine Buyer's Guide

April Ad Closing: March 11

**Feature** The Offshore Industry Annual - A look inside Offshore Rig and Offshore Supply Vessel tech that continues to drive the efficient discovery and recovery of resources.  
**Technical** Clean Marine Fuels - As new international emission mandates enter force, MR examines the solutions offered by major suppliers of fuel and fuel cleaning products.  
**Market** The Interior Design Guide - MR taps top cruise and ferry designers for insights on innovative products and materials.  
**Product** Maritime Security: Port and Ship Systems  
**Directory** Marine Electronics Buyer's Guide - A-to-Z Guidebook of suppliers.  
**Country Focus** Canada

**BONUS DISTRIBUTION**  
**Offshore Technology Conference (OTC) 2005**  
 May 2-5 • Houston, TX  
**Cruise + Ferry 2005**  
 May 3-5 • London, UK  
**Ports 2005 - 4th International Conference on Maritime Engineering and Ports**  
 Apr 20-22 • Barcelona, Spain  
**SeaCargo Americas International Congress and Exhibition**  
 May 11-12 • Miami, FL  
**ASNE Day 2005**  
 April 26-27 • Virginia Beach, VA

August Ad Closing: July 8

**Feature** AWO Edition: Inland & Offshore - Focus on the inland and offshore boat market as it is shaped by new U.S. Maritime Report - Focus on companies, domestic and abroad.  
**Market** Maritime Communications - A review of communication systems to keep the industry connected.  
**Product** Deck Machinery & Cargo Handling  
**Directory** Repair & Conversion Facilities  
**Country Focus** Finland

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## September Ad Closing: August 12

Water Exchange, Oil Spill  
operations. MR examines  
for compliance.  
technology.  
product feature focused on new  
A-Z directory of products  
work efficiency.

**BONUS DISTRIBUTION**  
**Nor-Shipping 2005**  
June 7-10 • Oslo, Norway  
**Seawork 2005**  
June 14-16 • Southampton, UK  
**Oceanology International Americas**  
June 1-3 • New Orleans, LA

**Maritime Security**

Feature  
Technical  
Product  
Directory  
Country Focus

**Marine Propulsion Annual** - Focus on companies that deliver increasingly sophisticated yet robust marine propulsion packages.  
**Offshore Production System Tech** - Technology that makes offshore production more efficient, including: FPSOs, FSOs, Shuttle Tankers, AHTS, OSVs and Dynamic Positioning Systems.  
**Software Solutions** - Products to seamlessly link vessels and shoreside ops.  
**Annual Internet Resources Guidebook**  
**The Baltic Region**

**BONUS DISTRIBUTION**  
**US Maritime Security Expo**  
September 20-21 • New York, NY  
**Neva 2005 - 8th International Ship-  
ping, Shipbuilding and Offshore  
Energy Exhibition**  
September 26-29 • St. Petersburg,  
Russia  
**Offshore Europe 2005**  
September 6-9 • Aberdeen, Scotland  
UK

**Maritime Security**

## October Ad Closing: September 9

**Workbook**  
**Industry Annual**  
Cruise Ship,  
Market Statistics •  
Port  
The Multi-Agency Combat Craft  
The leading maritime training &

**BONUS DISTRIBUTION**  
**MACC (Multi-Agency Combat Craft)**  
June • Norfolk, VA

Feature  
Market  
Technical  
Product  
Directory  
Country Focus

**The Marine Design Annual** - In cooperation withSNAME, MR examines vessel design issues and trends that will define the industry for a generation.  
**Megayachts** - A look inside the design, construction and operation of some of the most outstanding megayachts afloat.  
**Marine Salvage** - Marine Salvage companies push the technology envelope with a refinement of systems and techniques to discover and recover sunken objects.  
**Maritime Security Products Annual**  
**CAD/CAM Suppliers** - A-to-Z guide of CAD/CAM suppliers.  
**Germany**

**BONUS DISTRIBUTION**  
**SNAME Annual Meeting and  
International Maritime Exposition**  
October 20-21 • Houston, TX  
**Europort 2005**  
November 15-19 • Amsterdam,  
Netherlands  
**2005 National Maritime Salvage  
Conference**  
November 1-3 • New Orleans, LA  
**IBEX 2005 - International  
Boatbuilders Exhibition**  
October 19-21 • Miami, FL  
**Cruise, Ferry and River Cruise  
Convention**  
November 1-2 • Hamburg, Germany

## November Ad Closing: October 14

able, cost-effective maritime  
services

**BONUS DISTRIBUTION**  
**Americas' Security Expo**  
July 19-21 • Miami, FL

**Maritime Security**

Feature  
Technical  
Product  
Directory  
Country Focus

**The Workboat Annual Edition** - Profiles of the Outstanding Boats of 2005, as well as insights to the issues and technologies that will debut on boats in 2006.  
**RIBS & Patrol Boats** - Small boat makers continue to make big waves with cutting edge technology & development.  
**Insulation, Pipes, Pumps & Valves**  
**Marine Materials: The Official A-to-Z Guidebook**  
**China**

**BONUS DISTRIBUTION**  
**The International WorkBoat Show**  
December 1-3 • New Orleans, LA  
**Marintec China**  
December 6-9 • Shanghai, China

**Maritime Security**

## December Ad Closing: November 11

Examination of the Work  
related concerns.  
for U.S.-based marine

**BONUS DISTRIBUTION**  
**Offshore Communications 2005**  
September 14-16 • Galveston, TX

rely on fast and cost effective  
touch and efficient.  
it

Feature  
Technical  
Market  
Product  
Directory  
Country Focus

**Great Ships of 2005** - Details on the most outstanding ships delivered in 2005.  
**Maritime Security: Monitoring & Detection Equipment** -The marine environment poses some unique impediments to security. These products and systems help level the playing field.  
**U.S. Navy Report**  
**Shipboard Monitors & Displays**  
**2006 Training & Education Facility Guidebook**  
**Japan & Korea**

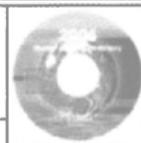
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**The International WorkBoat Show**  
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December 6-9 • Shanghai, China

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Bailey Refrigeration, 4986-1 Euclid Road, Virginia Beach, VA 23462  
Cospolich Refrigeration, 14695 Highway 61, Norco, LA 70079  
Stork Bronsweik Inc., 3755 C Boul. Matte, Brossard, Quebec J4Y 2P4, Canada

**AIRHORNS/SIGNALING EQUIPMENT**  
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

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Selco USA Inc., 2508 Lakebrook Ct, Atlanta, GA 30360-1715

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Sea Ark Marine, P.O. Box 210, Monticello, AR 71655-0210  
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Mackay Communications, 2721 Discovery Dr., Raleigh, NC 27616-1851

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

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Craft Bearing, 5000 Chestnut Ave., Newport News, VA 23605  
Duramax Marine LLC, 17990 Great Lakes Parkway, Hiram, OH 44234, 440-834-5400, 440-834-4950, Contact: Richard Spangler  
Thordon Bearings Inc., 3225 Mainway, Burlington, Ontario L7M 1A6, Canada

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Coffin World Water Systems, 326 S. Dean Street, Englewood, NJ 07631

**BOATBUILDER**  
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ROSBOROUGH BOATS, 37 Crane Lake Dr., HALIFAX, NS B3S 1B5, Canada  
Sea Ark Marine, P.O. Box 210, Monticello, AR 71655-0210  
Washburn Doughty, P.O. Box 296, E. Boothbay ME 04544  
Willard Marine Inc., 1250 N. Grove St., Anaheim, CA 92806

**BOLLARDS**  
Maritime International, Inc., 204 Ida Rd., Broussard, LA 70518

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

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

**CAD/CAM SYSTEMS**  
Albacore Research, 4196 Kashtan Place, Victoria, BC V8X 4L7, Canada  
Albacore Research LTD., 304-3960 Quadra St., Victoria, B.C. V8X 4A3, Canada, 250 479-3638, 250 479-0868, [Marketing@ShipConstructor.com](mailto:Marketing@ShipConstructor.com), Contact: Silke Sommerfeld, [www.ShipConstructor.com](http://www.ShipConstructor.com)  
Autoship Systems Corp., 611 Alexander Street, Suite 312, Vancouver, BC V6A 1E1, Canada, 604-254-4171, 604-254-5171, [sales@autoship.com](mailto:sales@autoship.com)  
Cadmatic, Ostra Strandgatan 72 (Vita Huset), FI-20810 Turku, Finland  
Creative Systems Inc., P.O. Box 1910, Port Townsend, WA 98368

