

April 2002

# MARITIME REPORTER AND ENGINEERING NEWS

## Offshore Annals

Deepwater Technologies Lead the Way

**Offshore Service Vessels**  
OSVs get Bigger, Stronger & Faster

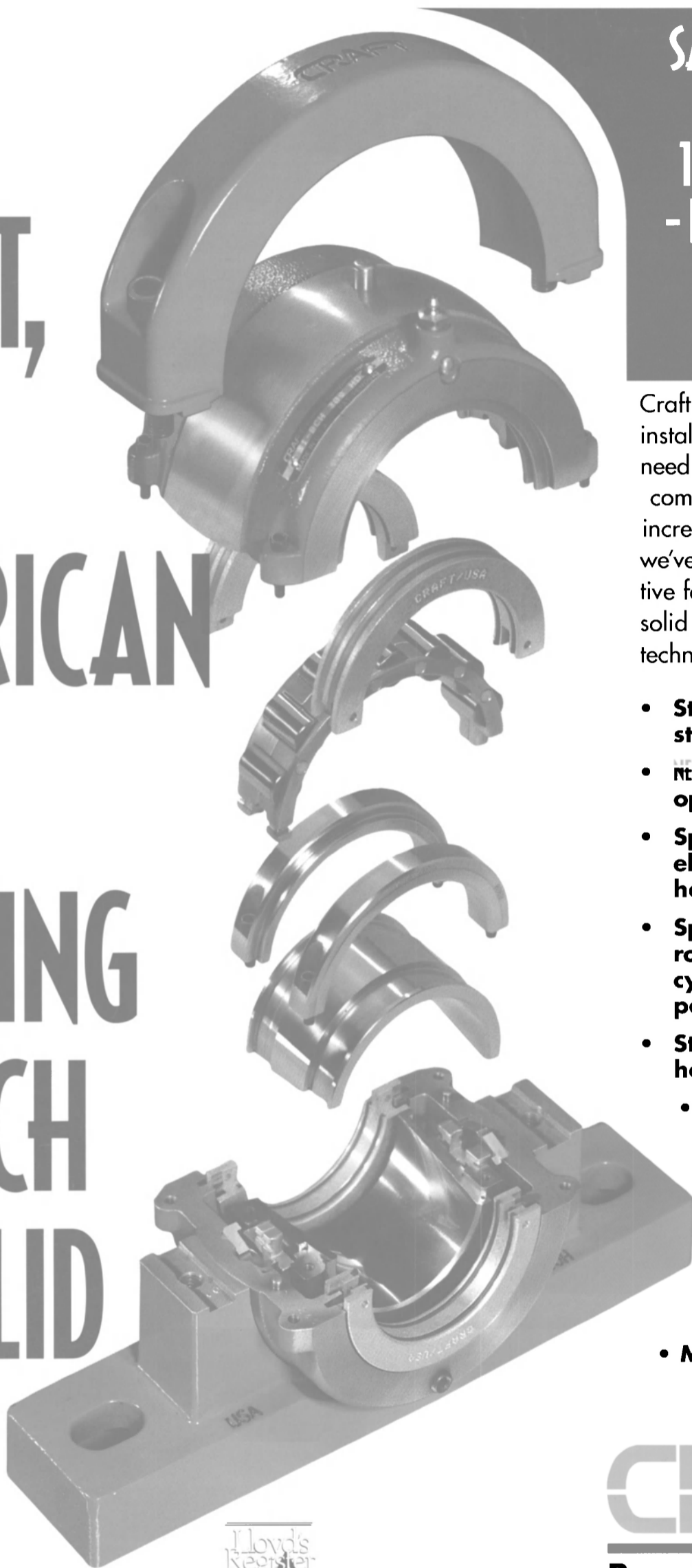
**U.S. Navy**

Tomorrow is Being Created Today in Newport, R.I.

**Finance**

Equipment Companies Step Up to Finance U.S. Marine Market

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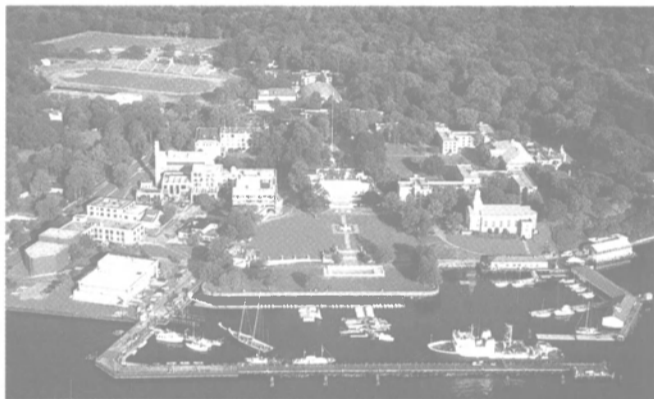


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## Features

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Melding development, research, experimentation and analysis in one location, the Navy Development Warfare Command, led by Rear Admiral Robert G. Sprigg, is focused on the Navy of tomorrow. — by Greg Trauthwein

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MAN B&W added the 48/60B to its high-speed engine family. — by David Tinsley, technical editor

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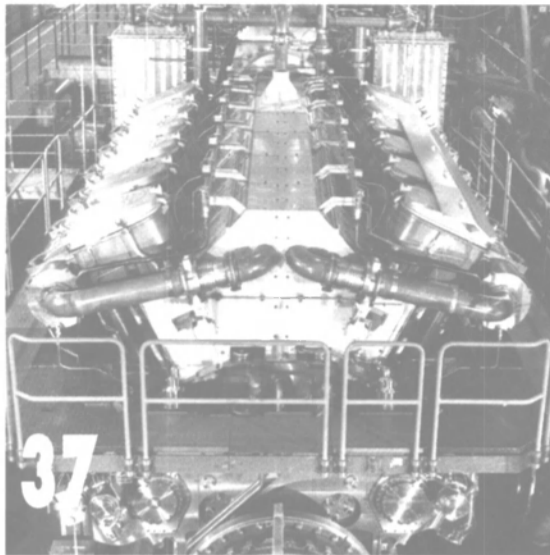
As U.S. funding facilities tighten in a sour economy, financial arms of equipment companies step up to infuse capital. — by Matt McCleery, president, Marine Money International.

### 50 Going Deep

The trend in deepwater drilling is on the upswing, and opportunities are ripe for companies that think global. — by Paul Hillegeist, president, Quest Offshore.

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Will there be a glut of LNG vessels as myriad of new orders are ready to operate on the high seas? — by Graham Marshall, VP Marine Business Support, Lloyd's Register Americas Inc.



## On the Cover



Highly-regarded by the Minerals Management Service as "America's New Frontier," deepwater drilling opportunities abound around the world.

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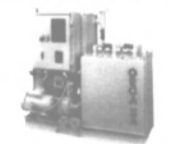
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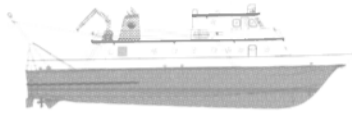
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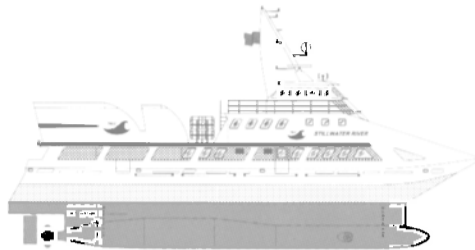
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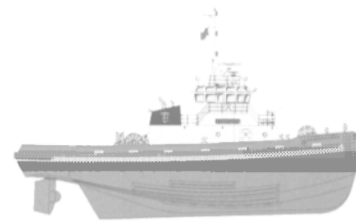
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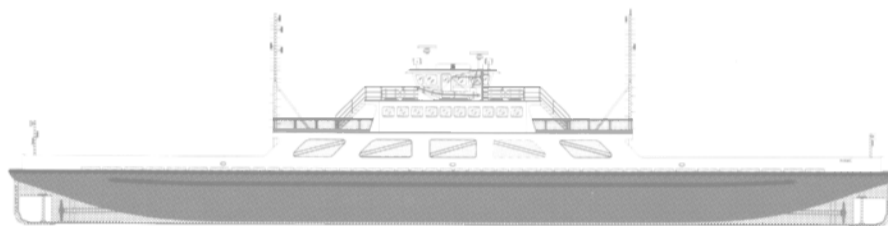
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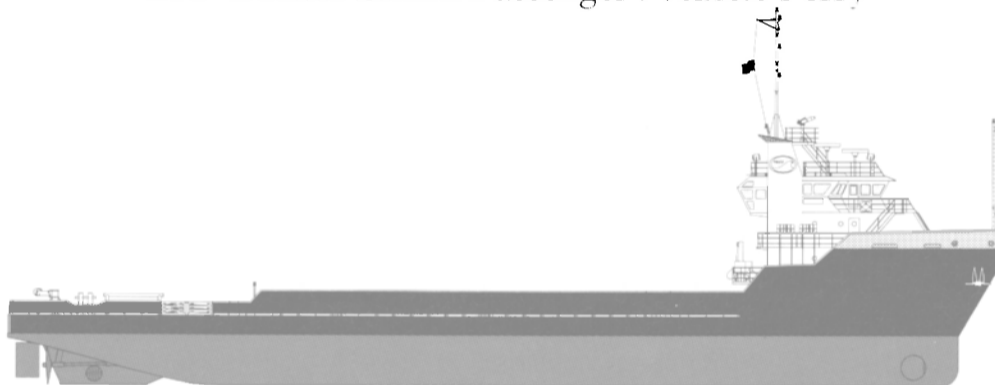
120' Aluminum SWATH



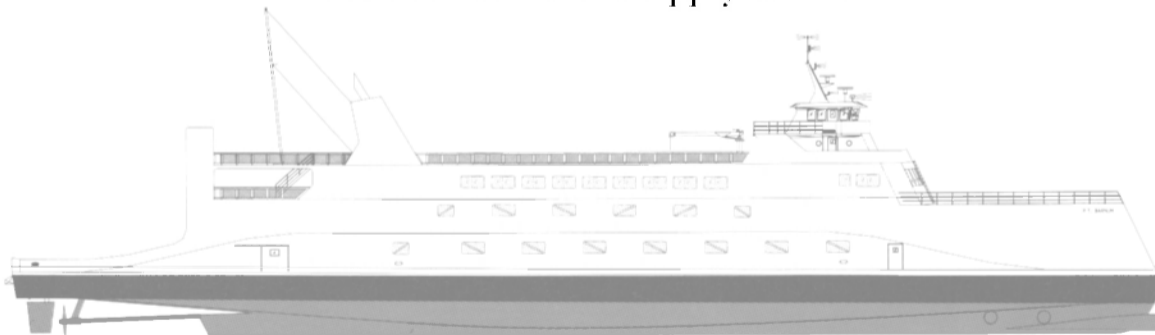
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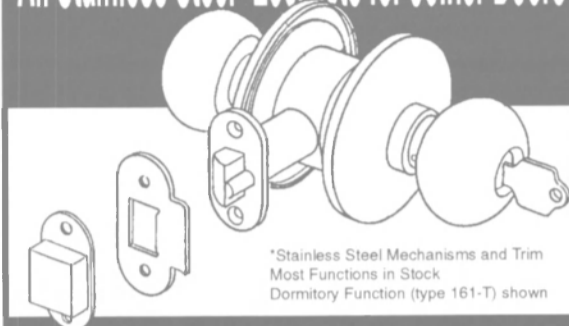
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**U.S., Spain Team To Develop New Warship**

Proving the depth of efforts to internationalize business, the Advanced Frigate Consortium (AFCON) announced its intention to design, develop and market a new class of corvette-size ships to meet the emerging needs of international navies. The main players in the consortium include IZAR of Spain; Lockheed Martin Naval Electronics & Surveillance System; and General Dynamics Bath Iron Works of the U.S.

The corvette ship class will be designed with advanced platform, propulsion and combat systems including superior anti-air, anti-surface, and anti-submarine warfare capabilities.

The AFCON team will work with international navies to design and develop an affordable, high-performance warship tailored for use in a nation's anti-air, anti-submarine, and anti-surface warfare operations. Though smaller than a frigate, the 2,600-ton design has excellent survivability with a focus on susceptibility and vulnerability that is typically limited to heavier displacement hulls.

This fast vessel will be equipped with advanced features such as the SPY-1K phased-array radar, modern hull-mounted sonar system, helicopter facilities, MK 41 Vertical

The agreement signifies AFCON's plans to continue its expansion into the corvette-class market. AFCON was formed in 1999 to pursue international surface ship opportunities. Today, its portfolio includes the IZAR-designed F 100 and F 310-class frigates and the DDG 51 class destroyer.

**Bennis to Lead Maritime, Land Security**

U.S. Secretary of Transportation **Norman Y. Mineta** named Rear Admiral **Richard E. Bennis**, USCG, (ret.) as the Associate Under Secretary of Transportation for Maritime and Land Security at the Transportation Security Administration (TSA). Admiral Bennis, who led Coast Guard response in New York to the September 11 attacks on the World Trade Center, will direct TSA exercise of security responsibilities for the nation's seaports and land transportation assets. In his last Coast Guard assignment as captain of the Port of New York, Bennis directed the successful evacuation by water of approximately 500,000 people from lower Manhattan.

Admiral Bennis served the Coast Guard for 30 years in a variety of headquarters and field assignments and was captain of the nation's three largest East Coast ports. In addition to service as captain of the port and commander of Coast Guard Activities New York, he was port captain and commander of the Coast Guard marine safety offices in Charleston, S.C. and Hampton Roads, Va. He served as the chief of the Office of Response at Coast Guard Headquarters addressing implementation of the Oil Pollution Act of 1990; oil spill and hazardous materials response, planning and preparedness; and port safety and security, including Olympic security for the 1996 Summer Olympics.

**WHOI And Gladding-Hearn Sign Coastal Vessel Contract**

The Woods Hole Oceanographic Institution (WHOI) and Gladding-Hearn Shipbuilding, Duclos Corporation of Somerset, Mass., signed a contract to build a 60-ft. (18.2-m) vessel to replace the Institution's aging 46-ft. (14-m) coastal vessel Asterias. Construction of the new vessel is estimated at a cost of \$1.6 million, with delivery expected in March 2004.

The Asterias replacement, designed by Roger Long Marine Architecture, Inc. of Cape Elizabeth, Maine, will offer researchers many expanded capabilities, including a cruising speed of 20 knots, providing efficient and quick access to coastal waters including Martha's Vineyard and Nantucket Sounds and Massachusetts Bay.

Vessel Design Specifications	
Length	60 ft. (18.2 m)
Beam	17 ft. (5.1 m)
Draft	5 ft. (1.5 m)
Range	350 miles
Cruising speed	20 knots (22.5 max)
Endurance	usually one day, occasionally 2 to 3 days
Accommodations	6 bunks (10 people on day trips)
Gear Handling	A-frame: 10,000 pounds
Fantail	15 x 20 ft.
Special Capabilities	Dive support, IMET, ADCP, CTD, clean power

The new vessel, whose name will be determined at a later date, will have a single operator for day trips and can accommodate six people for overnight trips or up to 10 people for day trips.

Among the standard instrumentation planned for the vessel are a flow-through water sampling system, a full suite of meteorological measurement systems (IMET), an acoustic doppler current profiler (ADCP) and conductivity/temperature/density (CTD) with winch for a variety of physical oceanographic measurements, and clean power.

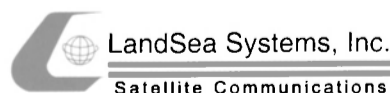
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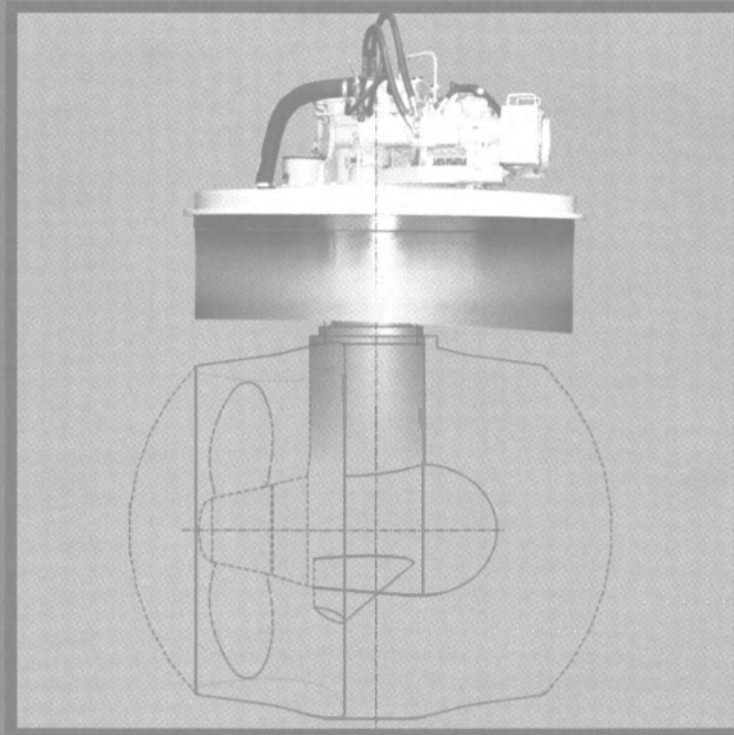
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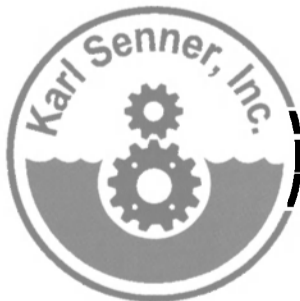
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Those companies that belabor the arduous conditions prevalent in business today will literally be left on the docks when the pace picks up during the coming year. All signs seem to point towards the start of economic recovery in the U.S., though the ripple effects will take some time to filter through to maritime and offshore businesses. Despite a generally dour hangover from the past 12 months, business opportunities are available to those who seek them.



Politics and irrational bean counters aside, the U.S. Navy will present ample opportunities for companies selling into this market in the decades to come. The cacophony of individual interests making cases for increased dollars at budget time does a great disservice to the causes that are truly needy. While the U.S. Navy and its supporters, particularly the American Shipbuilding Association, have added decibels to this homogenous voice, it is an inescapable fact that — to maintain its status as a world power for the coming decades — the U.S. must initiate an aggressive ship and boatbuilding program now to avoid future shortcomings.

While the need for more money is clear and justified, the size and look of the Navy of tomorrow is a bit fuzzy. The tremendous military build-up during the Cold War centered on aircraft carrier battle groups, and the presence and reality of massive doses of lethal force. While carrier groups are indeed a cornerstone of the Navy of tomorrow, work currently underway under the steady guidance of Rear Admiral Robert G. Sprigg at the Navy Warfare Development Command seeks to assist in providing clarity, and is focused on smaller, faster vessels, and the role that they can play in facing future defense challenges. The Navy section begins on page 24.