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

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

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

**CAST IRON REPAIR**  
In-Place Machining, 3811 N. Holton St., Milwaukee, WI 53212

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

**CLASSIFICATION SOCIETY**  
American Bureau of Shipping, 16855 N. Chase Drive, Houston, TX 77060

Lloyds Register Americas, Inc., 1401 Enclave Pkwy., Ste. 200, Houston, TX 77077

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

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

**COATINGS/ CORROSION CONTROL/ PAINT**  
Chugoku Marine Paints, P.O. Box 73, 4793, Netherlands  
Ferro Corp., 1301 North Flora St., Plymouth, IN 46563  
Flow International Corp., 23500 64th Ave., South Kent, WA 98059  
Hempel Coatings, 10-3511 Viking Way, Richmond, BC V6V 1W1, Canada  
Mr. Longarm, Inc., P.O. BOX 377, Greenwood, MO 64034-0377  
Sherwin Williams, 101 Prospect Ave., Cleveland, OH 44115  
Sigma USA, P.O. Box 816, Harvey, LA 70059  
Visions East, Inc., 1600 West State Rd. 84, Suite 5, Ft. Lauderdale, FL 33315

**COMMUNICATIONS**  
Inmarsat Ltd, 99 City Rd, London EUY 1AX, UK  
Japan Radio, 1011 SW Klickitat Way, Bldg B Suite 100, Seattle, WA 98134  
L-3 Communications, 6000 Fruitville Road, Sarasota, FL 34232  
Mackay Communications, 2721 Discovery Dr., Raleigh, NC 27616-1851

**Seawave, 76 Hammarlund Way, Middletown, RI 02842**  
World-Link Communications, 74 Main St., Framingham, MA 01701

**COMPOSITE SHAFTS**  
American Vulkan, 2525 Dundee Rd, Winter Haven, FL 33884

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

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

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

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

**CONTROL SYSTEM-MONITORING/STEERING**  
Alma Impex, Inc., 4000 Brodertown Ave., Suite 15, Sayreville, NJ 08872  
Electronic Manne Systems, 800 Ferndale Pl., Rahway, NJ 07065  
Electrowave U.S.A., 6125 W. Sam Houston Pkwy., Ste 406, Houston, TX 77041  
G.R. Bowler, 2261 Lake Rd., Ontario, NY 14519  
Industrial Power Systems, 3010 Powers Avenue Unit 16, Jacksonville, FL 32207, 904 731-8844, 904 731-0188, [marine@ipsjax.com](mailto:marine@ipsjax.com), Contact: Glenn Beaupre, [www.ipswitchgear.com](http://www.ipswitchgear.com)  
Kobelt Manufacturing Co., Ltd., 8238-129 Street, Surrey, BC V3W0A6, Canada  
MMC International, 60 Inip Dr., Inwood, NY 11096  
Prime Mover Controls, 3600 Gilmore Way, Burnaby, BC V5G 4R8, Canada  
Seastate Pty. Ltd., 2 Egmont Road, Henderson WA 6166, Australia

**CORROSION CONTROL**  
Apex Engineering Products, 1241 Shoreline Dr., Aurora, IL 60504  
Furuno USA Inc., 4400 NW Pacific Rim Blvd, Camas, WA 98607  
Gardner Denver Water Jetting Systems, 12300 N. Houston Rosslyn Road, Houston, TX 77086  
Ultra Strip, 3515 SE Lionel Terrace, Stuart, FL 34996

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

**COUPLINGS**  
American Vulkan, 2525 Dundee Rd, Winter Haven, FL 33884  
Centra Corp., 815 Black Hawk Drive, Westmont, IL 60559  
Mapeco Products, 91 Willenbrock Rd., Unit B, Oxford, CT 06478  
MMC International, 60 Inip Dr., Inwood, NY 11096

**CRANE - HOIST - DERRICK - WHIRLEYS**  
Bisso Manne Co., P.O. Box 4113, New Orleans, LA 70178  
DMW Manne, LLC, 1123 Street Matthews Road, Chester Springs, PA 19425  
E. Crane, 241 Executive Dr., #3, Manon, OH 43302

**CRANKSHAFT REPAIR**  
In-Place Machining, 3811 N. Holton St., Milwaukee, WI 53212  
Waltz & Krezner, 91 Willenbrock Rd., Oxford, CT 06478

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

**DECK MACHINERY- CARGO HANDLING EQUIPMENT**  
Burrard Iron Works Ltd., 220 Alexander Street, Vancouver, BC V6A 1C1, Canada, 604-684-2491, 604-684-0458, [sales@burrardironworks.com](mailto:sales@burrardironworks.com)  
Coastal Marine Equipment, Bldg 9114 MISAAP Ind. Complex, Stennis Space Center, MS 39529  
Coastal Marine Equipment Inc., BLDG. 9114 MISAAP Industrial Complex, Stennis Space CTR., MS 39529, 228-813-1700, 228-813-1709, [sales@coastalmarineequipment.com](mailto:sales@coastalmarineequipment.com), Contact: Ralph Waguespack, [www.coastalmarineequipment.com](http://www.coastalmarineequipment.com)  
DMW Manne, LLC, 1123 Street Matthews Road, Chester Springs, PA 19425  
Hyde Manne Inc, 28045 Ranney Parkway G, Cleveland, OH 44145-1144  
Intercontinental Engineering, PO Box 9055, Kansas City, MO 64168  
Markey Machinery, P.O. Box 24788, Seattle, WA 98124

McElroy/Catchot Winch Company, Inc., P.O. Box 4632, Biloxi, MS 39535-4632, 228-875-6327, 228-872-7880, [hcatchot@bellsouth.net](mailto:hcatchot@bellsouth.net), Contact: Harold Catchot, [www.mcelroycatchotwinch.com](http://www.mcelroycatchotwinch.com)  
Norwegian Maritime Equipment AS, BOX 244, NO-5480 HUSNES, Norway  
Rapp Hydema, 4433 27th Ave. West, Seattle, WA 98199  
Skookum, P.O. Box 280, Hubbard, OR 97032  
Smith Berger Manne, 7915 10th Ave. S., Seattle, WA 98108  
Superior Lidgerwood Mundy, 1101 John Ave., Superior, WI 54880

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

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

**DETECTOR DOG TEAMS**  
American Detection Technologies, Inc., 415 Main St. (3rd flr), Worcester, MA 01608

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

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

**DIESEL ENGINE- SPARE PARTS & REPAIR**  
Alma Impex, Inc., 4000 Brodertown Ave., Suite 15, Sayreville, NJ 08872

Caterpillar, Inc., P.O. Box 610, Mossville, IL 61552-0610  
Chris Manne AB, Box 9025, 200 39 Malmo, Sweden  
Cummins Manne, 4500 Leeds Ave., Ste 301, Charleston, SC 29405  
GUASCOR INC, 7220 NW 36TH ST #310, MIAMI, FL 33166  
Man B&W Diesel, 17 State St., NY, NY 10004  
Man B&W Diesel A/S, Telgholmsgade 41, Copenhagen SV DK-2450, Denmark  
Man B&W Diesel AG, Stadtbachstrasse 1, Augsburg D-86153, Germany  
Marine Exhaust Systems of Alabama, P.O. Box 698, 757 Nichols Ave., Fairhope, AL 36533  
Manne Turbo & Diesel Inc., 1090 7th St., Richmond, CA 94801  
Manso USA, Inc., 100 Davidson Ave., Somerset, NJ 08873  
Motor-Services AB, Box 2115, Ronninge S-144 04, Sweden  
Motor-Services Hugo Stamp, 3101 S.W. 3rd Ave., Ft. Lauderdale, FL 33315  
Scardana Amencas Bkg., 502 Empire St., Greenfield Park J4V 1V7, Canada  
Wartsila Diesel, 201 Defense Hwy, Annapolis, MD 21401  
Wartsila North America, Inc., 16330 Air Center Boulevard, Houston, TX 77032

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

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

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

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

**DOORS- MARINE & INDUSTRIAL**  
Joiner Systems, 1925 52nd Avenue, Lacine, Quebec H8T 3C3, Canada  
Juniper International, 72-15 Metropolitan Ave., Middle Village, NY 11379  
Manly Manne, P.O. Box 86788, N. Vancouver, BC V7L 4L3, Canada  
Mapeco Products, 91 Willenbrock Rd., Unit B, Oxford, CT 06478  
Nabrico Marine Products, 1050 Trinity Road, Ashland City, TN 37016  
Pacific Coast Manne, 4314 Russell Road, Mukiteo, WA 98275  
USA Sliding Doors, Inc., 801 Hosmer Road, Churchville, NY 14428, 585-538-4160, 585-538-2806, [info@usaslidingdoors.com](mailto:info@usaslidingdoors.com), Contact: Mr. Robert Weiland, [www.usaslidingdoors.com](http://www.usaslidingdoors.com)  
Waltz & Krezner, 91 Willenbrock Rd., Oxford, CT 06478

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

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

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

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

**EDUCATION**  
Massachusetts Maritime Academy, 101 Academy Drive, Buzzards Bay, MA 02532

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

**ELECTRICAL EQUIPMENT**  
MMC International, 60 Inip Dr., Inwood, NY 11096

**ELECTRONIC CHARTS**  
C-Map Commercial, 133 Falmouth Rd, Mashpee, MA 02649

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

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

**ENGINES**  
DEUTZ Corporation, 3883 Steve Reynolds Blvd, Norcross, GA 30093  
Dynamold, Inc., 2905 Shamrock Ave., Fort Worth, TX 76107  
FDGM, Inc., 800 Principal Court, Suite C, Chesapeake, VA 23320  
Giro Engineering Limited, Talisman, Duncan Road, Park Gate, Southampton, Hants SO31 7GA, UK

**ENVIRONMENTAL SOLUTIONS**  
Hyde Marine, 28045 Ranney Parkway G, Cleveland, OH 44145-1144

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

**EXHAUST**  
American Vulkan, 2525 Dundee Rd, Winter Haven, FL 33884  
Applegate Industrial Materials, P.O. BOX 428, Baton Rouge, LA 70821-0428  
Manne Exhaust Systems of Alabama, P.O. Box 698, 757 Nichols Ave., Fairhope, AL 36533

**EXPANSION JOINTS**  
Applegate Industrial Materials, P.O. BOX 428, Baton Rouge, LA 70821-0428  
Silex Inc., 6659 Ordan Dr., Mississauga, ON L5T 1K6, Canada

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

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

**FENDERING SYSTEMS/ BUOYS - DOCK & VESSEL**  
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.com](mailto:jerry.thermos@mpowercom.com), Contact: Jerry Thermos

Maritime International, Inc., 204 Ida Rd., Broussard, LA 70518  
Schuyler Rubber Co., 16901 Woodred Rd., Woodinville, WA 98072  
Trelleborg Engineered Products, P.O. Box 98, Clearbrook, VA 22624

Urethane Products, 9076 Rosecrans Ave, Bellflower, CA 90706  
Viking Fender Co., 1160 State St., Perth Amboy, NJ 08861

**FILTERS/FILTER SYSTEMS**  
Alfa Laval Tumba AB, 147 80, TUMBA, Sweden  
Algae X International, P.O. Box 4011, Fort Myers Beach, FL 33932  
Boll Filter, 9822 General Drive, Ste. 180, Plymouth, MI 48170  
Hellan Strainer, 3249 East 80th St., Cleveland, OH 44104  
US Filter, 2 Milltown Ct., Union, NJ 07083

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

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

**FLOW CONTROLS**  
EIM Controls, 13840 Pike Road, Missouri City, TX 77489

**FUEL INJECTORS**  
Interstate Diesel, 4901 Lakeside Avenue, Cleveland, OH 44114-3996

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

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

**GANGING & SAMPLING**  
Hermatic Inc., 4522 Center St., Deepark, TX 77536

**GANGWAYS**  
WACO, 1330 KNECHT AVE, BALTIMORE, MD 21229

**GAS GENERATION SYSTEMS**  
Air Products AS, Box 8100, Vagsbygd, NO-4675 Kristiansand S, Norway

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

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

**GENERATOR PARALLELING EQUIPMENT**  
Selco USA, 2508 Lake Brook Court, Atlanta, GA 30360

**GLASS**  
Ganbaldi Glass, 7344 Winston Street, Burnaby, British Columbia V5A 2G9, Canada  
ProCurve Glass Technology, LLC, 3535 Davisville Rd., Hatboro, PA 19040

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

**GPS**  
MX Marine, 23868 Hawthorne Blvd., Torrance, CA 90505

**GROUNDINGS**  
Sohre Turbomachinerv, 132 Gilbertville Rd., P.O. Box 889, Ware, MA 01082-0889

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

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

Alfa Laval Tumba AB, 147 80, TUMBA, Sweden  
Duramax Marine LLC, 17990 Great Lakes Parkway,  
Hiram, OH 44234, 440-834-5400, 440-834-4950.  
Contact: Richard Spangler  
Tranter, Inc., P.O. Box 2289, Wichita Falls, TX 76307,  
940-723-7125, 940-723-1131, 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  
Ciariariello, www.manningusa.com

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

**HIGH SPEED FERRY BUILDERS**  
Incat Australia Pty. Ltd, 18 Bender Marine, Hobart 7009,  
Australia

**HMI CONTROLS DISPLAY**  
Azonix-Dynalco, 3690 NW 53rd St., Ft. Lauderdale, FL 33309

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

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

**HOSES/HOSE FITTINGS**  
JGB Enterprises, Inc., 115 Metropolitan Dr., Liverpool, NY  
13068

**HYDRAULIC SYSTEMS**  
Allied Systems, 2300 Oregon St., Sherwood, OR  
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**  
Mascoat Products, 10890 Alcott, Unit 12, Houston, TX 77043  
Shannon Enterprises of W.N.Y., Inc., 162 Sweeney Street, PO BOX  
199, North Tonawanda, NY 14120-0199  
Superior Energies Inc., 3115 Main Ave., Groves, TX  
77619

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

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

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

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

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

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

**LEAK REPAIR**  
Indumar Products Inc., 2500 Tanglewilde, Suite 260, Houston,  
TX 77063

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

**LIFEBOATS/DAVITS**  
Umoe Schal-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

**LIFESAVING EQUIPMENT**  
C.M. Hammar AB, August Barks Gatan 15, 421 32 Vastra  
Frolunda, Sweden  
Umoe Schal-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., Suite E, Mont Clare, 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, Contact: unknown,  
www.marinesigns.com

**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

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

**MANEUVERING EQUIPMENT**  
Schottel GMBH & Co. KG, Mainjer Str 99 , D-56322-  
Spay/Rhine, Germany

**MARINE & OFFSHORE SIGNAGE**  
Maritime Associates, P.O. BOX 1788, Crystal Bay, NV  
89402, 775-832-2422, 775-832-2424,  
maritimeas@charter.net, Contact: unknown,  
www.marinesigns.com

**MARINE DECKING & FLOORING**  
Lonseal Flooring, 928 East 238th Street, Carson, CA 90745

**MARINE DIESEL ENGINES**  
W rtsil North America, Inc., 16330 Air Center Boulevard,  
Houston, TX 77032

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

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

DRS Technologies, 5 Sylvan Way, Parsippany, NJ 07054  
Hatteland Display, Bogstadveien, 19 , N-0355 Oslo, Norway  
Jotron Electronics, Box 85 , NO-3280T Jodalving Norge,  
Norway

Marine Electronic Solutions, 1522 Crabapple Cove,  
Jacksonville, FL 32225  
Midwest Instrument, 6500 Dobry Dr., Sterling Heights, MI 48314  
Saab Marine Electronics, Box 13045, 402 5Goteborg, Sweden

**MARINE ENGINEERING**  
Elliott Bay Design Group, 5301 Shishole Ave. NW, Ste. 200,  
Seattle, WA 98107  
Heger Dry Dock, Inc., 13 Water St., Holliston, MA 01746  
Ocean Crest, 2 Pidgeon Hill Dr., Sterling, VA 20165

**MARINE EQUIPMENT**  
Rasmussen Equipment Co, 8727 5th Ave S, Seattle, WA 98108  
Scardana Americas Bkg., 502 Empire St., Greenfield Park J4V  
1V7, Canada  
Waterman Supply, P.O. Box 596, Wilmington, CA 90748