Opportunities of the non-lethal variety are presenting themselves in the Offshore realm, as the ability to discover and recover energy products in increasingly deeper waters evolves rapidly. Three stories in this edition: *Offshore Service Vessels* on page 40; a *Deepwater Offshore Market Projection* from Quest Offshore on page 50; and a detailed analysis of *LNG Ship Demand* on page 74 help to adequately illustrate this point.

*Gregory R. Trauthwein*

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[trauthwein@marinelink.com](mailto:trauthwein@marinelink.com)

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**NEW YORK**  
118 E. 25th St., New York, NY 10010  
Tel: (212) 477-6700; Fax: (212) 254-6271  
e-mail: [mren@marinelink.com](mailto:mren@marinelink.com) • Internet: [www.marinelink.com](http://www.marinelink.com)

**FLORIDA**  
215 NW 3rd St., Boynton Beach, FL 33435

**ASSOCIATE PUBLISHER**  
Gregory R. Trauthwein • [trauthwein@marinelink.com](mailto:trauthwein@marinelink.com)

### EDITORIAL

**Managing Editor**  
Regina P. Ciardiello • [ciardiello@marinelink.com](mailto:ciardiello@marinelink.com)

**Assistant Editor**  
Jennifer Rabulan • [rabulan@marinelink.com](mailto:rabulan@marinelink.com)

**Technical Editor**  
David Tinsley

**Editorial Consultant**  
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### MARKETING

**Marketing Manager**  
Richard Grable • [grable@marinelink.com](mailto:grable@marinelink.com)  
Tel: (561) 732-1659; Fax: (561) 732-6984

### PRODUCTION

**Production Manager**  
Michael Lowe • [lowe@marinelink.com](mailto:lowe@marinelink.com)

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### CIRCULATION

**Circulation Manager**  
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## Halmatic To Supply RIBs For Maritime & Coastguard Agency

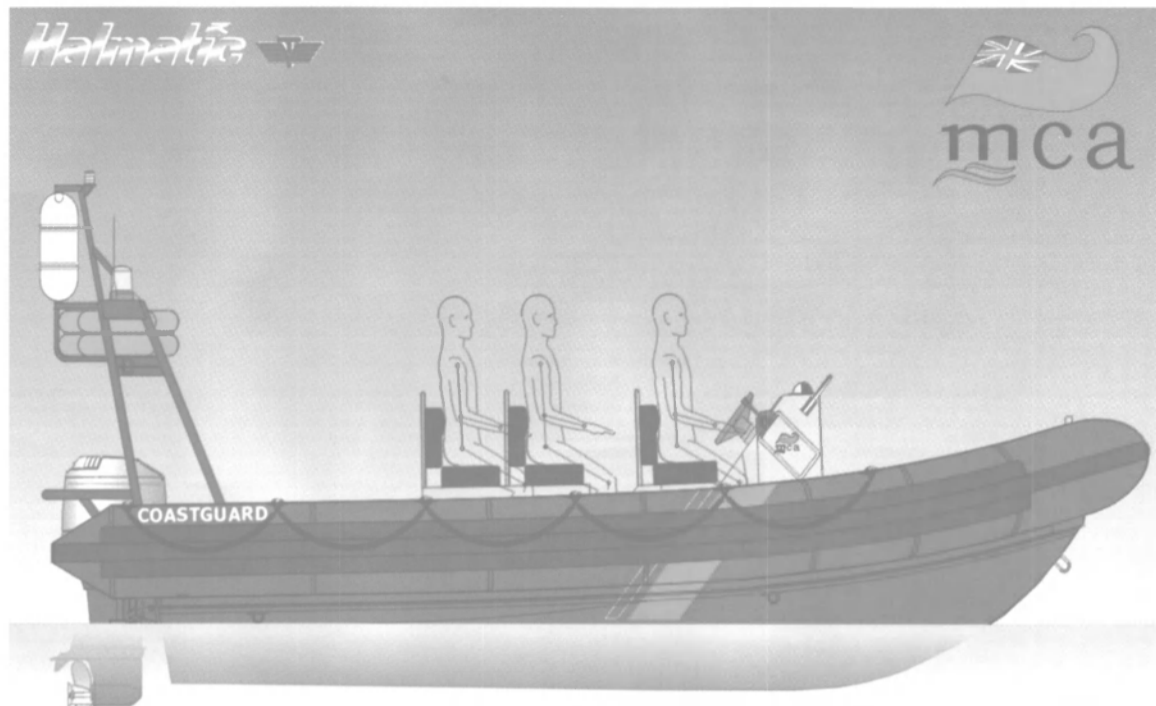
Halmatic, one of the leading U.K. commercial and military boatbuilders, has announced a contract to supply four Pacific 32 wheelhouse rigid inflatable boats, three Arctic 22 rigid inflatable boats and one RTK Marine 29-ft. (9-m) Logistic Support Boat to the UK Maritime & Coastguard Agency (MCA).

The new fleet is designed to fulfill the MCA's wide operational requirements and will be based around the United Kingdom. The new craft will be built to Lloyds Register of Shipping Rules Report 10 and the MCA Brown Code Category 3 Rules.

The RTK Marine Logistic Support Boat is a commercial derivative of the successful Combat Support Boat currently in service with the U.K. Ministry of Defence. The craft features an asymmetrical narrow tunnel hull form and is powered by twin Yanmar inboard diesel engines coupled to Hamilton waterjets to provide a service speed in excess of 25 knots. The large wheelhouse will accommodate six crew on individual suspension seats and boast a galley, air-conditioning and day heads.

The Arctic 22 rigid inflatable boats will be trailer mounted for ease of deployment and will be powered by twin 90-hp outboard motors. Like the Arctic 22, Pacific 32 rigid inflatable boats feature a large air-conditioned wheelhouse with seating for six crew, galley and day head; Both will house twin Yanmar inboard diesels driving Hamilton waterjets to provide a service speed in excess of 25 knots.

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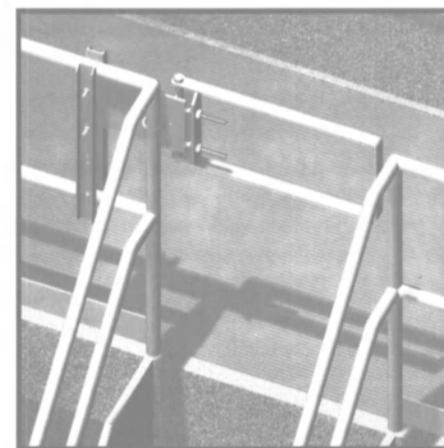
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## SENESCO Announces Largest Contract To Date

The Southeastern New England Shipbuilding Corporation (SENESCO), has signed its largest barge contract to date to build a 332 x 74-ft. (101.1 x 22.5-m) double-hulled liquid fuel barge. The contract, which is valued in excess of \$7 million, creates an immediate open-

ing for 20 new employees, a move that will increase SENESCO's workforce to just under 200 employees. The contract comes with options for two additional barges that, if exercised, will ensure full employment at SENESCO for the next two years.

Construction of the ABS-Classed, Ocean Service double-hull tank barge

will begin immediately and it is expected to be delivered by November 2002. The barge, with a capacity in excess of 80,000 barrels, will be built primarily for oil service in the Southern U.S. and will comply with the Oil Pollution Act of 1990 (OPA '90) requirements.

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## First L21/31 Enters Service

Scandinavian ferry operator DFDS Seaways has ordered a five-cylinder L21/31 genset from MAN B&W Diesel A/S, Holeby, Denmark; the engine will go into service in early May 2002 onboard the Princess of Scandinavia.

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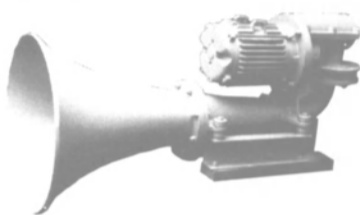
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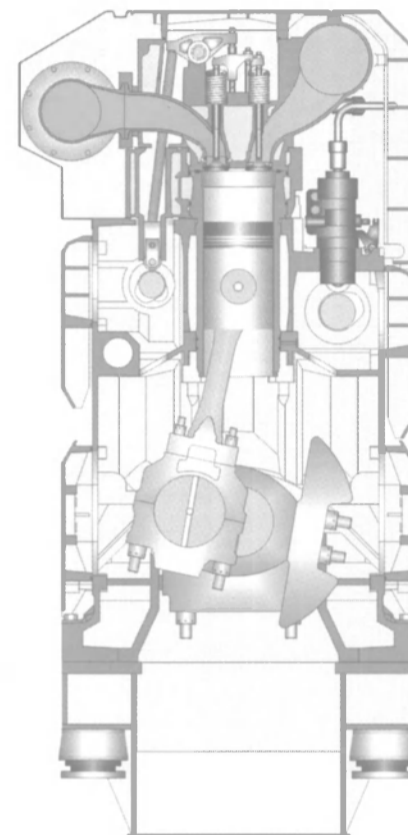
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Featuring a robust design with consequent low maintenance requirements, the L21/31 GenSet has an output of 950 kW at 900 rpm. This order follows the one already placed by DFDS Tor Line for 16 x 8L21/31 for a series of new-buildings at Flensburger Schiffbau-Gesellschaft.

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## New Board At Kvaerner Masa-Yards



**Jorma Eloranta**, president & CEO, Kvaerner-Masa.

A new Board of Directors has been elected for Kvaerner Masa-Yards Inc. Chairman: **Leif-Arne Langøy** (president and CEO, Aker Kvaerner Yards AS). Members: **Jorma Eloranta** (president and CEO, Kvaerner Masa-Yards Inc.); **Karl Erik Kjelstad** (executive vice president, Aker Kvaerner Yards AS); **Oddvar Slettevold** (executive vice president, Aker Kvaerner Yards AS); and **Trond Ø. Westlie** (CFO, Kvaerner ASA). **Aarne Ukkola** and **Jorma Malinen** continue as representatives of the personnel.

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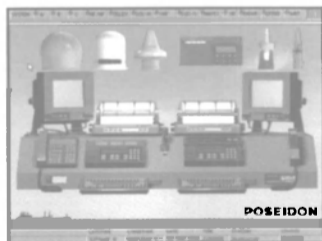
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## Germanischer Lloyd Reorganizes Operations



Dr. Hans Payer

Germanischer Lloyd (GL) has restructured its business operations, dividing its two main operating areas into maritime services and industrial services. In a press meeting in Hamburg on March 4, executive board members Dr. **Hans Payer** and Consul **Rainer Schondube** said, "The new structure advances our policy of continually adding value to services, and enables us to better control and adapt our operations."

Of a total group turnover of \$160.4 million in 2000, about 80 percent was provided by maritime services and 20 percent by industrial services. Maritime Services, whose main operation is ship classification, is comprised of tightly focused central services coupled to the decentralized field service. The organizational structure runs along the value-adding chain with only three divisions: classification and flagstate affairs, ship technology and advanced engineering and strategic research.

The technical functions have been concentrated in a unit based in Hamburg to generate the best possible synergies. The introduction of ship type managers within the ship technology division will be responsible for individual ship segments on a project basis. Ship type managers have been established for the segments of container ships, multi-purpose ships, bulk carriers, panamax and post-panamax ships, RoRo ships, high speed craft, tankers and naval vessels.

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## New Radio Holland Group Is Now Independent

Radio Holland (Rotterdam) announced that the MBO of the SRH Marine Group has been completed. Zenitel (Brussels) and the RheinMetall Group (Dusseldorf), both 50 percent shareholders in EMG EuroMarine Electronics GmbH (Hamburg), agreed to divest SRH Marine.

The operation took place through an MBO by the management of SRH, financed by ABN AMRO Capital (The Netherlands). Consequently, SRH Marine has now become an independent and leading international company in the maritime market.

The new name of the holding will be Radio Holland Group, with headquarters located in Rotterdam.

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## Celebrity Cancels Summit And Infinity Sailings

Celebrity Cruises will send two ships, Summit and Infinity, into unscheduled drydocks March 29 and April 13, respectively, to repair propulsion pods. Both ships are operating safely but at a lower cruising speed.

Summit will cancel a March 29 sailing

from Fort Lauderdale, and an 11-night cruise April 8 will be shortened to a seven-night sailing April 12.

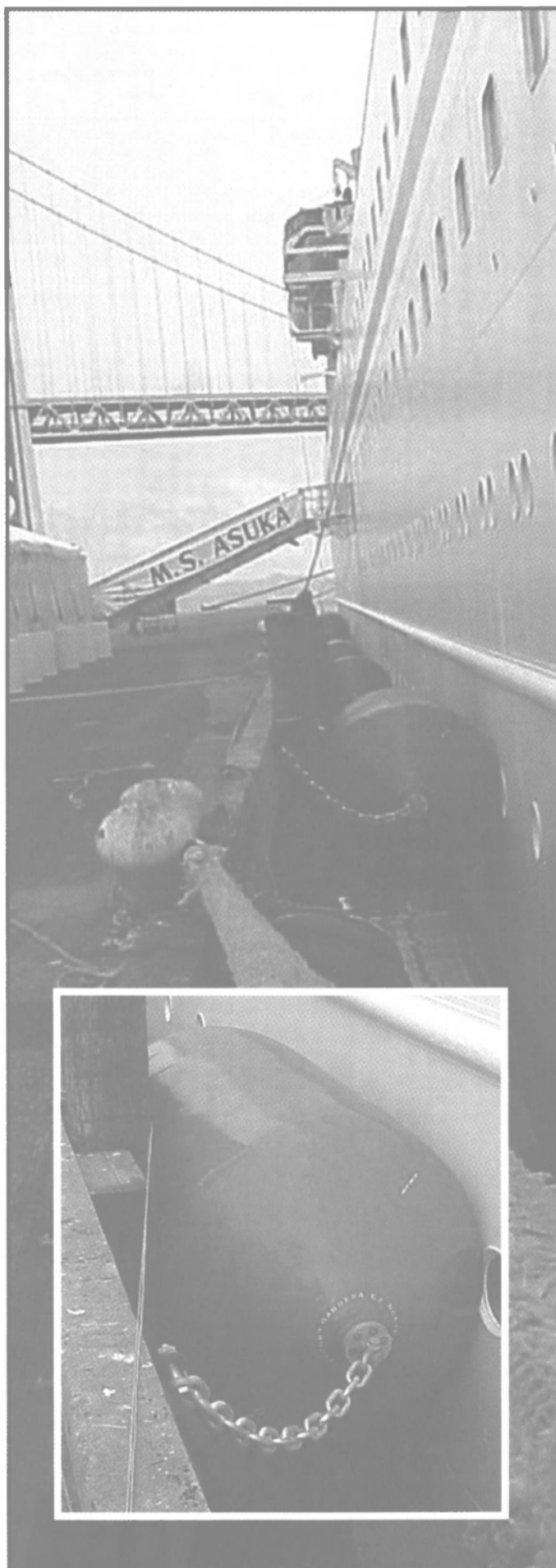
Infinity will miss its April 13 and 20 sailings from San Juan. Infinity will modify two itineraries.

The problem with the pods involves ball-bearing units that are wearing out prematurely. Consequently, ships must reduce their cruising speed, potentially

falling behind schedule on port calls. By making repairs as soon as possible, Celebrity will avoid further changes in itineraries.

Both ships will be drydocked at the Grand Bahama Shipyard in Freeport, Bahamas.

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## Kvaerner And Aker Maritime Join Forces

Kvaerner has launched a new company with 18,000 employees in 17 countries and on five continents. The new company, to be known as Aker Kvaerner, will supply products, services, tech-



nology and solutions worth \$2.2 billion a year to the global oil and gas industry.

Aker Kvaerner is the result of a merger between Aker Maritime and Kvaerner Oil & Gas, and forms one of four business areas within the Kvaerner Group. Subsidiaries of Aker Kvaerner have already won contracts totaling \$1.7 bil-

lion since the start of 2002, almost doubling the Group's order backlog in just over two months.

In many of its business streams, the new company will rank among the world's leading players. It is strong, for instance, in advanced drilling equipment, subsea facilities, the management of large and complex platform tow-outs, and the installation of seabed equipment. Aker Kvaerner also embraces some of the most advanced solutions for both platforms and mooring systems in deep water. It has become one of the biggest players in the large U.K. and Norwegian markets for maintenance, modifications and operational support on production platforms.

Preparations for merging Aker Maritime and Kvaerner Oil & Gas have been completed in just over two months, with more than 250 employees directly involved in the integration work. In addition, personnel from the whole organization have been drawn into the planning and preparatory process. Establishing a new organization has been a key task. Since the beginning of January, potential candidates for senior roles have been nominated and thoroughly assessed prior to key posts being filled.

## USCG Awards Contract for Response Boats

The U.S. Coast Guard awarded a contract of up to \$10 million to SAFE Boats International of Port Orchard, Wash., for ports and waterways response boats. Funding for the boats, which will help the service perform Homeland Security missions, was provided in the Emergency Supplemental Act, 2002. The initial order is for 18 boats with an option of procuring additional craft and essential spare parts over the next 18 months.

The response boats will be deployed to Coast Guard stations throughout the United States and will be used by the new Coast Guard Maritime Safety and Security Teams, which will provide specialized Homeland Security capabilities in key economic and militarily strategic ports.

The Coast Guard Maritime Safety and Security Teams (MSSTs) are domestic, mobile units that possess specialized training and capabilities to perform a broad spectrum of port safety and security operations.

MSSTs will offer operational commanders a quick response capability that will meet the changing threat environment in U.S. harbors, ports and internal waterways. They are also part of the USCG's layered defense strategy, and will be used to provide safety and security in strategic seaports.

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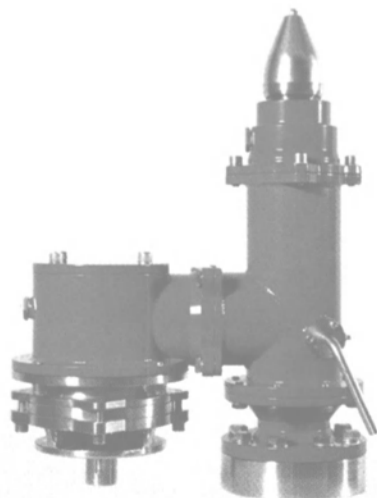
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## Royal Caribbean And Celebrity Announce Key Appointments

Royal Caribbean International and Celebrity Cruises named industry veterans **Dietmar Wertanzl** and **Rod McLeod**, to two new posts created to build service quality and improve outreach to travel agents.

Wertanzl will lead Celebrity's Fleet Operations, assigning him responsibility for the brand's hotel and marine operations. Named senior vice president of



Fleet Operations, Wertanzl joins Celebrity from Crystal Cruises, where he was senior vice president of Hotel Operations, and widely credited with both elevating and cementing Crystal's luxury standing.

**Rod McLeod**, senior vice president Travel Industry Relations, RCCL.

Wertanzl's appointment follows a 25-year career in high-end lodgings and travel, which includes nine years at Crystal and six years at Royal Viking Line.

McLeod was named senior vice president of Travel Industry Relations, giving him chief responsibility for liaising with travel agents and supporting client needs.