**MARINE FURNITURE**  
Deansteele Mfg., 111 Merchant St., San Antonio, TX 78204

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

**MARINE HAZARD RESPONSE**  
Marine Respose Alliance LLC, 1102 SW Massachusetts St.,  
Seattle, WA 98134-1030

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

**MARINE POWER PLANT SYSTEMS**  
Auramarine Ltd., Box 849, FI-20101 Turku, Finland  
W rtsil North America, Inc., 16330 Air Center Boulevard, Houston,  
TX 77032

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

**MARINE VENTILATORS**  
Tuthill Energy Systems, PO Box 8000, milbury, MA 01527

**MARITIME TRAINING & SCHOOLS**  
Maine Maritime Academy, MMA, Castine, ME 04420-5000  
Marine Safety International, Marine Terminal , Laguardia  
Airport, NY 11371

**METALIZING**  
Climax Portable Machine, 2712 E. 2nd ST., NEWBERG, OR 97132  
Cutting Edge Metal Processing Inc, Po Box 42, Mobile, AL 36601  
DMC Clad Metal Division, Po Box 680633, Houston, TX 77266  
International Metalizing & Coatings , PO Box 201, Cherry Hill, NJ  
08003

**MONITORING SYSTEMS**  
American Vulkan, 2525 Dundee Rd, Winter Haven, FL 33884  
Mackay Communications, 2721 Discovery Dr., Raleigh, NC  
27616-1851  
Prime Mover Controls, 3600 Gilmore Way, Burnaby, BC V5G  
4R8, Canada

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

**MOTION CONTROL SYSTEMS**  
Seastate Pty.Ltd., 2 Egmont Road, Henderson WA 6166,  
Australia

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

**NAV/COMM EQUIPMENT**  
C- Map Commercial, 133 Fairmouth 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  
Arthur D. Darden, Inc, 3200 Ridgetlake Dr., Suite 403, Metairie, LA  
70002

Band, Lavis, & Associates, Inc., 900 Ritchie Hwy, Suite 203,  
Severna park, MD 21146  
Bay Engineering, 253 N. First Ave., Sturgeon Bay, WI 54235  
Bristol Harbor Group, Inc., 103 Poppasquash Road, Bristol, RI  
02809

C. Baxter & Associates, P.O. Box 9006, Mobile, AL 36609  
CDI Marine Co., 9550 Regency Square Blvd, Ste 400, Jacksonville  
, FL 32222  
Computer Sciences Corporation-Advance Marine Center, 1201 M  
St. SE., Washington , DC 20003

Elliott Bay Design Group, 5301 Shishole Ave. NW, Ste. 200,  
Seattle, WA 98107  
Guarino & Cox, 639 Lotus Drive, N., Suite 3, Mandeville, LA 70471  
Jamestown Marine Service, 1084 Shenecossett Rd., Groton, CT  
06340

John J. McMullen Associates, 4300 King St., Suite 400, Alexander,  
VA 22302  
KVAERNER MASA MARINE, 1818 CORNWALL AVE,  
VANCOUVER, BC V6J 1C7, Canada

Kvaerner Masa Marine Inc., 201 Defense Highway, Ste 202,  
Annapolis, MD 21401  
MCA Engineers, Inc., 2960 Airway Ave., #A-103, Costa Mesa, CA  
92626

McElroy Machine & Mfg Co., Inc., P.O. Box 4454 , Biloxi, MS  
39535-4454  
ML 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  
VUYK Engineering, P.O. Box 204., 9700 AE Groningen,  
Netherlands  
Wasburn 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  
Nauticasl AG, Marahiller Strasse 50/211, A-1070 Vienna, Austria  
Scandinavian Micro Systems, 1001 South Andrews Avenue, Suite  
120, Fort Lauderdale, FL 33316

**OIL SPILL RESPONSE**  
Donjon Marine, 1250 Liberty Avenue, Hillside, NJ 07205  
MARINE PRESERVATION ASSOCIATION, 877 N GAINNEY  
CENTER DR. SCOTTSDALE, AZ 85258  
Marine Response Alliance, 1102 SW Massachusetts St,  
Seattle, WA 98134-1030  
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  
Alfa Laval Tumba AB, 147 80, TUMBA, Sweden  
MMC International, 60 Inp Dr, Inwood, NY 11096

**PAINT APPLICATOR**  
Mr.Longarm, 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

**PARTS LOCATOR SERVICE**  
Inventory Locator Service, 3965 Mendenhall Rd., Memphis, TN  
38115

**PIPE FITTINGS/CUTTINGS/CONNECTING/  
SYSTEMS**  
RAMCO Manufacturing Co., 365 Carnegie Ave., Kenilworth, NJ  
07033  
W & O Supply, 3485 Evergreen Ave., Jacksonville, FL 32208

**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 AUTHORITY**  
National Port Authority, BOX 32696, 2017 Braamontein, South  
Africa

**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**  
Amerc Corp, 1910 E. Devon Ave., Elk Grove Village, IL 60007

**PORTAL MONITORS**  
Canberra Industries, 800 Research Parkway, Meriden,  
CT 06450, (800) 243-3955, (203) 235-1347,  
customersupport@canberra.com

**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  
Chas S. Lewis & Co. Inc, 8265 Grant Rd, St. Louis, MO 63123  
Cummins Marine, 4500 Leeds Ave., Ste 301, Charleston, SC  
29405

CWF Hamilton Co., P.O. Box 709, Christchurch, New Zealand  
Fincanteri, 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, Telgelholmsgade 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  
Napier Turbochargers, P.O. Box 1, Waterside, South Lincoln  
LN5 7FD, UK  
Nya Berg Propulsion AB, Box 1005, 430 90 Ockerö, Sweden  
Rolls-Royce Commercial Marine, 10255 Richmond Ave., Ste  
101, Houston, TX 77042

Ultra Dynamics (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  
W rtsil North America, Inc., 16330 Air Center Boulevard,  
Houston, TX 77032  
ZF Marine Group , Eherlerst. 50, 88046 Friedrichshafen, Germany

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

**PUMP-REPAIR-DRIVES**  
New England Pump and Valve, 36 Industrial Park Road, Niantic,  
CT 06357  
Scardana Americas Bkg., 502 Empire St., Greenfield Park J4V  
1V7, Canada  
Wooster Hydrostatics, 4570 West Old Lincoln Way, Wooster,  
OH 44691

**RADARS-ARPAS**  
Furuno USA Inc., 4400 NW Pacific Rim Blvd, Camas,  
WA 98607

**REMANUFACTURED PUMPS & MOTORS**  
Wooster Hydrostatics, 4570 West Old Lincoln Way, Wooster,  
OH 44691

**REMOTELY OPERATED VEHICLES**  
Seabotix Inc., 1425 Russ Blvd, T112D, San Diego, CA 92101  
VideoRay LLC, 415 Engleview Blvd., Exton, PA 19341

**RIGID INFLATABLE BOATS**  
Willard Marine Inc., 1250 N. Grove St., Anaheim, CA 92806

**ROPE-MANILA-NYLON-HAWSERS-FIBERS**  
Lankhorst Touwfabrieken hv, Maritime Div., P.O. Box  
203 , 8600 AE Sneek, Netherlands, T:+31 515 487629,  
F:+31 515 487669, mar.div@lankhorst-  
touwfabrieken.nl, www.lankhorst-touwfabrieken.nl  
Marlow Ropes, South Road, Halesham, East Sussex BN27 3JS, UK  
Samson Rope Technologies, 2090 Thornton St., Ferndale, WA  
98248

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

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

**SAFETY PRODUCTS**  
Brookdale International, 1--8755 Ash St., Vancouver, BC V6P  
6T3, Canada  
D & B Technologies, 1458 OCEAN SHORE BLVD  
#132, ORMOND BEACH, FL 32176-3613, 407-647-  
7500, 407-647-7505, HOTEYE@HOTEYENOW.COM

DBC Marine Safety Systems, 101-3760 Jacombs Rd.,  
Richmond, BC V6V 6T3, Canada  
Lalizas SA, 21 Haidariou St., 545 Piraeus, Greece  
Norwegian Maritime Equipment AS, BOX 244, NO-5480  
HUSNES, Norway

Stearns Mfg. Co., PO Box 1498, St. Cloud, GA 56302-1498  
Thordon Bearings Inc., 3225 Mainway, Burlington, Ontario L7M  
1A6, Canada  
Viking Life Saving Equipment, 1400 NW159th Street Suite 101,  
Miami, FL 33169

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

**SALT REMOVING PRODUCTS**  
Salt Away, P.O. Box 8797, Newport Beach, CA 92658

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

**SANITATION DEVICE- POLLUTION  
CONTROL**  
Envirovac Inc, 1260 Turret Dr., Rockford , IL 61111  
EVAC Environmental Solutions, 1260 Turret Dr., Rockford , IL  
61111

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

Headhunter Inc., 3380 SW 11th Ave., Ft. Lauderdale, FL 33315  
HydroxI Systems, 9800 McDonald Park Rd, Sidney, BC V8L 3S8,  
Canada  
Microphor, 452 E. Hill Rd., Willits, CA 95490

**SATELLITE COMMUNICATIONS**  
EMS Satcom, Green Lane, Tewkesbury, Gloucestershire GL20  
8HD, UK  
Eurocom Industries AB, Box 7071, DK-9200 Aalborg SV, Denmark

France Telecom Mobile Satellite Communications,  
16,bvd du Mont d'Est-BP 14-93161, Noisy le Grand,  
France, +33556223231, mobilesat@francetelecom-  
mobilesat.com, Contact: unknown,  
www.francetelecom-mobilesat.com

Furuno USA Inc., 4400 NW Pacific Rim Blvd, Camas,  
WA 98607  
KVH Industries Inc., 50 Enterprise Center, Middletown , RI 02842  
Land Sea Systems, 509 Viking Drive, Suites K,L,M, Virginia Beach,  
VA 23452

MX Marine, 23868 Hawthorne Blvd., Torrance, CA 90505  
Nera Satcom AS, Box 91, NO-1375 Billingstad, Norway  
Petrocom, 5300 West Sam Houston Parkway North,  
Houston, TX 77041, 1-800-PETROCOM, 713-580-4150,  
sales@petrocom.com

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

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

**SEALS**  
Duramax Marine LLC, 17990 Great Lakes Parkway, Hiram, OH  
44234  
Kobelco Eagle Marine, Inc., 366 Fifth Avenue, Suite  
312, NY, NY 10017, 212-967-5575, 212-967-6966,  
hawkins@kobelco-eagle.com

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

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

**SECURITY**  
Control Screening, 2 Gardiner Rd, Fairfield, NJ 07004  
GE Ion Track, 205 Lowell Street, Wilmington, MA 01887

Loronix Video Solutions, 1120 W. 122nd Ave. Suite 200, Denver, CO 80234  
Pole Star Space Applications Limited, Suite 301-303 Whiteleys Centre, Queensway London W2 4YN, UK  
Smiths Detection, 30 Hook Mountain Road PO Box 410, Pine Brook, NJ 07058, 973 830-2131, 973-830-2200, susan.cooper@smithsdetection.com. Contact: Susan Cooper, www.smithsdetection.com  
Vingcard Marine, Bryan Oaks Business Park 1500 N.W. 1st Street, Dania, FL 33004

#### SECURITY BARRIERS

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

#### SECURITY CONSULTANTS

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

#### SENSORS

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

#### SHAFT SEALS

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

#### SHAFTS

American Vulkan, 2525 Dundee Rd, Winter Haven, FL 33884  
Centa Corp., 815 Black Hawk Dr, Westmont, IL 60559

#### SHIP MANAGEMENT

Crowley Maritime, 9487 Regency Sq Blvd, Jacksonville, FL 32225  
Eurasia Group, 22A Floor Chinachem Exchange Sq., 1 Hoi Wan St, Quarry Bay, Hong Kong  
OCEAN TECHNICAL SERVICES, MILITARY OCEAN TERMINAL BAYONNE UNIT #8-FOOT OF 32ND STREET, BAYONNE, NJ 07002

#### SHIP REPAIR

HALIFAX SHIPYARD, 3099 BARRINGTON ST, HALIFAX, NS, Canada  
Manitowoc Marine Group, 1600 Ely St., Marnette, WI 54143-2434  
NORSHIPCO, PO BOX 2100, Norfolk, VA 23501-2100  
R&R Maintenance Inc., 5700 Proctor St. Extension, Port Arthur, TX 77642  
Trident Technologies, 4011 C Highway 377 S., Fort Worth, TX 76109  
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

American Ship Repair, 1011 38th St, Brooklyn, NY 11219  
Atlantic Marine, Inc., P.O. Box 3202, mobile, AL 36652  
Austal USA, 100 Dunlap Dr., Mobile, AL 36633  
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  
Enavi Reparos Navais Ltda, 169 Barreto., Niteroi, RJ 24110-200, Brazil  
Fincantieri Cantierieri Navali Italiani Spa, Merchant Shipbuilding Div., 34123 Tneste, Italy  
Gladding Hearn, 1 Riverside Ave., Somerset, MA 02725  
Grand Bahama Shipyard, PO BOX F-42498-411, Freeport, Bahamas  
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  
NASSCO, 2798 E HARBOR DR, SAN DIEGO, CA 92113  
Newport News Shipbuilding, 4101 Washington Ave., Newport News, VA 23607  
Signal International LLC, 1011 S.Hwy 6, Ste 108, Houston, TX 77077  
United Defense, 1525 Wilson Blvd., Ste 700, Arlington, VA 22209-2444  
United Marine Enterprises Inc., P.O. Box 22077, Beaumont, TX 77720  
VT Haller, 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  
Bollinger Shipyards, 8365 Hwy 308 South, Lockport, LA 70374, 985 532-2554, 985 532-7225.  
RobertS@bollingershipyards.com, Contact: Robert A. Socha, www.bollingershipyards.com  
Bradford Marine, 3051 State Rd 84, Fort Lauderdale, FL 33312  
Derektor Shipyard, 311 E. Boston Post Rd., Mamaroneck, NY 10543

Jeffboat, 1030 E.MARKET STREET, JEFFERSONVILLE, IN 47130  
Kvaerner Masa-Yards Oy, BOX 132, FI-00151, Helsinki, Finland  
Leevac Industries, LLC, P.O. Box 1190, Jennings, LA 70546  
Offshore Inland, 3521 Brookdale Dr. S., Mobile, AL 36618  
R&R Maintenance Inc., 5700 Proctor St. Extension, Port Arthur, TX 77642  
United Defense, 1525 Wilson Blvd., Ste 700, Arlington, VA 22209-2444

#### SILENCERS

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

#### SIMULATION TRAINING

Marine Safety International, Marine Terminal, Laguardia Airport, NY 11371  
Maritime Institute of Technology, 5700 Hammonds Ferry Rd., Lanthicum 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

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

#### SOFTWARE

Autoship Systems Corp., 611 Alexander Street, Suite 312, Vancouver, BC V6A 1E1, Canada, 604-254-4171, 604-254-5171, sales@autoship.com, Contact: Ross Muirhead, www.autoship.com

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

Design Maintenance Systems, Inc, 340 Brooksbank Ave, Ste.100, North Vancouver, BC V7J 2C1, Canada

Loadmaster International, St. Varvsgarten 11B SE, 211 19 Malme, 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  
Dalseid 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

#### SWITCHBOARDS

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

#### TANK LEVELING INDICATORS

Ian Conrad Bergan, 3119 North Davis Highway Pensacola, FL 32503, 850-434-1286, 850-434-1246, sales@icbergan.com, Contact: Ron Monell, www.icbergan.com  
King Engineering Co, PO Box 1228, Ann Arbor, MI 48106  
Saab Manne Electronics, Box 13045, 402 5Goteborg, Sweden  
Technical Manne Services, 6040 North Cutter Circle, Portland, OR 97217

#### TESTING SERVICES

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

#### THICKNESS GAUGES

StressTel Ultrasonic Testing, 2790 West College Avenue, State College, PA 16801-260

#### THRUSTER SYSTEMS

Omnithruster, 30555 Solon Industrial Parkway, Cleveland, OH 44139, 440 542-9260, 440 542-9265 widmer@omnithruster.com, Contact: Kurt Widmer, www.omnithruster.com