McLeod returns to Royal Caribbean after a six-year hiatus working elsewhere in the cruise industry. Most recently, he headed American Classic Voyages as president and COO.

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# Key Port Security Measure Passed

H.R. 3983, the "Maritime Transportation Antiterrorism Act of 2002," was passed by the House Transportation and Infrastructure (T & I) Committee on March 20. The legislation was introduced by the bipartisan leadership of the

Transportation Committee, including: Rep. **Don Young** (R-Alaska), Chairman, Transportation & Infrastructure Committee; Rep. **James Oberstar** (D-Min.), Ranking Democrat, Transportation Committee; Rep. **Frank LoBiondo**

(R-N.J.), Chairman, Coast Guard & Maritime Transportation Subcommittee; and Rep. **Corrine Brown** (D-Fla.), Ranking Democrat, Coast Guard Subcommittee

"We thank Chairman Don Young (R-

Ark.) of the House T & I Committee, and Subcommittee Chairman Frank LoBiondo (R-N.J.) of Coast Guard and Maritime Transportation, for their leadership on moving to address maritime security," said **Kurt J. Nagle**, president of the American Association of Port Authorities (AAPA). "We are encouraged about the \$225 million authorized for Federal grants to help ports enhance seaport security, and the local flexibility provided for vessels and facilities to address terrorism at America's ports. AAPA strongly supports enactment of Federal legislation to address maritime security."

Overall, H.R. 3983 takes a slightly different approach than the Senate bill, S. 1214, "The Port and Maritime Security Act of 2001." It is focused solely on terrorism and is not as detailed on planning requirements. The bill only covers areas that the Department of Transportation (DOT) determines are at risk of having a catastrophic emergency in the event of a terrorist attack. Also, because of jurisdictional limitations of the committee, the bill only focuses on DOT activities, not those of the U.S. Customs Service.

The bill is modeled on the Oil Pollution Act, in which Congress outlined broad planning requirements but left most of the details to the discretion of DOT. Like S. 1214, it requires a family of plans, including national, area and vessel/ facility plans. H.R. 3983 calls for grants over three years totaling \$225 million (less than S.1214, which over a five-year period, calls for \$390 million in grants), but limits them to technology.

## The Maritime Transportation Antiterrorism Act of 2002

### Port Security

Section 2 of the bill creates a new subtitle VI of title 46, United States Code, to establish a comprehensive national system of antiterrorism security enhancements. Chapter 701 of this subtitle contains provisions related to port security.

New section 70102 of title 46 requires the Coast Guard to conduct port vulnerability assessments for U.S. ports, including an assessment of the vulnerability of each facility in a port, at which there is a high risk of a catastrophic emergency. The results of the vulnerability assessments will be used to implement a national maritime transportation antiterrorism planning system, consisting of a national plan, area plans, as well as vessel, facility, and port terminal plans, to deter a catastrophic emergency to the maximum extent practicable.

Section 70103 requires that vessel and facility antiterrorism plans be submitted for approval to the Coast Guard, by vessels and facilities involved in a cata-

(Continued on page 20)



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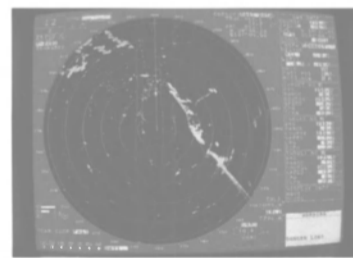
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#### 2 JMA-9800 Color ARPA Radar

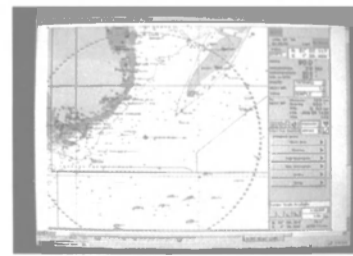
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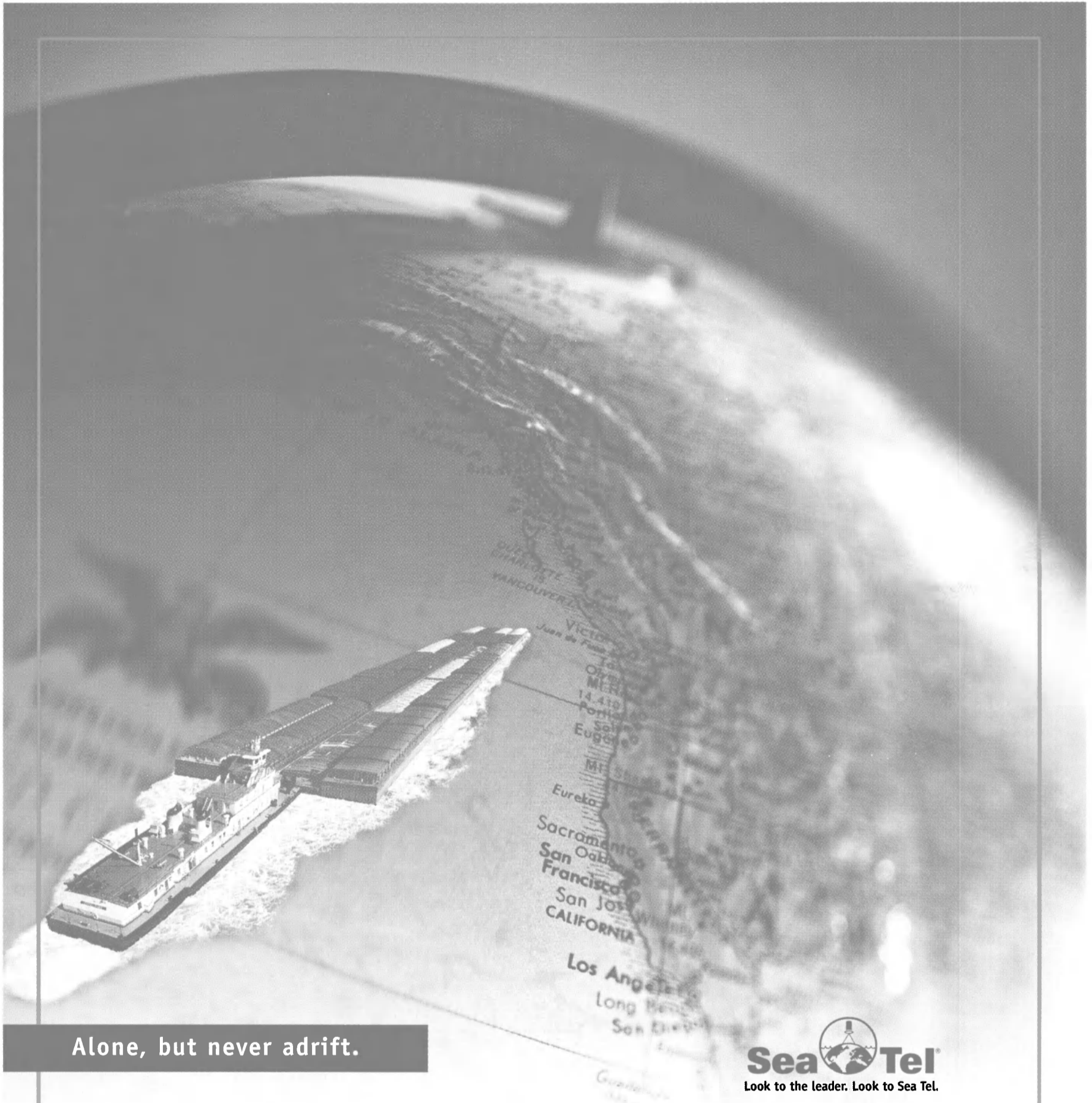
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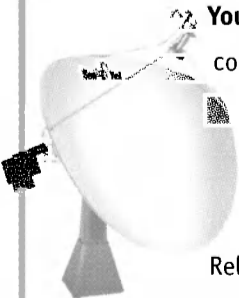
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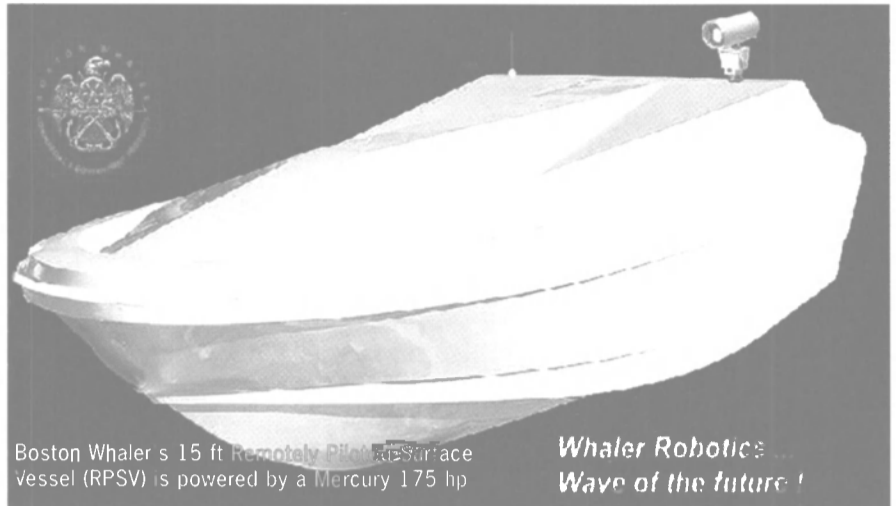
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## Boston Whaler Unveils "Robot" Security Boat

A Remotely Piloted Surface Vessel (RPSV) was unveiled at the Navy League Air Sea and Space Exhibition in Washington D.C. from March 26-28, 2002 by Boston Whaler Commercial and Government Products Inc., a Brunswick Corporation boatbuilding division. Developed jointly by Boston Whaler, Global Atlantic Inc. and Smart boat Inc., the 15 foot fiberglass hull of the RPSV is propelled by a 2.5-liter V6 cylinder 175-hp Mercury SportJet water jet giving a speed capability in excess of 40 knots. Although initially offered with a gasoline engine, a diesel or multi-fuel variant will be optional in the near future. (See related story, page 26 of this edition).

Selection of Boston Whaler as lead contractor to supply the boat hull was

made due to its long reputation as volume manufacturer of hulls with proven sea-keeping qualities and its experience in governmental and military boats. General Manager **Eric Caplan** said, "this cost-effective RPSV brings about a quantum leap in naval/marine tactics, heralding a new era in maritime security." The RPSV operates without a pilot and is controlled either remotely or autonomously according to mission and set-up. Typical tasks for this craft are surveillance and interdiction: able to operate for periods ranging from several hours to several days, depending on fuel limitations. Propulsion and steering control functions use a customized Mercury SmartCraft CAN-bus network, integrated to the "black boxes" of the command and control system specially developed for the application. The on-board computer is a COTS design with open archi-



Boston Whaler's 15 ft Remotely Piloted Surface Vessel (RPSV) is powered by a Mercury 175 hp

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ture, retained in special marine shock mounts. High-definition video with low light capability, infrared camera, spot/floodlights, electric thrusters providing position loitering. Additional roles could include port and coastal

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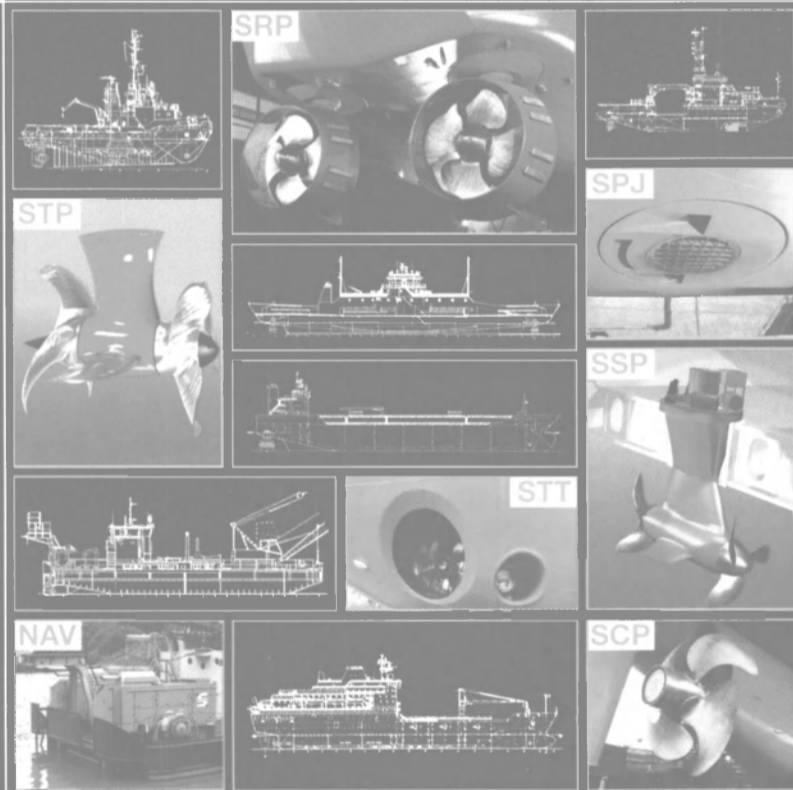
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## Protection Zones In Place For USS Roosevelt's Return

As part of the Coast Guard's ongoing port security mission, extra Coast Guard boats and personnel provided armed escort and enforcing the Naval Vessel Protection Zone (NVPZ) surrounding the USS Roosevelt Battle Group during its return to Hampton Roads, Va. on March 27.

"We're very proud of what our Sailors, Soldiers, Airmen and Marines are doing overseas to protect our homeland," Coast Guard spokesman Lt. Cmdr. **Brendan McPherson** said. "These protection zones are a way of showing our support for our troops who routinely put themselves in harm's way for our Nation."

More than 150 Coast Guard men and women from Coast Guard Group Hampton Roads, the Marine Safety Office and a number of local boats and cutters, including the 210-ft. (64-m) cutter *Diligence* from Wilmington, N.C., conducted a channel clearing operation on the morning of March 27.

A 500-yd. protection zone around each ship was also be enforced. Non-commercial vessels must remain at least 100 yds. away from any naval vessel and operate at minimum speed when within 500 yds.

All outbound commercial vessels on the southern and eastern branches of the Elizabeth River must sail two hours before the scheduled naval vessel movement or must remain astern of and maintain a safe distance from the naval vessels.

All inbound commercial vessels must be in the Capes one and one half hours ahead of the scheduled naval vessel to transit ahead of the battle group. Otherwise they must remain at anchor at Lynhaven Anchorage or stay outside of the buoy marking the "C" anchorage.

Recreational vessels will be required to comply with the NVPZ restrictions and comply with all orders directed by the Coast Guard and Navy patrols.

Coast Guard Atlantic Area Commander Vice. Adm. **Thad Allen** established the Naval Vessel Protection Zone regulation effective from Sept. 14, 2001 to June 15, 2002, providing another safety measure for Naval ships in the wake of the attacks on America.

A U.S. Naval vessel is considered to be any vessel owned, operated, chartered or leased by the U.S. Navy; and any vessel under the operational control of the U.S. Navy or a unified commander.

As a result, the establishment and enforcement of NVPZs is a function directly involved in and necessary to military operations and the safety and security of naval commanders and personnel.

### Details Excerpted From the Temporary Regulation

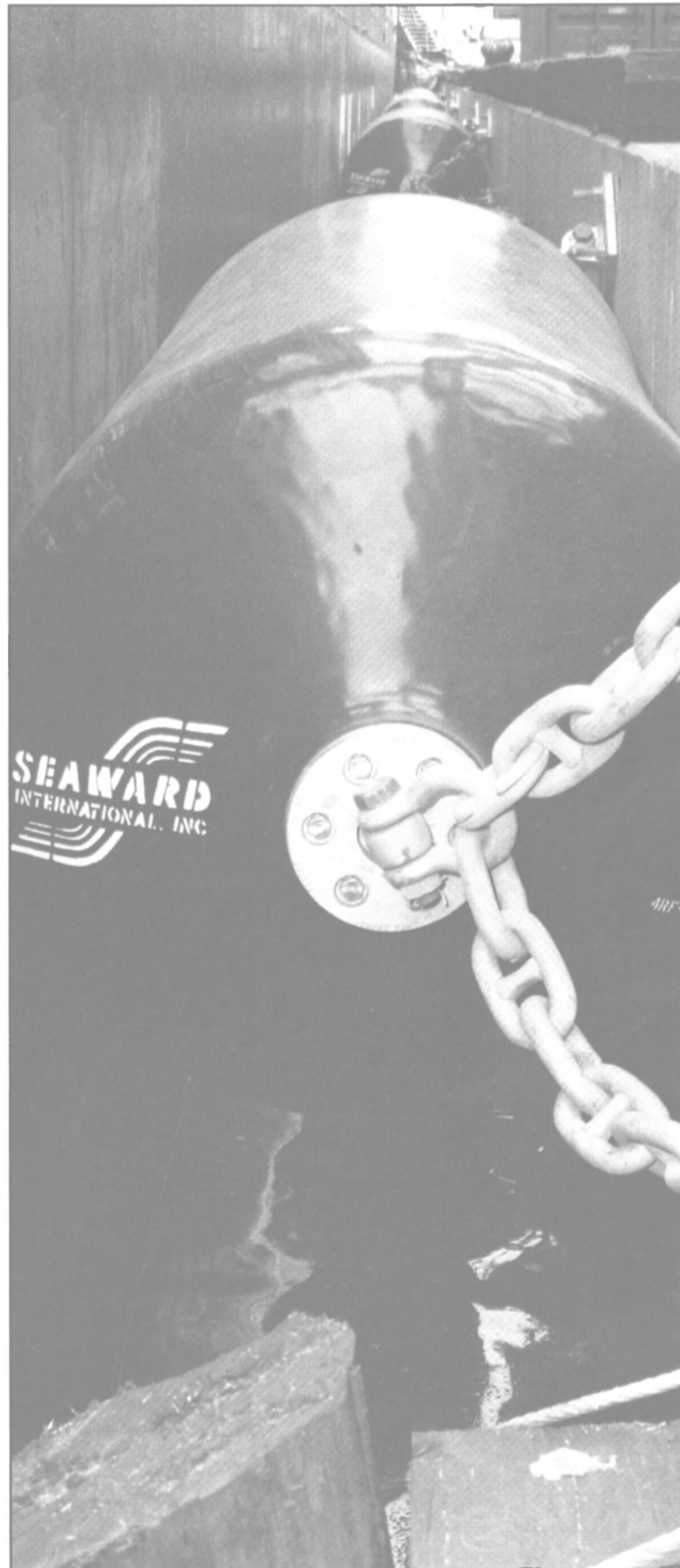
- All vessels within 500 yards of a U.S. naval vessel must operate at the minimum speed necessary to maintain a safe course and proceed as directed by the official patrol.

- Vessels are not allowed within 100 yds. of a U.S. naval vessel, unless authorized by USCG or Navy official.

- Vessels requesting to pass within 100 yds. of a U.S. naval vessel must contact the official patrol on VHF-FM channel 16.

- Under some circumstances, the official patrol may permit vessels that can only operate safely in a navigable channel to pass within 100 yds. of a U.S. naval vessel.