#### TRAINING

International Maritime Training, 910 SE 17th St., Ste 200, Fort Lauderdale, FL 33316  
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

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 LN5 7FD, UK

#### ULTRA HIGH MOLECULAR WEIGHT

#### MARINE FENDERING

Ultra Poly, Inc., 2926 So Steele Street, Tacoma, WA 98409

#### ULTRASONIC TESTING

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

#### ULTRATHIN (UHMW) NON-SKID DECKING

Ultra Poly, Inc., 2926 So Steele Street, Tacoma, WA 98409

#### 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

W & O Supply, 3485 Evergreen Ave., Jacksonville, FL 32208

#### VALVES & FITTINGS

Leslie Controls, 12501 Telecom Dr., Tampa, FL 33637  
William E. Williams, 38-52 Review Ave, Long Island City, NY 11101

#### VENTILATION SYSTEMS / PRODUCTS

Delta T Systems, 858 West 13th Court, Riviera Beach, FL 33404

Dry Air Technology, 313 North Oak St., Burlington, VA 88233

#### VIBRATION ANALYSIS

Ludeca, Inc., 1425 NW 88th Ave, Miami, FL 33172  
Maritech, LLC, 100 Powermill Rd., Acton, MA 01725

#### VISCOMETERS

Cambdage Applied System, 196 Boston Ave., Medford, MA 02155

#### VOYAGE DATA RECORDERS

Rutter Technologies Inc., 22 Pearl Place, P.O. BOX 427, St. John's NL A1C 5N8, Canada

#### WASTE WATER TREATMENT

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

Marine Environmental Partners, 3874 Fiscal Ct, Suite 200, West Palm Beach, FL 33404  
RWO, Leerikamp 3, D- 28259 Bremen, Germany

#### 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

#### WATERTIGHT CLOSURES

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

#### WELDING PRODUCTS & POWER EQUIPMENT

ESAB Welding and Cutting Products, 411 S. Ebenezer Rd, PO Box 100545, Florence, SC 29501, 843-664-4411, 843-664-4258, dterry@esab.com, Contact: Donna Terry, www.esabna.com

#### WINCHES & FAIRLEADS

Burrard Iron Works Ltd., 220 Alexander Street, Vancouver, BC V6A 1C1, Canada, 604-684-2491, 604684-0458, sales@burrardironworks.com  
Coastal Marine Equipment, Bldg 9114 MISAAP Ind Complex, Stennis Space Center, MS 39529

Coastal Marine Equipment Inc., BLDG. 9114 MISAAP Industrial Complex, Stennis Space CTR., MS 39529, 228-813-1700, 228-813-1709,

sales@coastalmarineequipment.com, Contact: Ralph Waguespack, www.coastalmarineequipment.com  
Intercontinental Engineering, PO Box 9055, Kansas City, MO 64168

Jeamar Winches, 1051 Clinton St., Buffalo, NY 14206  
Markey Machinery, P.O. Box 24788, Seattle, WA 98124

McElroy/Catchot Winch Company, Inc., P.O. Box 4632, Biloxi, MS 39535-4632, 228-875-6327, 228-872-7880, hcatchot@bellsouth.net, Contact: Harold

Catchot, www.mcelroycatchotwinch.com  
MMC International, 60 Inip Dr, Inwood, NY 11096

Nabrico Marine Products, 1050 Trinity Road, Ashland City, TN 37016

Skookum, P.O. Box 280, Hubbard, OR 97032  
Smith Berger Marine, 7915 10th Ave. S., Seattle, WA 98108

Superior Lidgenwood Mundy, 1101 John Ave., Superior, WI 54880  
Timberland Equipment Ltd & Almon Johnson, 459 Industrial Ave., Woodstock, ON N4S 7Z2, Canada

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#### WINDSTES

Deanstead 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

## Products



### Burrard

Burrard Iron Works offers duty winches, windlasses and capstans are custom designed for each application. ferries, cargo ships and tankers. The Burrard Type HF Electric Headline Winch features a 400 ft 3-1/2 diameter synthetic line 24,000 lb. line pull at 70 fpm 10,000 lb. at 140 fpm A.C. variable frequency inverter drive.

**Circle 103**



### Camlite

The Camlite Video System is a mobile, wireless audio-video system housed inside a rugged, water resistant, fully functional flashlight. It is designed to transmit up to 1,000 ft. line of sight. It can be integrated with existing camera systems and can be used with biometric identification systems.

**Circle 104**



### Eastproject

Eastproject is an Italian company specialised in marine engineering, offshore consulting, development of innovative project applications and brokerage. Recently the team of experts together with an Italian partner specialized in heavy machinery equipment has developed an innovative towing module, patent pending, for installation on tugboats

**Circle No. 105**



### Ludeca

Boralign -Laser alignment measurement of stern tubes, strut bearings, engine and compressor bores. Boralign measures true bore center, not just bore straightness. It measures whether multiple bores are in line with one another and with the rotating centerline of the shaft. Universal brackets fit bore diameters from 5 to 30 in.

**Circle 101**



### Kiene Diesel

Kiene Diesel Accessories was founded in 1948 by William Kiene who developed an indicator valve that would not open accidentally under normal engine operating conditions. Kiene went on to develop indicator valves for various engine applications, and special valve configurations to meet customer requirements.

**Circle 108**



### Konrad

The Konrad 540 Stern Drive is manufactured in two variations, the Standard 540 and the High Performance 540. It is lighter and faster, and is designed to enhance the performance of both diesel and gasoline powered craft. It also features standoff boxes with external steering complement selective applications.

**Circle 109**



### Rapp Hydema

Sause Brothers, a tug-and-barge operator, awarded Rapp Hydema a contract for four double-drum mooring winches, now joined by two tricing auxiliaries, for a total of six winches. They will work aboard Sause' new oil barge which is presently under construction. This barge-fitting out at 19,700 long tons at load line - will be the largest ever double-hull towed oil barge on the West coast. Rapps MW-20-2 winches are of a split double-drum, anchor and mooring type. There are clutches on both drums with capstan heads; they will have a two-speed option for a high-speed, light line-pull application (15 tons of line pull first layer with 30 meters/minute line speed). The winches accommodate 330 meters of 32 mm line, and have 50 tons of brake holding force first layer.

**Circle 108**



### Moose Boats

Moose Boats is now an approved supplier to Federal agencies through the General Services Administration (GSA). Offering three models, along with a variety of options and accessories, these aluminum cats are now available for direct purchase under Contract #GS-07F-0507M.

**Circle 110**



### Remontowa

The Hibernia Project, constructed by the Hibernia Management and Development Company Ltd. and positioned on the seabed east of St. John's Newfoundland. Remontowa's share in the Hibernia Project was the conversion of barges used for Hibernia's topsides transport and mating operations.

**Circle 113**



### Worldwide Metrics

World Wide Metric is a wholesale distributor of valves & flanges in ANSI, BS, DIN and JIS Standards, hydraulic fittings & tubing, pipe couplings and expansion joints.

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**Circle 112**



### 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 114**



### SolarSolv

Solar Solve Marine designs develops and manufactures retractable anti-glare roller screens for ships navigation bridge windows. There are more than 45,000 SolarSolv screens in use on over 4,500 commercial and military vessels worldwide. All roller blinds and screens are manufactured to withstand the demands of a marine environment.

**Circle 115**



### Stork-Kwant

The Stork-Kwant control units type BUK-A are the largest sized console mounted lever units designed for propulsion control. They come in single or double lever execution with either a knob or cross bars. The BUK-A has been type-approved by the leading classification bureaus ABS, BV, CCS, DNV, GL, IRS, NKK, RINA and RMRS.

**Circle 116**



### E Com

The ecom i.roc x 10-Ex is a compact, industrial PDA based on a Pocket PC. It features three modes of communication- integrated WLAN 802.11b, Bluetooth and IrDA infrared port. Three different versions of the i.roc x 10-Ex meet the diverse needs and requirements of industry for ex-areas or unclassified areas.

**Circle 117**



### VingCard

VingCard Marine's North American and Caribbean Service Center is situated in Dania, Fla. The Dania office stocks a complete range of TrioVing and VingCard traditional products.

**Circle 118**



### 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 119**



### York

York Marine Systems is the name of the multinational division within YORK International that operates as one organization to supply naval and commercial marine air conditioning and refrigeration products and services.

**Circle 120**



### MSE of Canada

MSE of Canada Ltd. FailSafe Insulation Fault Detectors are recognized by users as a preventative maintenance tool for the elimination of failures due to ground faults. Early warning of insulation deterioration enables the scheduling of maintenance at a convenient time. This will reduce downtime, free up manpower, increase ship readiness and reduce costs. Equipment up to 13.8 kV.

**Circle 121**



### Desmond Stephan

The performance of your Swirl-Off tool is dependent on the power it receives from your disc sander, grinder, polisher, or drill motor. As a general rule, the higher the RPM the faster the material will be removed. The tool will give its utmost performance when a disc sander with speeds from 1500 to 4000 rpm are used.

**Circle 122**



### Charles Marine

Charles Marine & Industrial Group is a designated marine distributor for HeartSine Technologies' Samaritan AED (automated external defibrillator). Considered standard equipment in many cruise ships and numerous public places, portable defibrillators can be a key factor for increased survival rate of a person experiencing sudden cardiac arrest (SCA).

**Circle 123**



### UltraJet

Ultra Dynamics manufacturers single-stage axial flow pump waterjet propulsion systems with a variety of control options, including Joystick controls. UltraJet waterjets excel when more thrust is required to quickly accelerate the boat, to permit getting on plane with a full load, and to maintain planing at cruise throttle settings, even in tight turns.

**Circle 124**



### Mastervolt

Mastervolt will introduce the new Whisper 8 and 10 kVA generator sets which bridge the gap between the popular 6 kVA and the 12 kVA Ultra. The newly developed sound shields make the generators run even more quietly. The advanced DDC system, the Digital Diesel Control, are delivered as standard with the generator sets. The DDC will be delivered as standard with the revised Whisper 3.5 kVA as well.

**Circle 125**

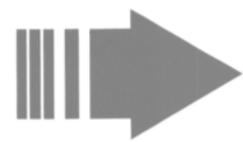
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Page	Advertiser	Product	R/S#	Page	Advertiser	Product	R/S#
17	A. Van Der Velden BV	manoeuvring equipment	200	60	Kvaerner Masa Marine	naval architects/engineering	269
C4	ABB Turbocharger Co.	turbochargers	201	85	L.C. Doane Company	lighting systems	270
6	ABB Turbocharger System	turbochargers	202	63	Liebrock Industries	chairs	271
16	ABS	classification society	203	94	Lloyd's/Informa	cruise & ferry exhibition	343
90	AG Marine	autopilots/navigation wholesale	204	95	Mack Boring & Parts Company	industrial commercial marine	272
2	Albacore Research Ltd.	cad-cam	205	35	MAN B&W Diesel A/S	diesel engines	273
65	All American Marine	jobs and training	206	95	Marine Exhaust Systems of Alabama	water cooled manifolds	274
84	Allied Systems	deck machinery	207	73	Marine Fenders International	foam filled fenders/buoys	275
17	Alma Impex, Inc.	engine spares/controls	208	82	Marine Response Alliance	hazard response	276
93	Anchor Lamina	portable hydraulic drilling equipment	209	77	Marine Safe Electronics of Canada	electrical motor protection	277
22	Anchor Marine	anchors & chains	210	78	Marine Safety International	training	278
78	APM Hexseal	switch boots	211	87	Marine Travel Services	travel services	327
20	Atlantic Marine	shipyard	212	95	Maritime Associates	safety products/signage	279
90	Aurand Manufacturing	surface prep tools	213	53	Marlow Ropes	ropes	280
10	Autoship Systems	software solutions	214	47	Mascoat Products	insulation coatings	281
18	BAE Systems	windows and wipers	215	82	Massachusetts Maritime Academy	training and education	349
69	Bayonne Drydock	shipyard/ship repair	345	51	Military Sealift Command	employment	282
88	Bluewater & Associates, Inc.	training	347	C2	MITAGS	training and education	283
14	Bollinger Shipyard	shipyard	216	4	Motor-Services Hugo Stamp	diesel engine spare parts	284
78	BSA Advertising	for sale	217	21	Noran Engineering	analysis software	285
59	Burrard Iron Works Ltd.	deck machinery	354	13	NORSHIPCO	commercial ship repair	286
80	Calhoun Engineering School	training and education	343	9	Northrop Grumman Newport News	shipbuilding	287
25	Caprock Communications	satellite communications	218	95	Ocean Marine Services	ship repair	288
65	Capsante/Technofibre	Lifeboat & davit maintenance	353	41	Omnithruster	thrusters	289
32	Caterpillar, Inc.	marine power systems	342	70	Orkot Marine	bearings	290
1	C-Map Commercial	electronic charts	219	64	Owens Kleen Tank	sanitation devices	291
90	Coastal Marine Equipment	deck machinery	220	56	Pacific Coast Marine	doors and hatches	292
17	Comnav Marine Ltd.	autopilot/navigation	221	5	Petrocom	data/communications	293
C3	Cooper Bearing	bearings	222	89	Philadelphia Resins	coating systems	294
85	Creative Systems	software	223	38	Pole Star Space Applications Ltd.	fleet tracking solutions	344
45	Crowley Maritime Corp.	marine logistics/transportation	224	71	ProCurve Glass Technology	marine glass	295
78	CSD North America	pipe & cable sealing systems	225	46	R&R Marine Maintenance, Inc.	shipyard	296
15	Cummins Marine	diesel engines	226	81	RAMCO Manufacturing Co.	safety shields for pipe connections	297
91	Dalseide Shipping Services	marine maintenance equipment	227	34	Rapp Hydema U.S. Inc.	deck machinery	298
67	Damen Shipyard	shipyard	228	84	Redland Genstar	ballast crete	299
85	Deansteel Manufacturing	windows	229	85	Reverse Osmosis of S.F. Inc.	water systems	300
29	Derecktor Shipyards	shipyard	230	17	Robert Allan Ltd.	naval architects	301
10	Design Maintenance Systems	maintenance software	231	64	Salt Away	salt removal	302
95	Desmond Stephan	swirl off scarifier	350	24	Sasakura Engineering Co.	fresh water generators	303
71	DMW Marine, LLC	deck machinery/cargo handling	345	55	Schuyler Rubber Co.	fenders	304
89	Don Sutherland Photography	photography	232	36	Sea Ark Marine	boatbuilders	305
91	Duramax Marine	bearings	233	41	Seacraft Shipyard Corporation	shipyard	306
65	Dynamold	engine/component installation	234	63	SeaWave	communications services	307
31	EastProject SRL	marine engineering	235	68	Severn Trent De Nora, LLC	waste water treatment	308
93	Ecology & Environment, Inc.	security compliance support	236	24	Sewards Ship's Drydock	drydock	309
27	Electronic Marine Systems	bubbler	237	61	Sherwin Williams	coatings	310
29	Electronic Marine Systems	ballast	238	80	SIDUS Solutions Incorporated	CCTV/Cameras	311
31	Electronic Marine Systems	radar	239	75	Sigma USA	coatings manufacturer	312
33	Electronic Marine Systems	sea switch two	240	22	Skookum	rigging products	313
60	EVAC Environmental Solutions	sanitation systems	241	56	Smith Berger Marine	deck hardware	314
57	Exxon Mobil Marine Lubricants	lubricants	242	19	Smiths Detection	security	315
95	Falk Corporation	propulsion gear drives	243	84	SNAME	ship design publications	316
47	Ferro Corporation	coatings	244	86	SNAME	ship design publications	355
8	Flir Systems	thermal imaging	245	90	Sohre Turbomachinery	stern tube bearings	317
7	Furuno	navigation & communications	246	54	Stearns Manufacturing Co.	safety products	318
81	Gardner Denver Water Jetting	waterjetting systems	247	66	Stork-Kwant BV	naval instruments/controls	319
39	Garibaldi Glass	window glass	352	95	Summer Equipment	hydraulic steering systems	320
44	GE Marine and Stationary Power	diesel engines	248	84	Superior Energies	insulation manufacturers	321
49	Hagglunds Drives AB	propulsion systems	249	64	T&T Marine Salvage, Inc.	marine salvage	322
8	Halifax Shipyard	ship repair & conversion	250	28	TechCrane International	cranes	323
43	Hamilton Jet	waterjets	251	88	Timberland Equip./Almon Johnson	winches	324
18	Harbormaster Marine	propulsion	252	97	Titan Maritime Industries	salvage/wreck removal	325
70	Hillhouse Industrial and Marine	shaft rpm & torque systems	253	88	Tranzon Venebid	auctioneers	326
22	HO Bostrom	seating	254	83	United Marine Shipyard	shipbuilding	344
28	Hornblower Marine Services	marine management/consultants	255	11	Urethane Products	tendering products	328
76	Imes Inc.	lifeboat testing	256	79	Vigilant Marine Systems, LLC	monitoring systems	329
76	Industrial Power Systems	switchboards/control systems	257	87	Viking Fender	fenders	330
53	InPlace Machining	crankshaft repair	258	36	Viking Life Saving Equipment	life rafts	331
76	International Metalizing	metalizing	259	39	VingCard Marine	marine locks	332
12	Interstate Diesel	fuel injectors	260	52	W&O Supply	values	333
79	Inventory Locator Service	parts locator service	261	71	WACO Products, Inc.	gangways and cap treads	334
56	Jesse Engineering	robotic engineering	262	95	Washburn Doughty	boatbuilders	335
56	Jets Vacuum AS	toilet systems	263	71	Waterman Supply	marine equipment	336
47	JMS Naval Architects & Salvage	naval architects	264	95	Western Machine	deck machinery	337
27	Kahlenberg Brothers Company	airhorns/signalling equipment	265	74	Westfalia Separator, Inc.	bilge separators	338
3	Karl Senner	marine gears	266	30	Willard Marine	boatbuilder	346
23	Kawasaki	marine equipment	267	76	Wynn Marine Ltd.	windcreens/window wipers	339
88	Kiene Diesel	diesel cylinder indicators	348	89	York Marine	refrigeration systems	340
34	King Engineering	tank leveling indicators	268	59	ZF Marine Group	marine propulsion systems	341