- Under similar conditions, commercial vessels anchored in a designated anchorage area may be permitted to remain at anchor within 100 yards of passing naval vessels.



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(Continued from page 16)

strophic emergency. The Coast Guard may also require each operator of a vessel or facility to implement interim security measures until their antiterrorism plan is approved. The Coast Guard will integrate the local vessel and facility antiterrorism plans into area and national plans, with the advice of local harbor safety committees.

Section 70104 requires the Coast Guard to cooperate with the Director of the Federal Emergency Management Agency to coordinate maritime terrorism response actions. This section also requires the Coast Guard to develop a system of terrorism response for vessels. Section 70106 establishes Coast Guard maritime antiterrorism teams to protect vessels, ports, facilities, and cargo on United States' waters. Section 70107 allows the Under Secretary of Transportation for Security to provide financial assistance for enhanced facility security to implement a maritime antiterrorism plan approved by the Coast Guard or an interim measure required by the Coast Guard. For each of fiscal years 2003, 2004, and 2005, \$75 million is authorized for the grants. Section 70108-70110 requires that the Coast Guard assess the effectiveness of the antiterrorism measures maintained at foreign ports from which vessels depart on a voyage to the U.S. or which pose a high risk of terrorism to the U.S.

By no later than June 30, 2003, new section 70111 requires the Under Secretary of Security, in consultation with the Transportation Security Oversight Board, to develop and maintain an antiterrorism cargo identification and screening system for containerized cargo shipped to and from the U.S. directly or via a foreign port.

### Coast Guard Authority To Control Vessels In U.S. Territorial Waters

Section 3 of the bill amends the Port and Waterways Safety Act to require all vessels entering the 12-mile territorial sea of the United States to provide notice to the Coast Guard 96 hours before entering those waters. This section also clarifies that the Coast Guard has the authority to direct the safe operations of all vessels in the 12-mile territorial sea and other navigable waters of the U.S. during hazardous circumstances.

### Extension Of Coast Guard Jurisdiction

This section would extend the jurisdiction of the Coast Guard from three miles from shore to 12 miles from shore for certain security activities when the President determines that national security is endangered. Section 4 also creates civil penalties not to exceed \$25,000 for each violation of a Coast Guard order.

### Assignment Of Sea Marshals

Section 7 of this bill amends the Ports and Waterways Safety Act to allow the dispatch of properly trained and qualified armed Coast Guard personnel, commonly called "sea marshals," on facilities and vessels to deter or respond to acts of terrorism.

### Automatic Identification System (AIS)

This section requires that all vessels built after December 31, 2002, be equipped with a position indicating transponder and an appropriate situation display for accessing the information made available by the transponder system.

### DOT Outlines Smart Card Concept For Transportation Workers

The Department of Transportation (DOT) is considering establishing a nationwide transportation worker identification system under which workers in all transportation modes would carry "smart cards" to verify their identity and control their access to vessels and transportation facilities.

A DOT team, known as the Credentialing Direct Action Group, of CDAT, briefed industry representatives on the concept at a January 22 briefing at DOT headquarters in Washington, D.C.

The CDAG, briefed industry representatives from each of DOT's operating agencies, including the Coast Guard and the Maritime Administration, as well as the new Transportation Security Administration (TSA). Under the concept presented by CDAG, a transportation worker in any mode of transportation who required unescorted access to a vessel or transportation facility would obtain a Transportation Worker ID card (TWIC).

The Transportation Security Administration would establish standards and procedures governing the TWIC, including the biometric information it would contain (e.g., a photograph, fingerprint, etc.) and would require a standard security check (at minimum, an FBI criminal records and National Driver Register check) as a condition of card issuance. The CDAG outlined a range of possibilities for card issuing authorities, from state motor vehicle agencies (an approach that would potentially allow an individual's driver license to serve as the TWIC) to the federal transportation agencies (such as the Coast Guard).



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## IMO Calls for Unity on Bulk Carrier Safety

IMO Secretary General **William O'Neil** has highlighted the need for widespread and concerted efforts to improve bulk carrier safety. Speaking at the opening of the 45th session of the IMO Sub-Committee on Ship Design and Equipment (DE) O'Neil said, "Bulk Carrier Safety has been a priority on our agenda for over ten years now and, while certain improvements have been introduced, the work has not been finalized, as we are regrettably reminded from time to time by the continuing loss of bulkers."

He added, "I would therefore encourage, once again, all parties concerned — Governments, industry and technical organizations — to work in unison, not in an isolated manner, to bring the issue to a positive conclusion as soon as possible."

Specifically, the Sub-Committee will be looking at alternative means of sealing up anchor chain pipes to prevent water entry and whether access to chain lockers should be by bolted manholes and not doors. It will also be considering a recommendation that the installation of a level monitoring system in the spaces forward of the collision bulkhead be made mandatory on all capsized bulk carriers and the need for an independent pumping system for such spaces. The Sub-Committee will also address that classification societies should require shipowners to maintain on board and ashore as-built construction drawings and other plans showing subsequent structural alterations, to help shipowners to develop an effective maintenance program for their ships.

## OECD Working Group To Brainstorm on Port Security

The Maritime Administration (MarAd) announced its participation in the Ad-Hoc Working Group on Security for the Maritime Transportation Committee (MTC) at the Organization for Economic Cooperation and Development (OECD) in Paris.

Government and industry leaders will be open and encourage an international dialogue on this important matter. "We must participate in these international forums because port security problems require international solutions. It is vital that we work with other countries and international agencies worldwide, as well as with all the modes within the Department of Transportation and other agencies in the U.S. government."

This international initiative complements and augments the extensive domestic work being done in port security, such as the Port Security Grant Program, which is being administered by MarAd and the U.S. Coast guard on behalf of the Transportation Security Administration (TSA).

Maritime Administrator **William G. Schubert** says Carlton will apply a balanced approach, one that recognizes the critical need for secure and reliable port operations across the globe, because maritime transportation is the dominant component of our international trade infrastructure, carrying over 95 percent of the volume of U.S. overseas foreign trade."



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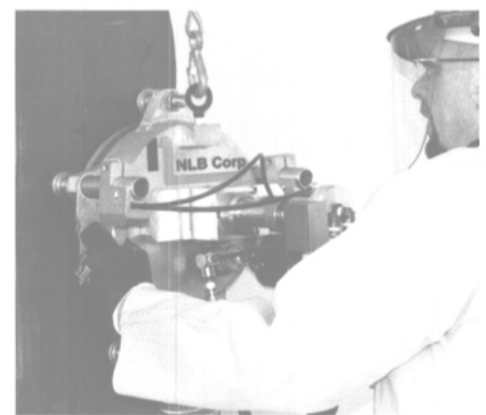
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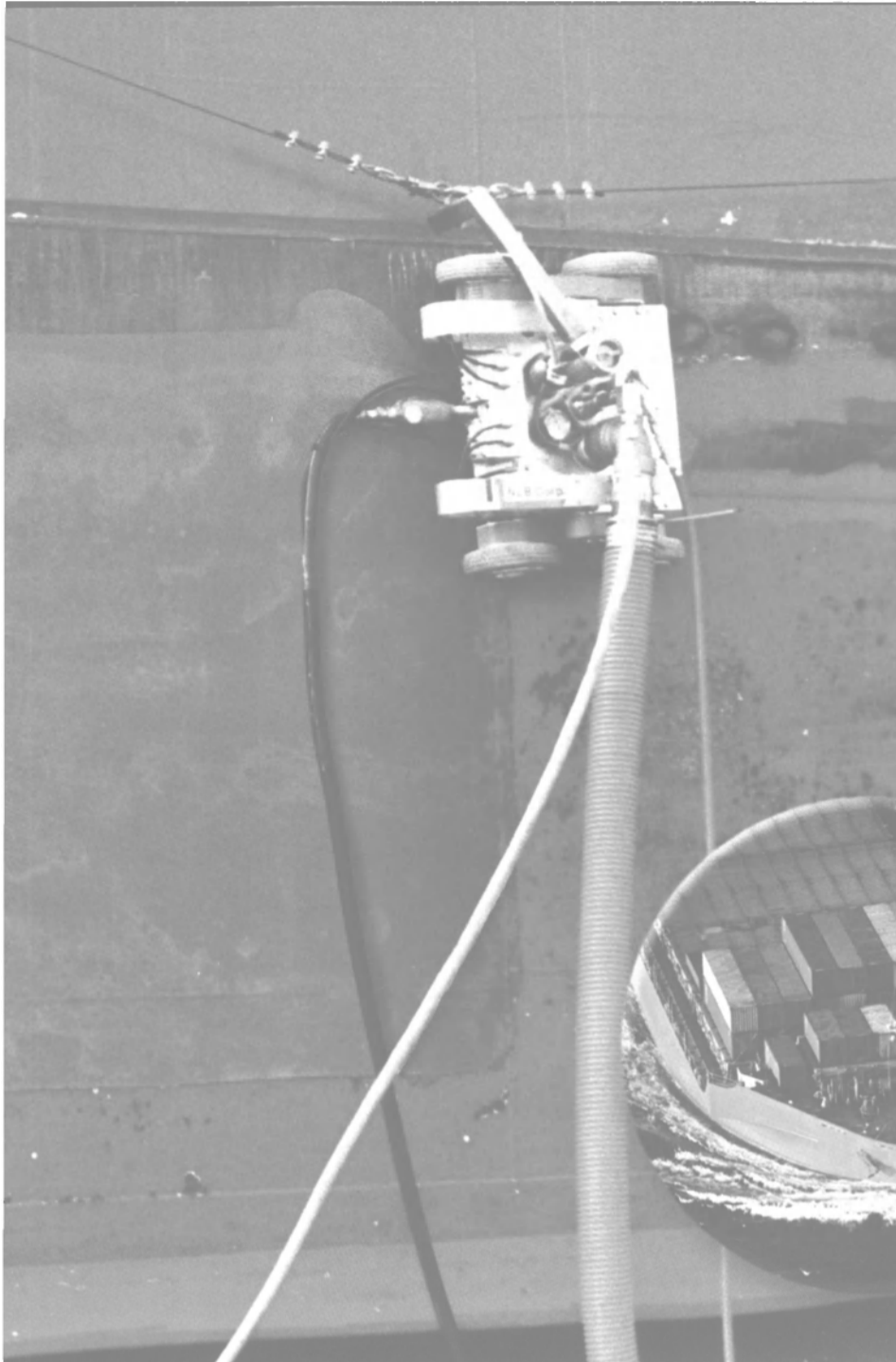
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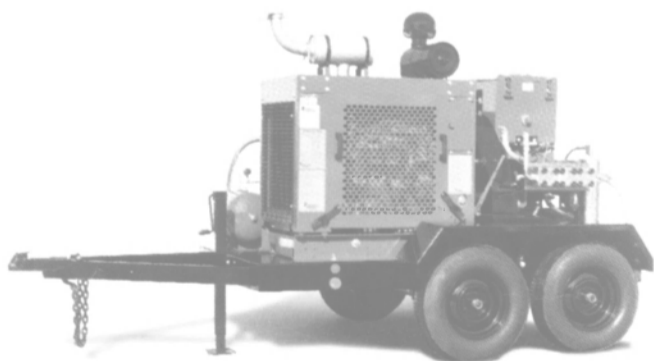
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# NWDC: The Ultimate One-Stop Shop

*The efficient adoption and integration of leading edge, off-the-shelf technologies; seamless cooperation among military branches and entities; and procurement of a vessel, in record time, on a "handshake ... with the paperwork later" is not the commonly held perception of the U.S. Navy. But the work being conducted in Newport, Rhode Island, home of the Navy Warfare Development Command (NWDC) under the leadership of Rear Admiral Robert G. Sprigg - simultaneously developing Concept, Technology and Doctrine - is anything but common. — by Greg Trautkwein*

There is no short or simple way to describe the work taking place by NWDC at its historic Sims Hall location aboard Naval Station in Newport, R.I., other than to say that it delicately balances current and future needs while helping to identify, develop, test and document the products and systems that will keep the U.S. Navy the strongest force on the world's waterways. NWDC is responsible to no one and everyone all at once, and as Rear Admiral Sprigg so adequately described: "We (NWDC) are needed ... we are incredibly valued ... and we could be dis-established at any minute." Established in 1998, NWDC is challenged with the formidable task to focus and champion warfare innovation and concept development, to identify the required organizational capabilities which flow from validated concepts to design, plan and coordinate the Navy's Fleet Battle Experiment Program, to synchronize, approve and disseminate navy doctrine, and to represent the Navy in joint experimentation. (See Figure below). In essence, NWDC is tasked with not one simple part of the developmental equation, rather it combines Concept, Technology and Doctrine. There is no other place in the Navy, or the military for that matter, which is tasked with the co-evolution of fighting concept, technology and procedure, said Rear Admiral Sprigg. The mandate requires a "think outside the box"

mentality, which emanates from his desk and flows down through the organization.

NWDC is far beyond the scope of evaluating simply a vessel or system, for example, rather plugging that piece into the overall puzzle, helping to create the path that will lead to the look, content and fighting capabilities of tomorrow's Naval forces. A current project, which has commanded a large part of NWDC's attention and R&D dollars is the Joint High Speed Vessel Experimentation Project, which is a 12-month joint experimentation project for the Army, Navy, Marine Corps, Special Operations Command and Coast Guard aboard the Joint Venture (HSV-XI), a 313-ft. (95.4-m), 40+ knot fast craft built in Australia by Incat.

### The Need for Speed

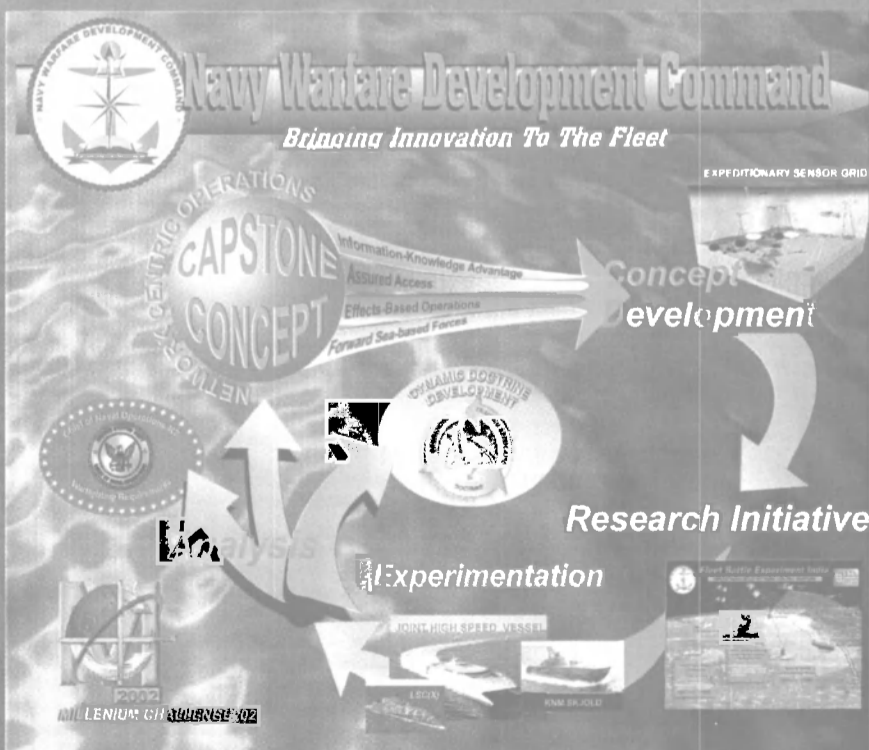
It is not a far stretch to assume that a man who was selected for Test-Pilot Training at the U.S. Naval Test Pilot School, and whose flying experience includes more than 3,500 flight hours in tactical jet aircraft and more than 500 arrested landings in more than 20 different aircraft is enamored with speed, be it on land, water, or in the air. The excitement with which Rear Admiral Sprigg regards the capabilities and multi-function possibilities of a new breed of high speed, shallow draft, high capacity vessels is palpable. It



Whether at his desk at NWDC headquarters in Newport, R.I. (above) or touring shipbuilding facilities in Australia with INCAT Chairman Robert Clifford (below), Rear Admiral Robert G. Sprigg's excitement for high-speed, high-capacity, shallow-draft ships is palpable.



should be noted that, while the experience with Joint Venture to date have been a resounding success, which is echoed throughout the NWDC organization, it is viewed as a surrogate technology, to be used for evaluation in determining the final look, feel and capability of a new product.



NWDC is designed to bring the realms of concept development, research, experimentation and analysis under one roof. Joint Venture (below), is a "surrogate" technology vessel, allowing NWDC and its partners to test the applicability of a high-speed, high-capacity, shallow-draft vessel for tomorrow's Navy.



Maritime Reporter & Engineering News



While the speed is impressive, the complete package currently embodied in Joint Venture is, in Rear Admiral Sprigg's estimation, a combination that cannot miss with military decision makers. I don't know how and when, but it (high speed vessels) will re-balance our naval force composition, he said.

Forced to "go big" during the Cold War year military build up, the U.S. is facing a much more diverse, smaller and elusive target, which a large carrier group simply is not designed to fight. "(The terrorism attacks) have changed the balance of operational challenges, and has had a ripple effect throughout the entire organization," said Rear Admiral Sprigg. "It brought what we thought was potential to reality," and it represents as broad of a swing as possible from the Cold War, bringing up the need for new tools.

While speed is not the sole factor, of course, in determining the Navy of the future, Rear Admiral Sprigg believes that its impact with represent a watershed event in the history of the Navy.

**"We (NWDC) are needed ... we are incredibly valued ... and we could be dis-established at any minute."**

RADM Robert G. Sprigg, USN, Commander,  
Navy Warfare Development Command

Central to the "Streetfighter" concept of a large number of small, fast, multi-mission vessels is the need to have in place a seamless information collection, dissemination and analytical capability — termed Expeditionary Sensor Grid by NWDC — which allows the vessels to penetrate and successfully complete its mission without carrying the enormous quantity of equipment and systems typically found on Navy ships today. For example, the Naval craft of the future

might not carry the full complement of equipment necessary to detect, as an example, a cruise missile attack, but it will be capable of "plugging" into a system that is equally effective in determining and thwarting such an attack.