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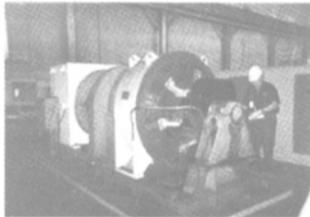


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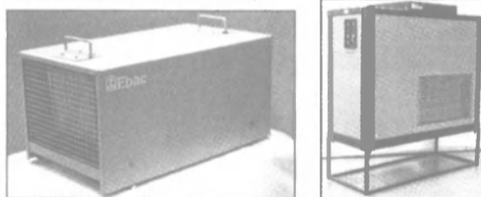
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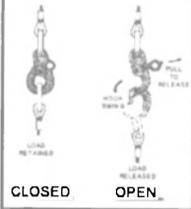
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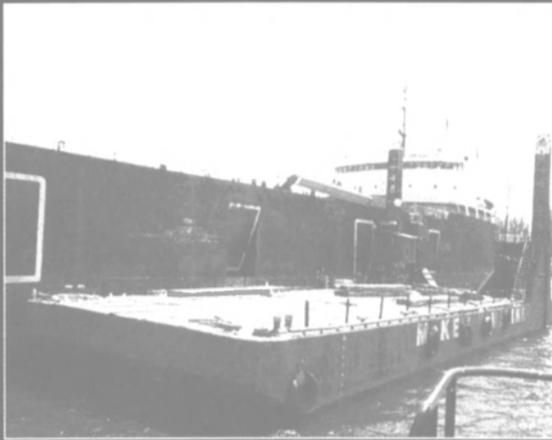


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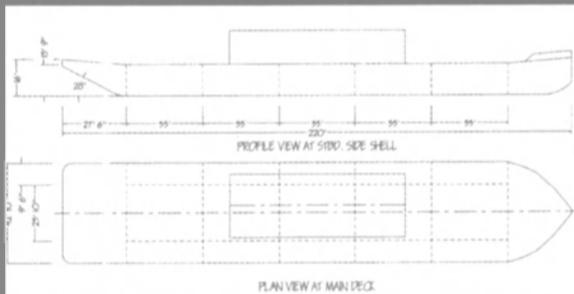
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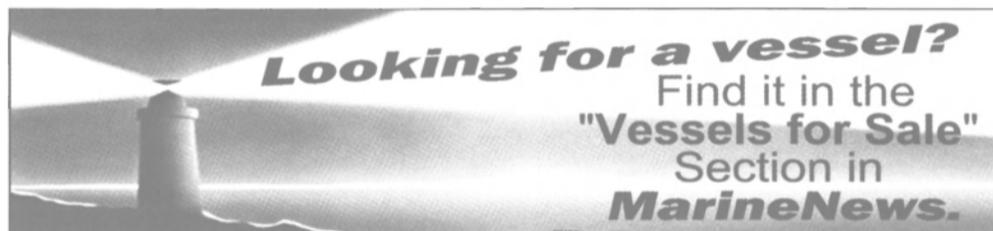
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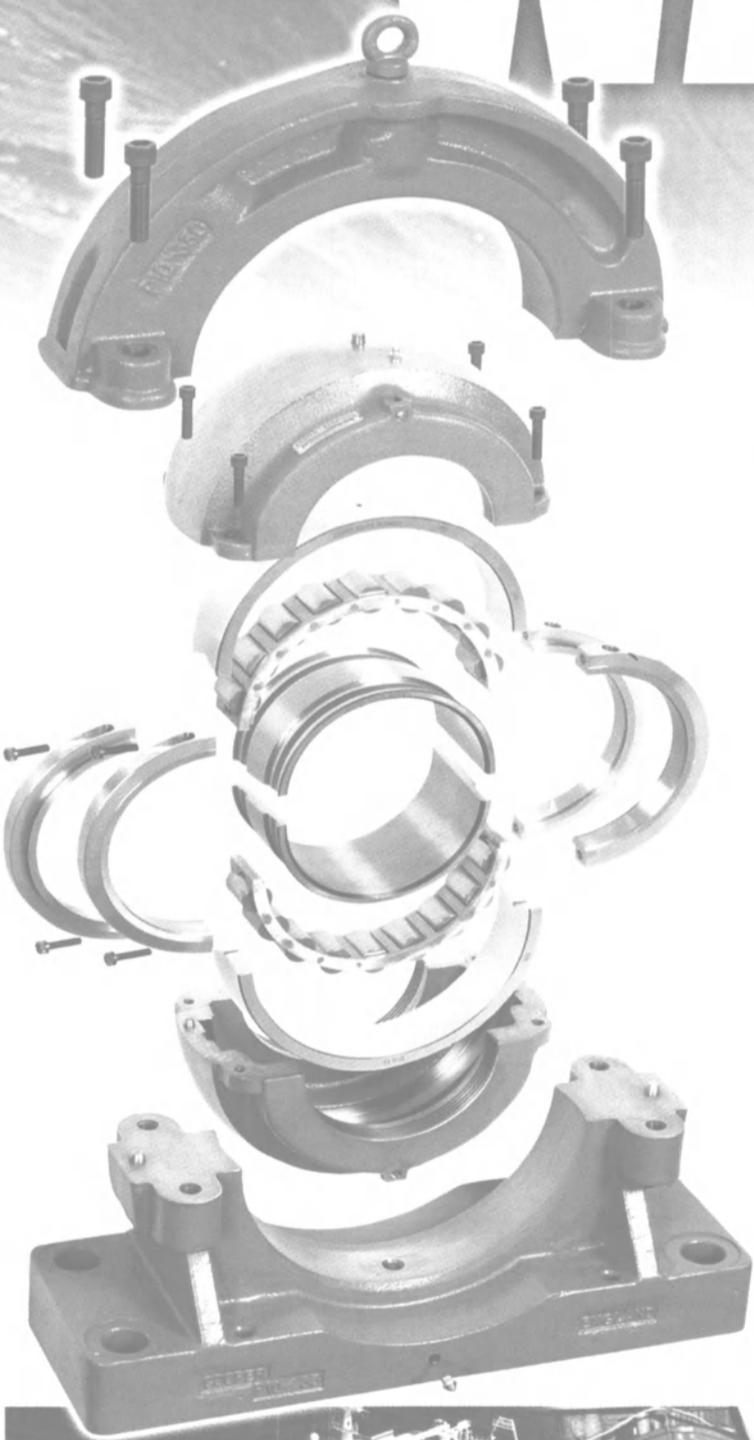
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