"You can have a multi-mission ship with no inherent weapon system, mak-

ing the design parameters as wide as your imagination," said Rear Admiral Sprigg. Joint Venture embodies many of the values RADM Sprigg deems necessary — high speed, shallow draft, multi mission, large carrying capacity, RoRo capability. "This ship is meant to move 'stuff' ... our (the Navy's) 'stuff' is differ-

ent than commercial cargo, but it is still 'stuff.'" The story of how Joint Venture was acquired is nearly as impressive as the vessel itself, as it was accomplished through an uncommon cooperation among military branches and an unbelievable swiftness. Rear Admiral Sprigg

(Continued on page 33)

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**Joint Venture - Main Particulars**

Length, o.a.	313 ft. (95.5 m)
Length, waterline	282.2 ft. (86 m)
Beam	87.4 ft. (26.6 m)
Beam (hulls)	14.75 ft. (4.5 m)
Draft (loaded)	12 ft. (3.67 m)
Speed, operational	38 knots (approx.)
	lightship
	48 knots (approx.)
Fuel capacity	175,000 liters (day tanks)
	392,800 liters (long range tanks)
Crew accommodations	45
Seating capacity	363
Helo deck capacity Level III VMC Class 3 (landing)	
Level III Class 4 (VERTREP)	
Vehicle deck capacity	375 sq. m. @ 4.65 m clear height
	809 sq. m. @ 4 m (min.) clear height
	1,008 sq. m. @ 2 m clear height

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# Boston Whaler Debuts New Security Products

Timing, it is said, is everything. Boston Whaler Commercial & Government Products has combined timing with a sterling reputation in introducing

a pair of new products touted as a plank in the war to keep terrorism from U.S. shores. According to **Eric Caplan**, director of Boston Whaler Commercial

& Government Products, the Sentinel is a unmanned surface vessel (USV), which is a sensing platform able to carry a wide variety of the latest technology

sensing systems available.

It is designed to be a multi-tasking craft, able to carry sonar for mine detection equipment as easily as it would carry systems able to sense bio-terrorism and nuclear devices aboard ships entering a harbor. (See story and photo on page 18).

"This country obviously has a big job ahead of it, to secure its borders," Caplan said. "This will entail many new layers of security."

The platform is literally designed to fill most any need, and can be remotely operated from shore or ship, running sentry duty with pre-programmed coordinates or operated by sight via joystick control.

## The 28-ft. Intruder

The 28-ft. (8.5-m) Intruder is a high speed craft designed and built for off-shore use under the most adverse conditions. Designed as a platform for law enforcement and security operations, this model offers a performance via Baja's deep-V hull design with a 24 degree deadrise; with durable construction and a number of mission defined layouts and options to ensure its operational success in any number of scenarios. The 28-ft. Intruder offers an ergonomic console/leaning post layout to ensure a smooth ride and minimize crew fatigue, and a utilitarian layout and use of commercial duty hardware and components that require minimal maintenance. "The Intruder is the perfect complement to our line, and we are pleased to have Baja join our team," Caplan said.

The Whaler line of products for military applications — which are understandably built to withstand the harshest of conditions — are also built with primary systems, such as electrical, propulsion and fuel, standardized to simplify logistics, repair and training requirements. The boats are available for both brown and blue water applications, and some are built for maximum speed in deployment, fitting aboard C-130s or slung under choppers.

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### Sperry Marine Wins \$27.2 Million Ship Navigation Contract

Northrop Grumman Corporation's Sperry Marine unit has won a U.S. Navy contract worth up to \$27.2 million to provide engineering and technical support for integrated ship navigation and control systems.

The three-year contract, awarded by the Naval Surface Warfare Center, Carderock Division, will run through September 2004. The indefinite-delivery/indefinite-quantity contract includes engineering services and technical support for installed systems, spare parts, hardware and software upgrades, logistics and maintenance support, labor and material. The contract supports Sperry Marine's integrated navigation and ship control technology.

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### Northrop Grumman Awarded \$150 Million Multiship Contract

Northrop Grumman Corporation announced that its Newport News sector has been awarded a multi-year, multiship contract by the U.S. Navy for nonpropulsion work on Nimitz-class aircraft carriers in San Diego through 2007. The contract is valued at approximately \$150 million. Newport News will lead a team of San Diego-based contractors for the production work under contract. The team consists of National Steel and Shipbuilding Co.; Pacific Ship Repair and Fabrication Inc.; SouthWest Marine Inc.; and Continental Maritime. The first authorized task involves planning for the upcoming

Planned Incremental Availability on the USS John C. Stennis (CVN 74) at the North Island Naval Air Station in the fall of 2002. This contract is a follow-on to a previous contract for maintenance and modernization of Stennis in San Diego. The Stennis and the USS Nimitz (CVN 68) are currently home-ported in San Diego and the Navy has announced that the Ronald Reagan (CVN 76), currently under construction at Northrop Grumman Newport News, will also be based in San Diego after delivery.

### GD Awarded Contract Modification For Navy Work

The U.S. Navy has awarded a \$7 million modification to a previously awarded contract under which Electric Boat will manage and support nuclear-maintenance work for submarines homeported at Submarine base New London, Conn. Electric Boat is a wholly owned subsidiary of General Dynamics.

Under the terms of the contract modification, Electric Boat will continue to operate the Nuclear Regional Maintenance Department (NRMD) at the submarine base through September 30, 2002.

The company will provide project management, planning, training, and radiological-control services to support maintenance, modernization and repairs in support of operational submarines. A core group of 20 Electric Boat employees are assigned to the NRMD.

### CSC Wins Naval Undersea Warfare Center Contract

Computer Sciences Corporation has won a contract with the Naval Undersea Warfare Center (NUWC) Division Newport to provide software engineering support for the Navy Training Management and Planning System (NTMPS). The indefinite-delivery/indefinite-quantity contract is valued at more than \$30 million if all options are exercised over an eight-year period.



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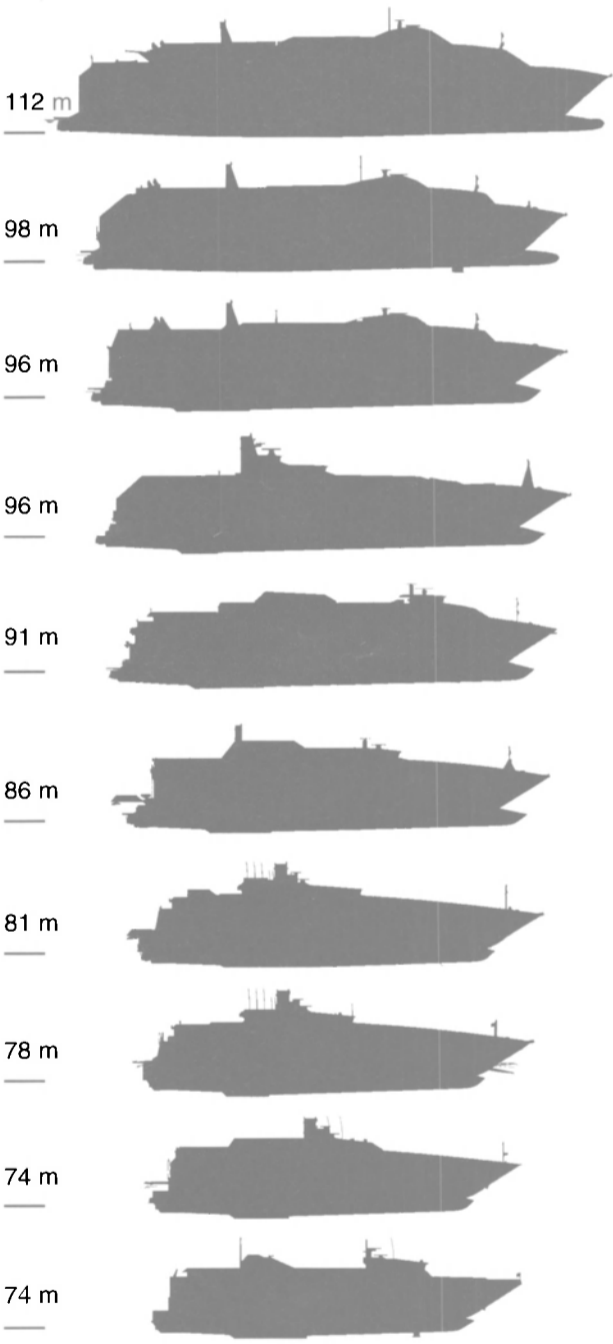
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# No Substitute for A Strong Navy

by **Cynthia L. Brown, president,  
American Shipbuilding Association**

The President is proposing a much needed, and long overdue increase of

\$49 billion in his fiscal year 2003 budget for National Defense. What is astonishing is that this larger budget proposes slashing the Navy's shipbuilding procurement account below that recom-

mended by the previous Administration. Why is this astonishing? If it were not for ships of the Navy and Marine Corps, the U.S. would not have been able to defend America from additional attacks



**Cynthia L. Brown**

## NOTICE OF AVAILABILITY OF SCRAPPING SITE IN QUINCY, MA

The Maritime Administration (MARAD) of the United States Department of Transportation is considering offering for lease as a scrapping facility approximately 120 acres of land, more or less, together with so much of its buildings, fixtures, dry docks, piers, and equipment as needed for scrapping operations at the partially reconstructed shipyard located on the Fore River at 115 East Howard Street, Quincy, Massachusetts (the Facility). The property is currently owned by Massachusetts Heavy Industries, Inc., and MHI Shipbuilding, LLC, which entities are currently subject to bankruptcy proceedings, and was formerly owned by General Dynamics and the Massachusetts Water Resources Administration.

MARAD is entertaining offers to lease all or a portion of the Facility for the purpose of scrapping vessels which are non-retention assets in MARAD's National Defense Reserve Fleet. In lieu of an annual cash lease payment for the use of the Facility, MARAD would accept payment in kind from the lessee through the scrapping of a certain number of vessels annually at no cost to MARAD. MARAD would provide these vessels to the lessee at no cost and the lessee would be entitled to retain any proceeds from the scrapping of the vessels.

On August 23, 2000, The United States Bankruptcy Court for the Eastern District of Massachusetts granted MARAD relief from the automatic stay imposed by section 362 of the Bankruptcy Code and permitted MARAD to commence preparations for the sale of the above-referenced property as long as the sale was not consummated on or before December 31, 2000. MARAD is a senior mortgagee on the property and plans to commence a foreclosure proceeding pursuant to the laws of the Commonwealth of Massachusetts to facilitate the transfer of title to the property free and clear of existing liens to a qualified purchaser or to MARAD.

MARAD is soliciting proposals from interested parties to lease the yard for the purpose and on the basis described above, in the event that MARAD obtains title to the facility through foreclosure. Such proposals should be submitted by April 26, 2002 and addressed to Jean E. McKeever, Associate Administrator for Shipbuilding, Maritime Administration, Room 8126, 400 Seventh Street, SW, Washington, DC 20590 (jean.mckeever@marad.dot.gov). Ms. McKeever may be called at (202) 366-5737. All information received by MARAD will be treated as confidential except that MARAD may, at its discretion, share the information with the other shipyard mortgagees or other officials within the United States government. If dissatisfied with the lease proposals, MARAD reserves the right to reject all proposals and issue a new request for proposals.

Proposals to lease must contain information concerning the financial responsibility and technical competence of the offeror, the proposed business plan including the proposed term of the lease, number of vessels to be scrapped annually and method of scrapping. The proposal must also indicate the impact of the proposed use on the local community in terms of employment, subcontracting, taxes, and the environment.

Entities or persons interested in inspecting the property or who desire more technical information about the property (including the types of equipment at the facility) may contact Donald F. Coll, Division of Ship Design and Engineering Services, Office of Shipbuilding and Marine Technology, Maritime Administration, at the above address, (Don.Coll@marad.dot.gov) or by telephone at (202) 366-1946.

from the air and sea, or retaliate in Afghanistan after the September 11 attack on New York and Washington, D.C.

Long before the terrorist attacks, the commanders-in-chief (CINCs) of the Navy and Marine Corps were on record with Congress and the White House that they could not continue to adequately defend America with fewer than 360 ships comprised of 15 aircraft carrier battle groups (CVBG) and 15 amphibious ready groups (ARG). These CINCs were on record that the fleet was stretched perilously thin with their depleted force of 315 ships of 12 CVBGs and 12 ARGs. Numerous horror stories were told about having to divert battle ships from critical strategic regions around the world in need of a consistent American presence in order to respond to wars and conflicts in Iraq, Kosovo, Bosnia, the Straits of Taiwan, etc. They recounted the problems of a 300 percent increase in the operating tempo of the fleet following the Cold War, and the difficulty in responding to these high operating tempos with only half the size of their Cold War fleet. Naval operations of the 1990's entailed keeping ships on station past their intended six-month deployment cycles, skyrocketing maintenance costs on overworked ships, not being able to provide optimum training to Sailors and Marines. These same Sailors and Marines are being denied their promised leave time in between ship deployments because of too few ships to efficiently, and effectively execute America's national security strategy. In short — a fleet stretched perilously thin.

These alarm bells were being sounded after a 1997 Quadrennial Defense Review (QDR), a DOD study to determine required force structure, determined that the Nation could manage the risks with a 305-ship Navy. Despite the pleas of warfighters to the contrary, and an acknowledgement of the need for greater expeditionary forces and increased access to bases in the Pacific, this force structure was again recommended as adequate in the 2001 QDR conducted under the Bush Administration. What are naval forces? They are

expeditionary, forward-deployed bases.

What is so alarming is that DOD budgets will sink America's Navy to a fleet of only 180 ships, or fewer, if shipbuilding budgets are not dramatically increased immediately and sustained for years to come. A minimum 305-ship Navy requires an annual procurement of 10 ships. In any year that 10 ships are not bought, more than 10 ships must be ordered to make up for the deficit in ship procurement in a previous year. To sustain the force level of the 2001 QDR, 10 ships of the following types must be bought each year:

- One Aircraft Carrier every four years;
- Two SSN-774 Class Submarines;

- Four DDG-51 Class Surface Combatants;
- One LHD Class Amphibious ship every three years;
- Two LPD Class Amphibious ships;
- More than two combat logistics force and other ships.

For the past 10 years, however, the Defense Department has been buying only six ships a year, on average. This means that the Nation's naval fleet is already 42 ships short of sustaining a 300-ship fleet. Said another way, America's Navy is on course to drop to 258 ships as older ships are retired.

The President's fiscal year 2003 budget proposes funding of only \$6.1 billion for five ships, which will

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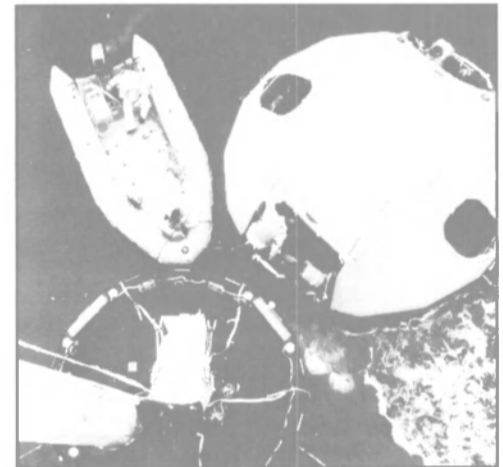
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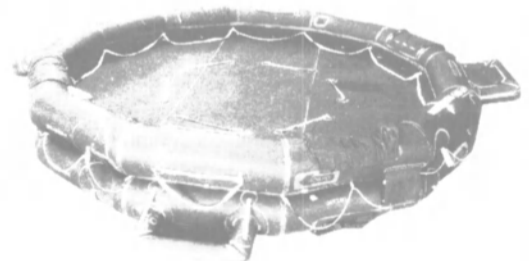
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drop the fleet to 253. By 2023, the fleet will number 180 if procurement rates are not dramatically increased.

Combine these startling force structure statistics with the fact that it takes four to seven years to build each of these warships, and every American with elementary math capability can understand why the Nation can no longer delay

rebuilding America's naval fleet.

The American Shipbuilding Association calls upon every American citizen and company to join its effort in urging Congress to increase the Navy's shipbuilding budget by \$3.3 billion in fiscal year 2003. This funding increase will add one DDG-51 Class destroyer in 2003 and provide advance procurement

for a third ship in 2004; Procure long-lead SSN-774 Class submarine systems to enable the Navy to reach its goal of two submarines per year beginning in 2005; Add one LPD-17 Class Amphibious Transport Dock Ship in 2003; and make a down payment on the LHD-9 Large Deck Amphibious Assault Ship. While this proposed amendment to the

## ASA Unveils Legislative Priorities

### Increase the Naval Shipbuilding Rate to Maintain a Navy

The Bush Administration's five-year shipbuilding plan will drop the force to 244 ships. The first installment in the process of restoring the Navy's fleet to the bare bones minimum, defined in the 2001 QDR, is to add one DDG-51 destroyer, one LPD-17 amphibious transport dock ship, complete the purchase of the LHD-8 amphibious assault ship, and add advanced procurement dollars for an economic order quantity production of the Virginia Class Submarine in FY 2003.

### "Tax on Delivery" of Naval Ships

H.R. 2189/S.666 will correct an inequity in the Tax code that severely penalizes naval shipbuilders by strengthening the shipbuilding industry's cash flow to allow for greater investment in facilities, technology, and people to reduce the cost of naval ships. It will also allow shipbuilders to pay vendors in a timely fashion. Under the Tax Code, naval shipbuilders must estimate what their profits may be three- to seven-years into the future and pay taxes on a percentage of their anticipated profit annually. This "Percent of Completion Method of Accounting" diverts critical cash needed in a ship's construction phase to income tax payments that may be not realized. These bills will change the Tax code to allow a shipbuilder to pay taxes on income earned upon delivery of each ship. The builder will pay the same amount of taxes, but pay them when the profit is known and earned.

### Promote Title XI Financing for Commercial Ship Construction

Increase the Maritime Association's FY03 budget for Title XI by \$50 million to help meet the national goals of increased energy self-sufficiency, increased commerce, and a strengthened defense industrial base. The Title XI Ship Loan Guarantee Program, managed by MARAD, makes financing available to small and medium-sized ship operating companies at comparable terms and rates as those available to large corporations. This Program is directly responsible for the U.S. construction of 10-double-hulled oil tankers, RoRo cargo ships, and other vessels to expand U.S. Commerce. Commercial shipbuilding reduces the cost of naval ships and sustains the skilled workforce and vendor base of the defense shipbuilding industry during historically low rates of naval ship production. Today, there are pending applications for six more environmentally safe double-hulled oil tankers, a chemical tanker, and the potential for 20 to 40 double-hulled offshore shuttle tankers to serve the growing Floating Production, Storage and Offshore Loading (FPSO) market in the Gulf of Mexico along with numerous other ship construction projects to replace and expand the U.S. fleet.

### Improve the Maritime Security Program (MSP)

The Maritime Administration's Maritime Security Program (MSP) promotes a U.S. Merchant Marine, and provides sustainment sealift to the Department of Defense in times of national emergency. U.S. citizen operating companies engaged in international commerce that register their ships in the United States and employ U.S. citizen crews are eligible for a \$2 million per ship subsidy to offset the higher cost associated with operating under the U.S. flag. The Program will expire at the end of 2005. As discussion begins on reauthorizing the Program, it is important to look at ways to improve MSP to enhance its role in meeting national security objectives in times of peace and war. A glaring weakness in the Program is that it does nothing to strengthen the defense shipbuilding industrial base, and in fact, weakens the base by encouraging U.S.-flag ship operators to buy their ships from foreign subsidized shipyards. This practice actually strengthens the industrial capability of potential American adversaries, such as China, to the detriment of American sea power. ASA will work with Congress and the Administration to foster American construction of the ships participating in the MSP fleet so that the program can better serve the Nation as the sixth branch of the Armed Forces.

### Support the Jones Act and Passenger Vessel Services Act

These laws require vessels transporting cargo passengers between two U.S. ports to be built in the United States and operated by U.S. companies employing American crews. The purpose and need for these laws is to strengthen American sovereignty and the shipbuilding industrial base, including the highly skilled workforce on land and at sea, to meet America's security requirements.

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President's 2003 budget is still well below what is necessary to restore American Sea Power capability, it is an important and essential first step in a long and essential investment process.

In closing, I ask all of your readers to consider where the Nation would have been on September 11 if not for naval ships?

In response to the terrorist attacks on the U.S., an aircraft carrier battle group, consisting of an aircraft carrier and numerous destroyers, submarines, cruisers and logistic supply ships, was immediately deployed to the east and west coasts to defend America from additional attacks via the air and sea. Homeland defense begins with ships.

The U.S. would not have been able to retaliate against the attack of 9/11 in land-locked Afghanistan without ships, because no foreign government in the region granted the United States land base rights from which to launch offensive strikes. The nearest land base from which the U.S. could operate was 3,000 miles away in Diego Garcia, an island in the Indian Ocean. The first phase of the war was waged from more than 60 ships. Long-range missiles were fired

on Afghan targets from submarines and surface ships. In less than a four-month period, more than 4,000 aircraft sorties were flown off the decks of three aircraft carriers. A fourth aircraft carrier along with submarines and amphibious ships were used to deploy Marines and Special Operations Forces of all services

into Afghanistan.

Ships of the Navy and Marine Corps are mobile, self-sustained, lethal bases at sea that can operate around the globe without the permission of any foreign government.

What if China, as a hypothetical, had attacked the West Coast of the United

States in October of 2001? America would not have been able to defend itself on two fronts with the depleted size of its Navy today.

This reality is being completely ignored in the President's fiscal year 2003 defense budget. Congress must act now to rebuild America's sea power.

### Rolls-Royce Appoints New President for Navy Biz

Rolls-Royce appointed **Patrick Marolda** as president of Rolls-Royce Naval Marine Inc. Marolda will develop and implement the North American business strategy for the Rolls-Royce Naval Marine business. Based at the Rolls-Royce Naval Marine headquarters in Walpole, Mass., with an additional office in Chantilly, Va., corporate headquarters for Rolls-Royce North America, Marolda will report to James M. Guyette, president and CEO. Rolls-Royce North America as part of the North American management structure. Marolda will receive business direction from **David Price**, managing director, Rolls-Royce Naval Marine.

### Digital System Wins Systems Support Contract

Digital System Resources, Inc., Fairfax, Va., was being awarded a \$53 million cost-plus-incentive-fee, cost-plus-award-fee contract modification to exercise an option under contract for level-of-effort engineering and technical services, for the design and development of upgrades and systems support of the Multi-Purpose Processor (MPP). The MPP provides hardware and software processing for the towed array on submarine and surface ship platforms. Work will be performed in Fairfax, Va., and is expected to be completed by March 2003.

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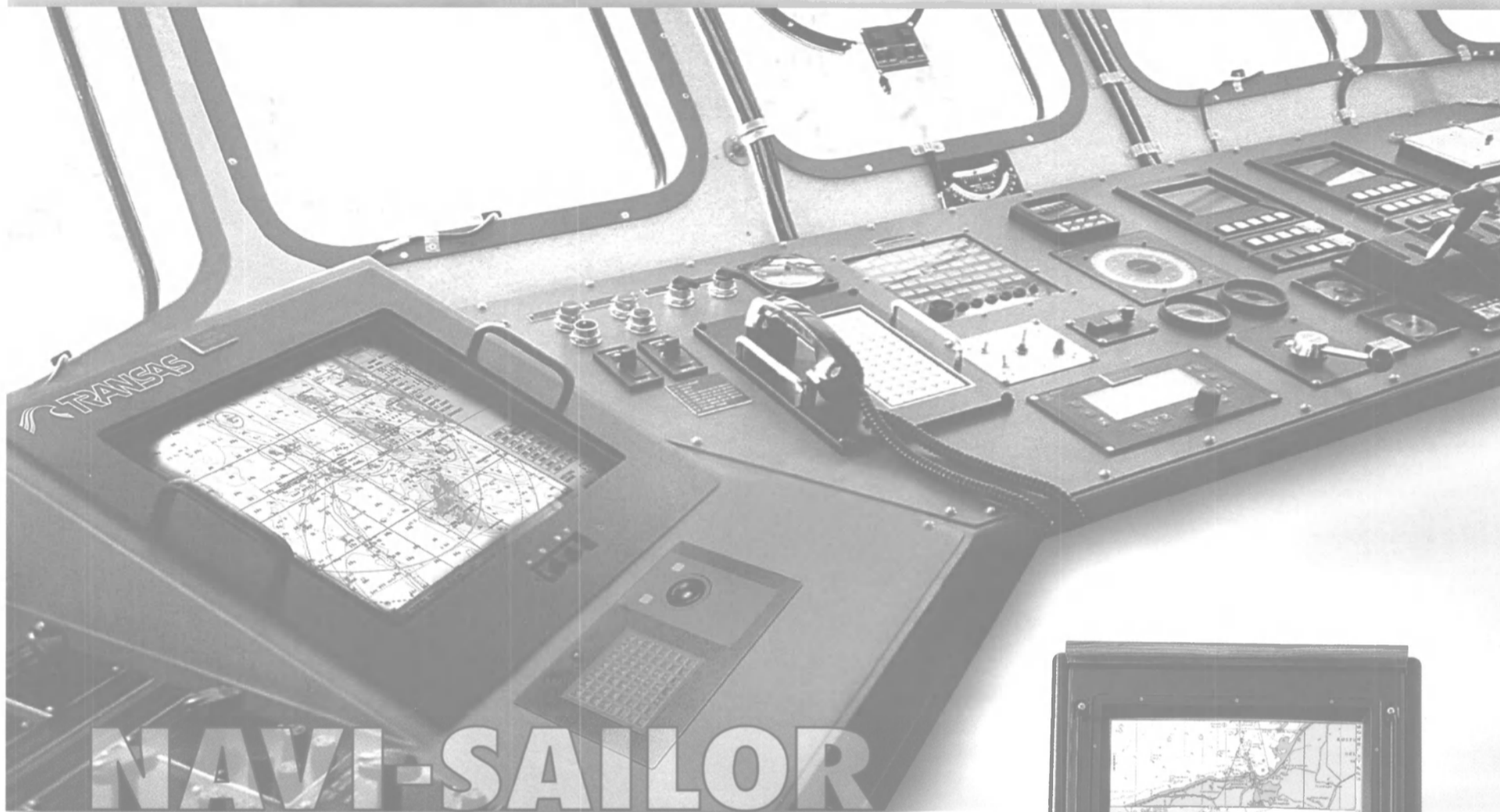
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(Continued from page 25)

said once the vessel was identified and determined worthy of evaluation, the "Joint Venture vessel was gotten on handshakes and phone calls, with paperwork to follow." Central to getting the vessel from commercial craft to military ready — taking an astoundingly brief 5.5 months from decision to arrival in the U.S. — was the cooperation and professionalism of the Incat yard in Australia and the steady guidance of Commander **Dean M. Chase**, the project manager for High Speed Vessels from the Maritime Battle Center.

Getting a surrogate to test the new technology was no simple matter, though, as Chase said: "It started out with 100 ideas as to what this ship should be. Through four workshops, it came down to Joint Venture."

Another factor in making the process a swift one is the broad use of off-the-shelf technology - modified for the military - in readying the vessel for test.

Chase echoed Rear Admiral Sprigg's assessment of Joint Venture to date, particularly when noting that the vessel recently completed a trans-Atlantic voyage in

five days and 17 hours, a 27-knot average across stormy Atlantic winter seas. "That's just amazing," he said. "Keep in mind, we're using this vessel for more than it was intended." Aside from the technical aspects, Chase maintains a literal juggling act of missions scheduled and completed on Joint Venture, helping to simultaneously meet the goals of its mixed crew, which includes 24 Navy (including two from Special Operations Command), six Army and one Marine.

*Need more information? Visit [www.nwdc.navy.mil](http://www.nwdc.navy.mil)*

## Information: The Real Power

While much of the focus on the Streetfighter concept focuses on the physical vessels being conceptualized, developed and tested, the underlying technology that makes the move to small acceptable is not found in a shipyard or a machinery space. Work on the Expeditionary Sensor Grid is a critical piece in the puzzle that will empower the Navy of tomorrow with the capability to identify, target and defeat foes, large and small. As **Harold Hultgren**, CNAN project manager, Navy Warfare Development Command explains, it largely centers on the ability to collect, distribute and analyze data efficiently, without fail. "We have to get our sensing closer ... you get no precision effects without precision sensing," he said. In essence, as weapons capabilities have grown, so to have the systems needed to detect them, in both size and cost. Today's Navy ship must carry an exhaustive array of complete systems to help it detect and thwart most any threat.

The work currently being carried out at NWDC is examining the employment of smaller, faster vessels to carry out the changing mission demands of the fleet of the future. It would be impossible for smaller vessels to carry such a diverse and complete package of equipment and systems, from both a payload and cost stance, so testing currently being carried out focuses on, for lack of a better term, "plug and play" capabilities of smaller, faster ships into a network, operating on a squadron concept. While the technology inherent in providing a vessel to do its mission while going "light" is multifaceted and diverse, it is based on consumer technology — with military tweaks, and is currently focused on the use of computerized "agents" to seek and retrieve information.

While work has progressed, Hultgren noted there are some enormous challenges ahead, such as making sensors smaller and making them robust enough to weather the rugged maritime environ-

ment. "Seawater is tough," Hultgren said. "Also, energy is a huge issue."

## HSV Gets Marines There Faster

Experimenting with high speed, high capacity, shallow draft vessel is off to a resounding success on another front, as Austal USA last month announced a three-year, \$31 million contract with the U.S. Military Sealift Command Chartering its 330-ft. (100.5-m) high speed catamaran.

As reported recently in the February 17, 2002 edition of Stars and Stripes, in an article by **Greg Tyler**, Sasebo bureau chief Pacific edition, the WestPac Express catamaran has helped the marines not only move more troops and equipment more quickly, but has also helped them to save tremendous amounts of money. The WestPac Express, an Australian-built ship leased for use by the U.S. military, can carry cargo roughly equivalent to the amount loaded on about nine C-17 cargo aircraft, Chief Warrant Officer **Gene Rose** said. The ship's cargo deck can hold 251 cars or 16 trucks along with 96 cars. "The ship can hold 417 tons of equipment, and we can carry 970 passengers. The C-17 carries only 100 [passengers]," he said. "The HSV is best utilized in a situation where you need to pile on the Marines, and just keep it coming and coming. We can do that indefinitely," Rose said.

The vessel can travel at speeds approaching 50 mph for 48 hours before refueling. In the past, smaller loads of Marines and equipment were transported to exercises in airplanes, one load after another, sometimes taking two weeks just to get everybody in the right place.

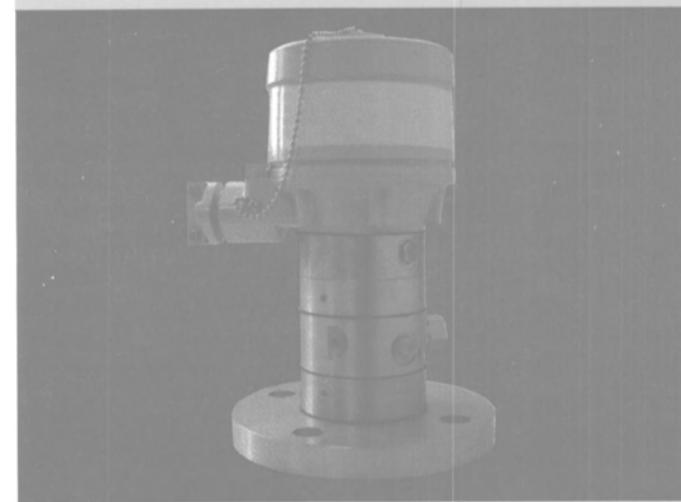
"It's 640 miles from Okinawa to South Korea, and for an exercise it used to take two weeks to fly the people and equipment there at a cost of about \$600,000, at minimum," Rose said. "With this, we can get everyone and everything there in about 22 hours, at a cost of about \$130,000."

## PROFILE: Rear Admiral Robert G. Sprigg Commander, Navy Warfare Development Command (NWDC)

Rear Admiral Sprigg was born in San Francisco, Calif., and graduated from the U.S. Naval Academy in 1969. Following graduation, he attended flight training in Pensacola, Fla.; Meridian, Miss.; and Beeville, Texas, earning his wings in 1971. His initial assignment was to VT-7 as a flight instructor. In 1973 he joined Attack Squadron 94, serving aboard USS Coral Sea (CV 43). Following his first fleet assignment, Rear Admiral Sprigg attended the Naval Postgraduate School in Monterey, Calif., where he earned a master's degree in aeronautical engineering. Following graduation, he reported to Air Test and Evaluation Squadron 5, where he was assigned as F/A-18 Project Director until returning for his department head tour with the "Royal Maces" of Attack Squadron 27, embarked in USS Coral Sea. The admiral was selected for test-pilot training at the U.S. naval Test Pilot School, Patuxent River, Md., graduating in June 1983. He was subsequently selected for command and reported aboard Strike Fighter Squadron 113 as the executive officer in February 1984, before assuming command in September 1985. He attended Naval Nuclear Power School in 1987, and in 1998 reported onboard USS Carl Vinson (CVN 70) where he served as the executive officer from November 1988 to November 1990.

In April 1991, the admiral assumed command of USS Camden (AOE 2) while deployed to the Arabian Gulf in support of Operation Desert Storm/Provide Comfort. In addition to the normal duties in support of the Nimitz Battle Group, Camden provided logistical support to eight ships of foreign navies who were part of the multinational force deployed in the Arabian Gulf. Rear Admiral Sprigg assumed command of USS George Washington (CVN 73) in 1993. Highlights of his tour included the ship's maiden deployment, 11 departmental excellence awards and the awarding of the Carrier Battle Efficiency "E." Following his tour as the commanding officer, he reported to the Headquarters of the Supreme Allied Commander, Atlantic, in May 1995 as Assistant Chief of Staff for Plans and Policy. On December 2, 1997, he assumed command of Carrier Group TWO. On June 21, 2000, he assumed Command of the Navy Warfare Development Command, Newport, R.I.

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# Electric Boat Gets a Lift with J.D. Neuhaus Hoist

At Electric Boat Company, a J.D. Neuhaus hoist purchased in 1976 helped to revolutionize the manufacturing process. A quarter of a century later, that hoist is undergoing OEM maintenance for the first time ever. Here is the story of reliability and durability and a partnership built for the long haul.

After 25 years of hard labor in Electric Boat Company's Groton, Conn., shipyard, the first air hoist ever sold in the U.S. by J.D. Neuhaus Corporation is finally getting its first taste of OEM maintenance.

The hoist, now sitting in J.D. Neuhaus' Sparks, Md., stateside headquarters, is getting re-certified, load tested, and equipped with special hooks with safety catches. For the past 25 years, the hoist has helped EBC associates like Rigger Foreman, Gary Singer, in the construction of engine rooms for nuclear-powered submarines. It has done so day after day, says Singer, despite a heavy workload and continuous exposure to the elements.

"What most impresses us is its durability — the way it is built — and its reliability. Every time we go to use it, it's ready," Singer says. The arrival of the air hoist dramatically altered the manufacturing dynamic for EBC. According to Singer, "The tooling is number one when it comes to getting a job done right. For the applications we use it - for

instance rotating shafts and couplings - the air hoist cuts man hours in half when compared to a regular chain fall. Plus, the air hoist cuts our injury rate by two-thirds.

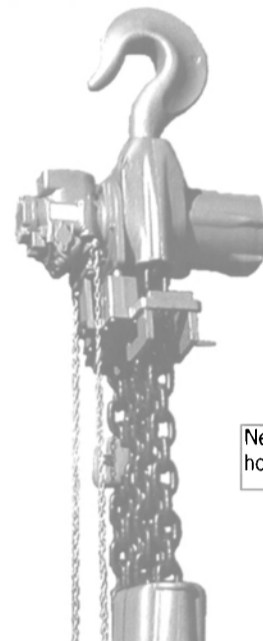
"That's the key in comparing an air hoist versus a manual chain: the air hoist gives you a finished product much faster with much fewer injuries."

"The air hoist revolutionized the shipbuilding industry," says JDN's vice president of Marketing **Don Plettenberg**. "It really did. We used to sell these by going into shipyards with time studies. We would show them that these hoists would literally save them days working on a ship. It would pay for itself within the first few jobs on time savings alone."

Plettenberg explains that prior to the arrival of the air hoist, traditional chain falls could require two people pulling 375 ft. of chain at 90 lbs. resistance just to raise the load a foot. The air hoist, meanwhile, lifts that much weight three feet in a minute.

Singer credits EBC's maintenance men, headed by **Gary Halloway**, for

After



Before



New hoist pictured at left, old hoist pictured at right.

maximizing the service life of this particular hoist. Plettenberg agrees, saying, "Sometimes we'll have a hoist on rent for a month and it comes back in worse shape than this. This one is in great shape. It shows very little wear; even the gear box seems to be in remarkable condition. Obviously, it's been really well maintained." Then again, Plettenberg says, "Most of the hoists we've sold are still in use. Very few of them are scrapped. While the hoists have been

improved over the years, the basic mid-section is still in use today. So we carry many of the parts and that goes right to the issue of durability. By simply replacing parts, our hoists last forever."

Forever may be a stretch, but Singer is convinced. "I'd go there again in a heartbeat. We don't want to change hoists and we don't want to change manufacturers. We're sticking with what we have."

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# GE Continues

GE Marine Engines has seen its LM aeroderivative gas turbines selected by 28 navies throughout the world.

Recently GE announced the selection of its LM2500 aeroderivative gas turbines and main reduction gears for use aboard the Italian Navy's new Andrea Doria aircraft carrier. The aircraft carrier is being designed by Fincantieri Direzione Navi Militari in Genoa, Italy and built at Fincantieri's Riva Trigoso, Italy shipyard. Four LM2500 gas turbines will be used in a Combined Gas turbine and Gas (COGAG) turbine configuration aboard the Andrea Doria aircraft carrier. Each of the two gear units will provide approximately 60,000 shp and will be driven by two LM2500 gas

Table 1  
GE LM Aeroderivative Gas Turbines

Engine	Rating (shp/megawatts)
LM500	6,000 shp/4.47 MW
LM1600	20,000 shp/14.92 MW
LM2500	33,600 shp/25.06 MW
LM2500+	40,500 shp/30.2 MW
LM6000	57,330 shp/42.75 MW

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## Vericor Is A Reliable Source of Propulsion Power

Vericor Power Systems LLC remains a leading supplier of integrated aeroderivative gas turbine propulsion systems for commercial and military customers worldwide. This joint company of Honeywell International, Inc. and MTU Aero Engines GmbH offers commercial ship operators and navies alike its TF series aeroderivative gas turbines, which are adapted from Honeywell's proven aero-engine designs and specifically configured for marine use. Currently there are more than 500 TF 40 and TF 50 aeroderivative marine gas turbine systems operating worldwide.

The compact size and lightweight features of the TF series are advantageous for fast ferries and high-speed vessel designs such as multihulls, hovercraft, conventional displacement hulls and other commercial vessels where small size and power density allows for faster speeds. TF series gas turbines drive a variety of propulsors including waterjets, fixed and variable pitch propellers, and, in the case of hovercraft, air props and fans. The ability to combine multiple TF engines on a single shaft line allows designers new flexibility in propulsion system configurations.

The TF series are "cold-end drive" gas turbines that can be integrated in a propulsion package in several ways. Flexible arrangement capabilities coupled with the compact size of the TF engine allows the gas turbines to be cantilever-mounted directly to the reduction gear, saving considerable weight in the form of support frames and mounting structure. Customers can use the compact TF marine gas turbines for stand alone power plants or combined with diesels to form COMBINED Diesel And Gas turbine (CODAG) COMBINED Diesel Or Gas turbine (CODOG) or COMBINED Gas And Gas turbine (COGAG) configurations. Vericor Power Systems, along with its distributor MTU-Friedrichshafen (a DaimlerChrysler subsidiary), provides CODAG, CODOG or COGAG systems for commercial and military marine uses. In CODOG systems, the diesels and gas turbines are used independently. In CODAG systems, they are used together and can be combined on the same shaftline to maximize the propulsion system. COGAG propulsion packages can be designed to integrate two TF-series gas turbines in either a "side-by-side" or an "over/under" configuration depending on the space constraints in the hull.

Complete CODAG, CODOG and COGAG package systems include local ducting, control and monitoring panel, and bridge panel, if desired.

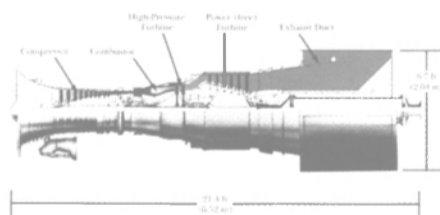
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## To Set Gas Turbine Tech Pace

turbines. Similar configurations will be in the port and starboard engine rooms. The GE LM2500 aeroderivative gas turbine has also been selected to power five new Royal Norwegian Navy F310-class frigates. IZAR Construcciones Navales, S.A., will build the frigates at its naval shipyard in Ferrol, Spain. The COMBINED Diesel And Gas (CODAG) turbine configuration on each F310-class frigate will consist of one LM2500 gas turbine combined with the two diesel engines for a total propulsion system rating of 30.5 MW. The F310 frigates are scheduled for commissioning beginning in September 2005, with the remaining vessels to be launched annually in September through 2009.

In another project, GE will furnish maintenance and logistical support services for the Canadian Navy's fleet of LM2500 aeroderivative gas turbines used to power Halifax-class patrol frigates. The contract will provide the Canadian Navy with a decrease in administrative functions such as procurement, inspection and technical support and material and inventory management associated with the LM2500. GE's LM500 recently has experienced a resurgence in order activity. For example, the Japanese Maritime Self-Defense Force (JMSDF) will use 15 LM500 gas turbines to power five 11 PG high-speed patrol boats. Each mono-hull boat will



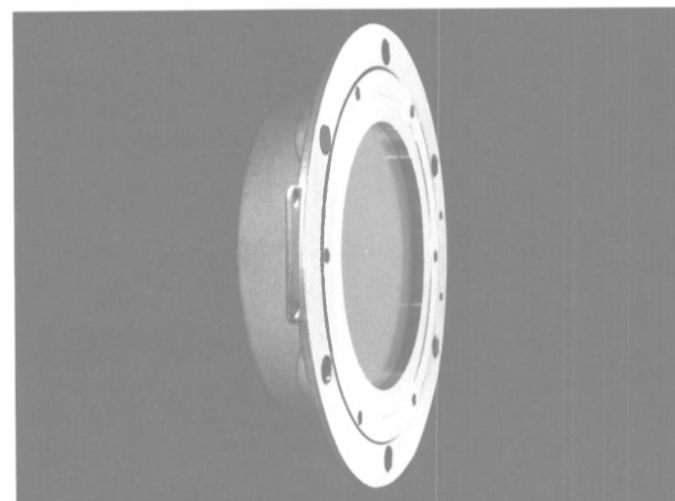
be equipped with three, 6,000-shp LM500 gas turbines driving waterjets. The 200-ton boats will be capable of reaching speeds in excess of 44 knots.

In 2001, GE received partial funding from Ingalls Shipbuilding to begin engineering work on equipment to be used aboard the U.S. Navy's eighth LHD Wasp-class ship. GE is in negotiations for a contract to supply LM2500+ gas turbines and is participating in a competition to supply main reduction gearing for these large-deck, multipurpose amphibious assault ships, thus marking the first military application of GE's LM2500+ gas turbine. The vessel will also feature a unique hybrid electric drive system, with electric motors providing propulsion power at low loitering speeds. The previous seven LHD ships, also designed and built by Ingalls, were powered by GE steam propulsion systems.

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# The Allure of Power

Continuity is a valuable asset in the marine field, especially so in relation to the most essential products pivotal to vessel design and operation. The diesel engine producers' adeptness at enhancing existing, successful designs at intervals through power and performance upgrades is a prime example of the



by David Tinsley,  
technical editor

development potential built into ships' machinery, making for longevity of the series involved. The ensuing continuity of the product line offers practical benefits to the client market and also to the licensors and manufacturers, given the huge investment costs entailed in developing entirely new engines and putting the requisite tooling in place.

In the latest example of the enhancement and modernization of a proven class of diesel, MAN B&W is planning to release a new version of the second-best seller in its medium-speed family from Augsburg, the 48/60 type (pictured on next page). The new 48/60B is to be introduced at a rating of 1,200-kW per cylinder at running speeds of 500 and 514-rpm, an increase of 14-percent over the 48/60 in its present guise.

However, higher output is just one, albeit fundamental aspect of the advances encapsulated by the B generation in relation to its immediate predecessor. Better fuel economy, lower mass and lower exhaust gas emissions, including smoke, are also claimed for the V-engine models, which will lead the 48/60B's market entry under a campaign dubbed 'The allure of power'.

Vee-form engines in 12- to 18-cylinder configurations, covering a power bracket between 14,400 and 21,600-kW are due to become available from early 2003.

In-line models of 6- to 9-cylinder layout should follow during the late summer of 2003, taking the range from nominal outputs of 7,200-kW upwards.

MAN B&W's initiative will surely intensify competition in a medium-speed diesel power band pertinent to passengershops, ferries, RoRos and other types of tonnage. Moreover, the design is well-suited to stationary power generation applications. Since its market launch in 1989, up to January 31 this year, the 48/60 series has attracted sales of 245 engines, amounting to 2,630 cylinders and 3.7m-bhp. Operating hours from the 162 engines ordered for marine applications and 83 used in land-based duties have topped 3.2 million hours, with some having already logged about 60,000 running hours. Indicative of the progression achieved with a single design, the 48/60 had originally been launched with a rating of 885-kW per cylinder at 428 and 450-rpm.

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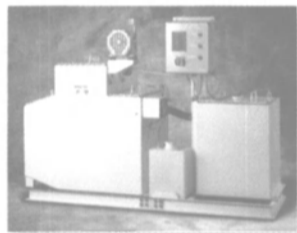
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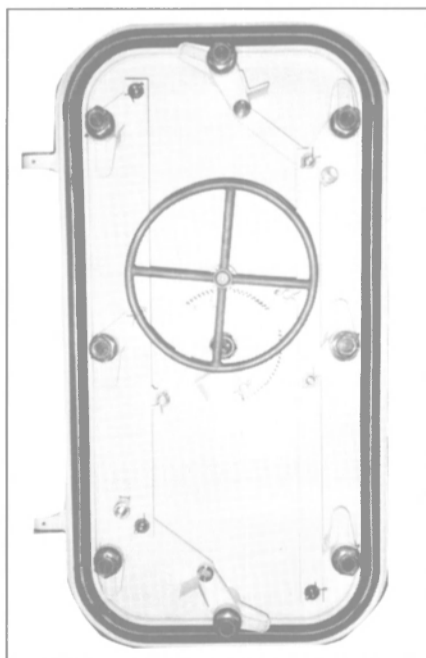
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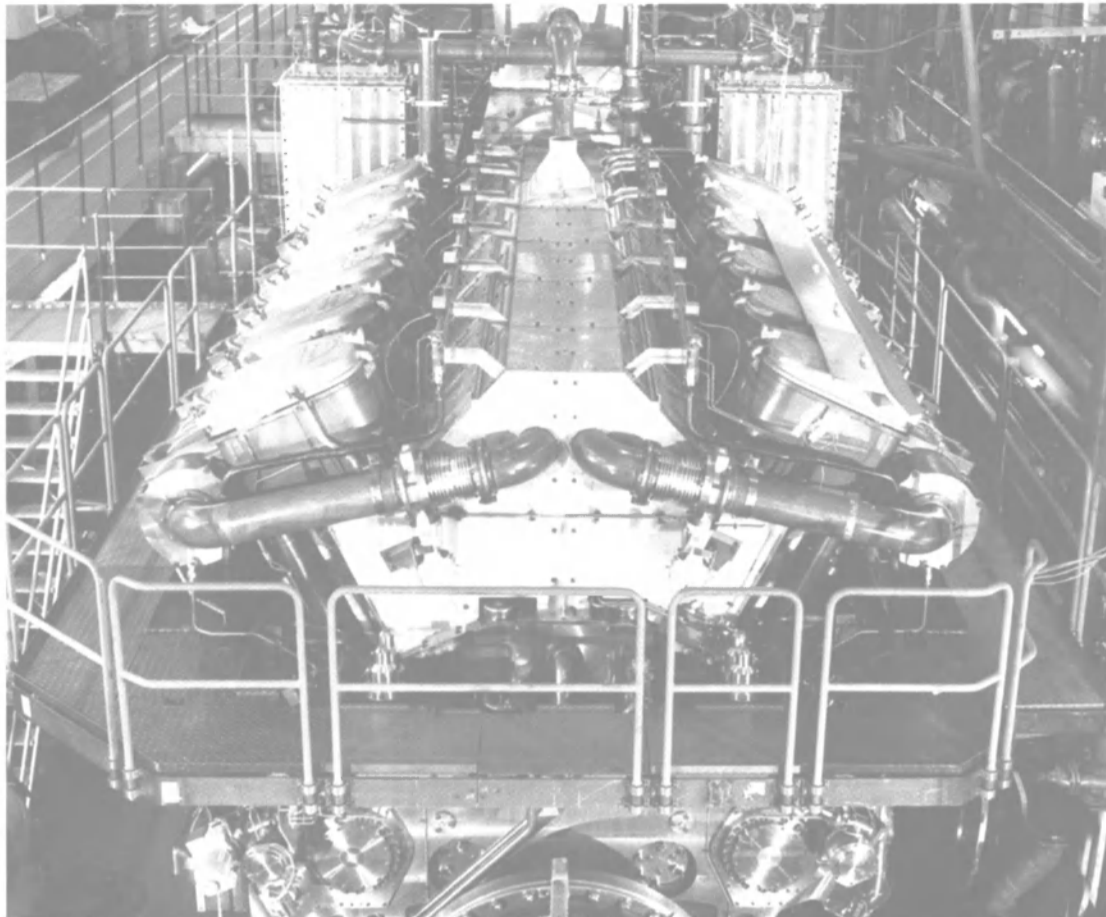
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MAN B&W is scheduled to release its ground-breaking new addition to its medium speed family from Augsburg — the 48/60 type — at a rating of 1,200 kW/cylinder.

### Spanish Group Endorses Pentamaran

As part of its strategy to foster business in the high-speed marine transportation sector, Spain's IZAR Group is collaborating with the British technical consultancy Nigel Gee & Associates (NGA) in the development of fast RoPax and RoRo vessel designs.

The recent unveiling of a proposal for a 40-knot RoPax type followed the signing of a license agreement granting IZAR exclusive European manufacturing rights to the adoption of the Pentamaran hull form in large RoRo equipped vessel applications.

The pact gives a further string to IZAR's bow in its multi-faceted bid to re-enter the high-speed ferry market. It also provides a basis whereby the innovative, patented Pentamaran could be pro-

gressed from a widely-acclaimed concept to forming the template for a range of vessels to be introduced to the market over the next five years.

IZAR has substantial experience in the design and construction of light-displacement fast ferries, built at its San Fernando yard. Market studies car-

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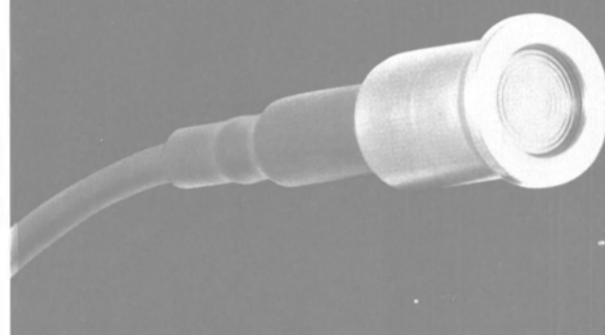
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## Investment in Design

ried out by the group pointed to a future demand for vessels of up to 40 knots incorporating higher deadweights than previously possible, with shipowners seeking 1,000-dwt and looking longer-term to 2,000-dwt or more.

Rather than scaling-up existing monohull types for such combinations of speed and higher payloads, IZAR

sought alternative, more cost-attractive solutions.

The Pentamaran form, a slender monohull stabilized by two pairs of sponsons resulting in a broad loading platform, was favored for the potential it offers for a 30 percent reduction in power in large, high-speed vessels relative to current monohull or catamaran

alternatives. The Pentamaran RoPax proposal, moreover, employs steel construction and heavy fuel oil-burning medium-speed diesel plant, out of consideration of owners' preferences and operating cost criteria.

In a paper prepared for the recent Fast Ferry Conference in Nice by **Juan Antonio Moret**, IZAR's high-speed ves-

sel design manager, and **Nigel Gee**, managing director of Southampton-based NGA, it was explained that the IZAR Pentamaran fast ferry had been developed to carry 900 passengers and 280 cars, or up to 24 x 30-ton trucks plus 48 cars.

While formulated in mind of a wide range of potential route applications, special reference had been made in the project development to the conditions and requirements on two busy connections, the 20-mile route across the Gibraltar Strait between Algeciras and Ceuta, and the 120-mile link between Barcelona and Palma di Mallorca.

Propulsion machinery would be installed in the central hull just aft of midships. Four engines of the Wärtsilä 38-series medium-speed design have been built into the provisional specification, driving a total of three transom-mounted, steerable and reversible waterjets.

The configuration is intended to yield the requisite raw power and maneuverability, while also conferring flexibility and economy by better enabling engine usage and settings to be closely matched to actual service and speed requirements.

IZAR is also cooperating with NGA in the development of a larger Pentamaran design for carrying up to 3,000-tons of RoRo cargo in open-sea conditions. This would have a top speed of 41-knots, engendered by a medium-speed diesel plant, and be fabricated from high-tensile steel throughout.

### Industrial Heritage Is Retained

After plant closure had been earlier mooted, part of the fabric of Europe's marine diesel engine industry now looks set to be retained following a new proposal for the restructuring of Wärtsilä's operations in the Netherlands. Wärtsilä is now prepared to outsource manufacturing of engine components at the extensively modernized Zwolle factory, selling the production capacity to an outside supplier. In addition, the Finnish group will develop its maintenance and repair services at the works, and continue local sales activities.

Although engine design and assembly would, as originally foreseen, be relocated to Wärtsilä's Trieste complex in northeastern Italy, the revised plan would avert the shutdown of Zwolle, hitherto the production point for the Wärtsilä 26 and 38-series engines. The service function had also been slated for transfer to the unit in Schiedam, near Rotterdam.

At the time of writing, discussions were underway with personnel on the details of the proposed solution, but this appeared to have received general support.



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The second 11K98MC type was also completed for the same shipbuilder in December 2001. MAN B&W Diesel A/S developed the K98MC type diesel engine series as a highly efficient main engine for large container carriers in 1999. The

cylinder bore is 980 mm and can develop 7,780 ps (per cylinder).

In April 2001, MES completed the MITSUI-MAN B&W 10K98MC for the same series of 5,500 TEU container carrier built by Imabari Shipbuilding Co. Ltd.,

Since the technical license agreement with B&W Diesel, MES achieved a total construction of 38 million ps for the B&W diesel engines in October 2001, which is reportedly a world record. MES will achieve 2.5 million ps of engine production in the current fiscal year on the ship trial basis.

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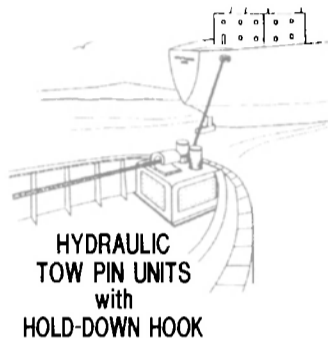
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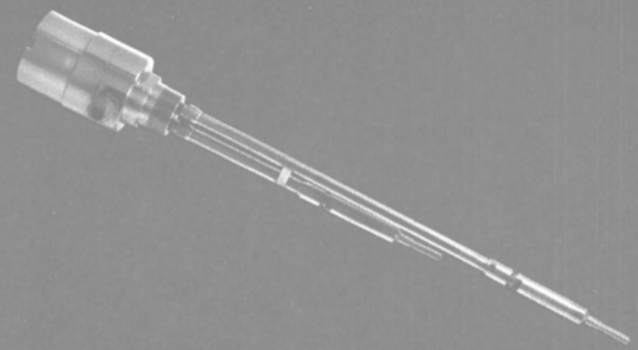


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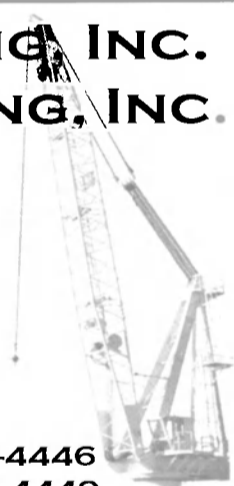


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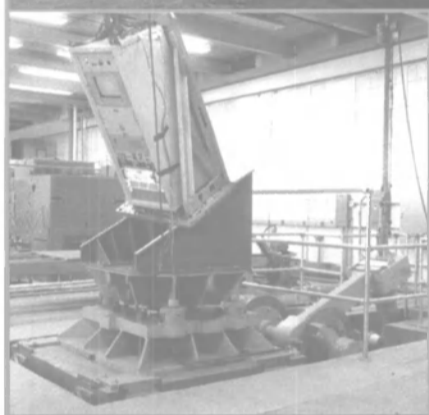
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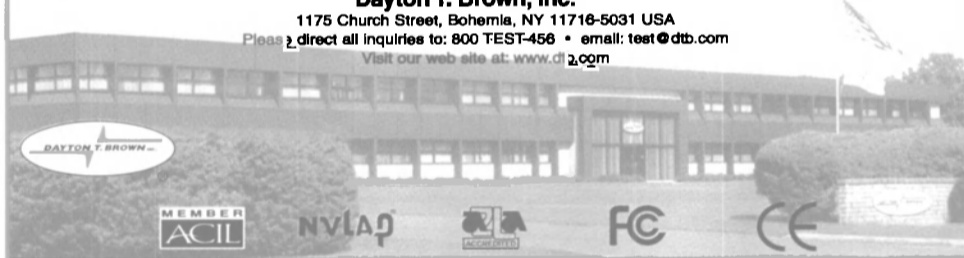
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## Faster Than A Speeding ...

Miss Jane Tide is Tidewater's first VS 480 platform supply vessel built by the company's own Quality Shipyards, L.L.C. in Houma, La. The ship was designed by the Norwegian firm Vik-Sandvik.



*It is little secret that as offshore oil production moves further from shore, the boats that service these offshore units must be bigger, stronger and more capable than their ancestors. Here's a peek at emerging technologies and the boats that house them.*

The technology to cost efficiently discover and recover oil and gas in increasingly deeper part of the Gulf of Mexico has quickly led to the development of bigger, stronger and more ruggedly equipped Offshore Service Vessels, not only on drawings boards but operating on the waterways. The discovery of oil and gas fields such as Auger, Marlim and Mars, have among others, highlighted the vast potential for drilling success and the inadequacy of the current fleet of OSVs to perform the job as cost effectively as possible.

The oil companies have invested billions in efforts to discover the 'next

big find,' and now that many of the complexities have been largely solved, namely the ability to accurately project volume of product at such great depths — orders for new, more capable vessels in ever increasing numbers.

One of the more notable vessels delivered in the last six months is BJ Blue Ray, a vessel built by Leevac Shipyards LLC, and delivered to Hornbeck. The vessel had been chartered to BJ Services, Houston, Texas, and finished as a well stimulation vessel. Measuring 265 x 60 ft. (80.7 x 18.2 m) with a 22-ft. (6.7-m) hull depth, the vessel's mass and design allow it to work in higher seas, while providing impressive tankage below deck. A common feature of the Hornbeck vessels is Dynamic Positioned (DP) navigation systems. Dynamic positioning was first developed to help keep drill ships precisely over the well they were drilling regardless of wind and sea state. All of the recently built Hornbeck vessels have DP-2 capability that calls for independent bow and stern thrusters each driven by a separate power source. Vessel positioning variables such as wind, and sea state are fed into a central comput-

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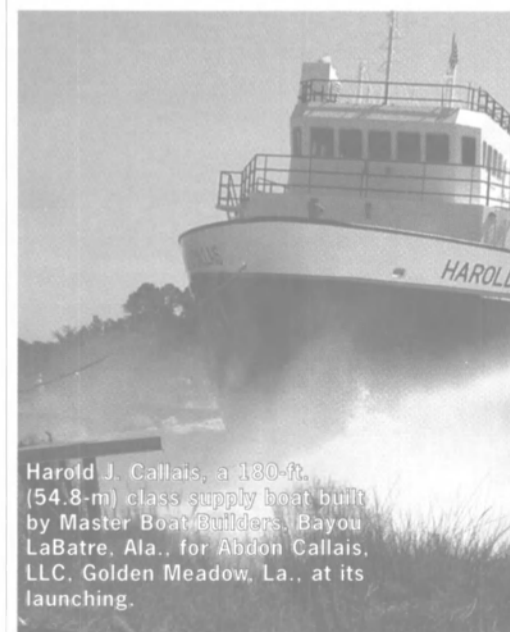
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Harold J. Callais, a 130-ft. (54.8-m) class supply boat built by Master Boat Builders, Bayou LaBatre, Ala., for Abdon Callais, LLC, Golden Meadow, La., at its launching.



er that feeds information to the main engines and the thrusters to keep the vessel on station and can do so even if there is a single point failure on one of the thrusters or main engines.

### The Rolls-Royce Design Solution

Rolls-Royce has won contracts worth \$76 million to supply design and equipment packages for nine offshore service vessels, which will be built in four different shipyards for owners in Brazil, France, Norway and the U.S.

The ship designs and packages of Rolls-Royce equipment will be supplied in 2002 and 2003, and the shipyards, located in Brazil, Denmark and Norway are scheduled to deliver the vessels in 2003 and 2004.

Five of the latest orders are for the popular UT 755 supply vessel. The Aker Promar yard in Brazil will build two; one for Edison Chouest Offshore and one for Tidewater, while Orskov Christensen's Staalskibsvaerft in Denmark will construct a UT755L for the French company, SURF. This Danish yard has also won a contract to build a UT722-T offshore-going tug for Unie Redding-en Sleepdienst in Belgium. The 20,000 hp Rolls-Royce design vessel has a design bollard pull of about 210 tons and will be the most powerful vessel the yard has built to date. Delivery is scheduled for January 2003.

Three examples of the UT722 design are also on order at Fels-Setal in Brazil for Delba Maritima S.A., which is a company jointly owned by Bourbon Maritime in France and Commercial Perfuradora Delba Daiana Ltda in Brazil. Two of these vessels will be 248 ft. (75.6 m) type UT722 and the third, a UT722L measuring 6.5 ft. (2 m) longer. All will have complete Rolls-Royce integrated ship system packages, including design, main engines, propellers, rudders, transverse thrusters, retractable azimuth thrusters and main winches.

### Jane Tide Makes An Impact


Tidewater Inc. has taken delivery of the 260-ft. (79.2-m) M/V Miss Jane Tide. The Miss Jane Tide, which is Tidewater's first VS 480 platform supply vessel, was built by the company's own Quality Shipyards, L.L.C. in Houma, La. The ship, designed by the Norwe-

gian firm Vik-Sandvik, is the first of four identical vessels to be built by Quality. The Miss Jane Tide is a 260-ft. PSV and is the first domestically constructed vessel to be delivered under Tidewater's new construction program announced in January 2000. In addition, Tidewater has also taken operational delivery of the M/V Ace Nature, one of eight vessels acquired from The

Sanko Steamship Co., Ltd. in late 2000. At 276 ft. (84.1-m), the Ace Nature, a UT 745 PSV, is one of the largest ships among Tidewater's fleet.

Upon entering into Tidewater's available fleet, both the Miss Jane Tide and the Ace Nature went on charter with large international oil companies at rates of \$20,000 per day.

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### Halliburton Brings Viking To GOM

Halliburton Subsea, a business unit of Halliburton's Energy Services Group, is deploying its ultra modern multi-purpose support vessel, MSV Subsea Viking, to the Gulf of Mexico on a long-

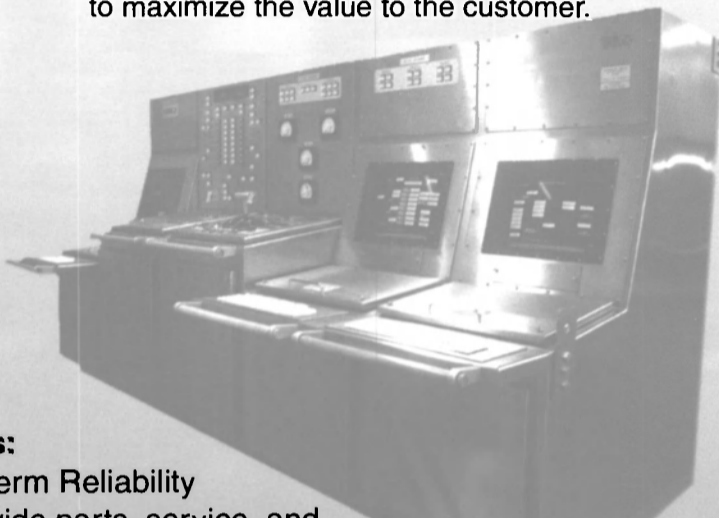
term basis. The vessel, which arrived in U.S. waters in early February 2002, will be available for a wide variety of field development and maintenance tasks including, flexible flowline and umbilical lay, manifold and template installation, remotely operating vehicle (ROV) and survey work and other subsea inter-

vention operations. This 340-ft. (103.6-m) vessel is particularly suitable for supporting deepwater operations. Key features include a 100-ton heave compensated crane, a 1,200-ton capacity below deck carousel, twin 10,000-ft. rated Work Class ROV systems and 12,400-sq. ft. of available working deck area.

With more than 10,000-kW of diesel electric power available and an International Maritime Organization/Norwegian Maritime Directorate (IMO/NMD) Class 3 Dynamic Positioning system, the vessel will be capable of operating safely in close proximity to structures and with a very wide weather capability.



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### ABS Speeds Truss Spar Projects to GOM

ABS-classed as a XA1 Floating Offshore Installation, the Medusa truss spar will be located on Mississippi Canyon Block 582 in 2,223 ft. of water.

Murphy Oil's Medusa truss spar has a hull diameter of 94 ft. (28.6 m) and a



total length of 568 ft. (173.1 m). The sixth truss spar to be installed in the Gulf of Mexico, the facility will have capacities of 40,000 barrels of oil per day and 110 million cu. ft. per day of gas.

In addition to Medusa, ABS is classing and certifying several other deepwater truss spar projects now under way, including Dominion/Williams "Devils Tower," BP's "Horn Mountain" and "Holstein" and Kerr-McGee's "Boomvang," "Nansen" and "Gunnison" spars. ABS maintains efficient interface with the U.S. Coast Guard, the Minerals Management Service, oil and gas companies and various contractors to significantly accelerate the regulatory compli-

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ance of these Gulf of Mexico deepwater applications.

Truss spar installations continue to grow in popularity in the Gulf of Mexico, offering avenues for deepwater developments. Classification society American Bureau of Shipping (ABS) has been apply its considerable deepwater expertise of late, as ABS is providing classification services while facilitating fast-track fabrication and installation schedules for Murphy Oil's "Medusa" truss spar and for the Dominion/Williams "Devils Tower" truss spar, currently the world's deepest dry tree platform in progress.

As for all floating production systems operating in the GOM, these two projects must comply with federal regulatory codes in order to receive a Certificate of Inspection (COI) from the United States Coast Guard (USCG) and a permit to operate from the Minerals Management Service (MMS), says Lynnda Pekel, ABS project manager for both the "Medusa" and the "Devils Tower" truss spars.

"The interface that ABS maintains with the Coast Guard, the MMS, oil and gas companies and various contractors and vendors significantly accelerates the regulatory compliance of these Gulf of Mexico deepwater applications," said Lynnda Pekel, ABS project manager for both the Medusa and the Devils Tower truss spars.. said Pekel.

Truss spars-similar to caisson or classic spars in their operational profile-are intended to offer some design improvement. The truss spar is primarily characterized by its space frame of tubular members, which provides the structural linkage between hard tank (flotation tank) and keel tank as well as support to the heave plates. The heave plates provide added mass and damping to further reduce heave motions and to improve stability.

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### Bollinger Signs Contract For Supply Boat Trio

This past February, Bollinger Shipyards, Lockport, La., signed a contract for three 145-ft. (44.1-m) supply/utility boats with Edison Chouest Offshore.

The vessels, which will meet new regulatory standards and will be less than 100 gt and less than 500 gt registered tonnage, will each have a 36-ft. (10.9-m) beam and maximum draft of 11.5 ft. (3.5-m); normal operating draft will be eight ft. (2.4 m).

The first vessel will be powered by a pair of Cummins KTA-38MO diesel engines rates at 750 bhp at 1,600 rpm. The Cummins package will drive Bollinger 72 x 57-in., four blade, stainless steel propellers through Twin Disc MG5301 reverse/reduction gears with a ratio of 4.96:1.

April, 2002

The remaining vessels will receive power via two Caterpillar 3508B-diesel engines rated at 855 bhp at 1,600 rpm. Each OSV will also be equipped with four liquid mud tanks and two Methanol tanks. While terms of the contract were not disclosed, the yard did say that delivery of the first vessel will occur in sum-

mer 2002; the remaining vessels will follow in October and December 2002.

At right: Bollinger's 145-ft. (44.1-m) Utility/Supply vessel construction program is carrying over to 2002 with the signing of three units for Edison Chouest Offshore. The first unit's superstructure takes shape at the Bollinger Lockport new construction facility. (Photo credit: Bollinger Shipyards).



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Marine Finance in the U.S.

# As Banks Step Down, Equipment Finance Companies Step Up

By Matt McCleery, president,  
Marine Money International

Shipowners are known for having distinct differences of opinion, but the one thing that all agree on is the importance of having access to capital. In an indus-

try in which assets are generally big-ticket items and operating margins can be thin, access to proper financing serves the dual purposes of fleet grow-

ing the generation of healthy operating returns.

Most shipowners would also agree that financing for maritime assets generally isn't easy to find. There are various reasons for this. One reason is that few lenders focus exclusively on marine finance and a result most lending institutions are not familiar enough with marine assets to feel comfortable financing them. In addition, unlike the aircraft market where planes are considered fungible commodities, most bankers are also uncomfortable with the reality that marine assets often fit a special niche. Their fear is that if the market dynamics in that niche change, the banker could be left with an asset that is very difficult to sell at anything but a fire-sale price. A good example of this is a ferry purpose built for a specific route. Although these fears sometimes exist in the international ship finance community, they are more pronounced in the Jones Act trades in which there are only a handful of American buyers for a particular asset and where relatively high values preclude sale in the international market.

While the trend has been for banks to retreat from U.S. marine finance, in the last several months we have noticed more and more U.S. equipment finance companies taking an interest in the sector. First off, the current low interest rate environment has caused the relatively high margins historically offered by finance companies to become manageable for shipowners. Second, finance companies like Boeing Capital, GATX and GE Capital that are heavily invested in aircraft view ships as another high value asset class through which they can diversify sector risk while still capitalizing on their structuring and equipment expertise. US Flag vessels can also offer very attractive depreciation benefits that can be enjoyed by the finance companies if a lease structure is used.

Another bit of good news for the U.S. shipping community is that finance companies are not necessarily well-suited for financing in the international shipping markets. We say this because the pricing offered by specialized international banks is low and because opportunities for capitalizing on depreciation will not be available due to the fact that most international shipowners are registered in offshore tax domiciles.

One of the specialties of these U.S. finance companies is known as a sale/lease back. Through these transactions, shipowners sell their assets to the finance companies and agree to charter them back for a period of years. Shipowners can also negotiate options

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to purchase the ship at various times through the term of the lease. It should be noted that sale/lease backs are more challenging with tank vessels where finance companies are often not willing to accept the unlimited liability associated with the Oil Pollution Act of 1990. While oil majors have been known to offer OPA indemnification, smaller tanker owners generally don't. That said, these alternative lender/lessors are capable of creating structures that can balance risk and reward more equitably than traditional bank debt.

In addition to providing secured financing through senior loans and leases, U.S. finance companies have the potential to excel by offering higher advance rates than banks.

Some background is provided (in the paragraphs below) on a few of the finance companies (presented alphabetically) that are active in the marine sector. Also provided is some insight into the size and types of deals that these lenders are looking for. What you will find in reading through these brief profiles is that each of these lenders is taking a different approach to marine finance and that not every deal is right for every finance company.

It is also important to realize that not every finance company that is active in marine finance is represented in this brief article. If you would like to receive more information, please do not hesitate to contact us.

#### Boeing Capital

Until recently, the name "Boeing" was only uttered in shipping finance circles in relation to its involvement with the legendary Sea Launch program. In early 2001, though, Boeing Capital Corp. (BCC), which was formed from the finance arm of McDonnell Douglas, appeared on the shipping finance scene and promptly closed a \$97 million transaction with International Shipholding.

Using the model of marrying financial services with manufacturing (pioneered by GE Capital) BCC's role within the larger organization is two-fold: to support the airplane manufacturing business and diversify the company's sources of revenue. If BCC's model is similar to GE Capital's, its scale is not: Boeing's \$7.5 billion portfolio is dwarfed by GE Capital's \$750 billion portfolio. BCC's move into shipping finance makes sense. First, the BCC's strategy of having a small number of people manage a large pool of assets means that they prefer to finance big-ticket assets that can be put away from long periods — shipping fits the bill. Second, shipping represents a way for BCC to diversify its exposure to the aircraft sector. Third, financing ships allows BCC to put capital to work without competing with the aircraft leasing companies that are clients of the Boeing Corporation.

From our perspective, Boeing appears to be most interested in working with corporate credits, but would consider doing deals with independent shipowners that possess the ubiquitous "Three Cs" — Character, Credit and Collateral.

#### GATX

Unlike many financiers, GATX isn't afraid to own ships; they are, in fact, so unafraid that GATX Marine encompasses the single largest asset concentration within GATX Specialty Finance. GATX owns covered-hopper grain barges, tank barges and

tow-boats that operate on the U. S. inland waterways and offshore supply vessels and drilling rigs that work in the Gulf of Mexico. GATX Marine also includes the self-unloading bulk cargo carriers that American Steamship Company operates on the Great Lakes. On the blue water side, GATX's fleet includes factory/freezer fishing vessels, ocean-going tugs, log carriers, container ships, oil tankers, and gas and chemical carriers.

GATX Marine's confidence in their credit and equipment judgment has evolved into something very unique in ship finance — a willingness to partner with shipowners on an equity basis. In our view, this is where GATX really distinguishes itself — through their joint ventures with shipowners, such as IMC Holdings of Hong Kong and I.M. Skaugen of Norway. In both cases, GATX Specialty Finance invested in specialized gas and chemical carrier newbuildings, the first of which was delivered from China on July 3, 2001.

Another piece in the GATX puzzle is their involvement with AMA Shipping Funds I and II — equity funds managed by New York-based American Marine Advisors. The combination of debt and equity allows GATX to capture fees and benefits from all aspects of transactions with the select shipowners they believe in.

#### GE Capital

GE Capital is unique to ship finance in that they will do deals for companies with a weak credit profile, so long as they like the underlying business/transaction.

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GE's 9 to 1 leveraging of its AAA balance sheet allows the company to assume risk where they feel the premiums will fairly compensate them for doing so. There are several results of this business strategy.

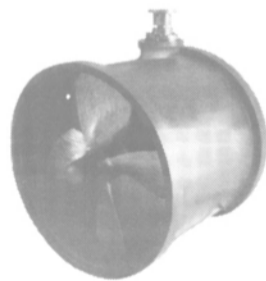
For one thing, GE often acts as more than just a lender. Like GATX, GE is willing and able to take a view on a market sector and provide financing that makes sense, irrespective of leverage or borrower credit standing. In order to be compensated for risk, GE uses a quiver packed with specialized products not seen at other ship finance shops.

From equity to senior and junior debt, from structured finance investments to sophisticated leasing and other tax-advantaged products, GE has loads of mechanisms by which to exact their fee — which can be dear.

Despite GE Capital's overall size, the shipping desk

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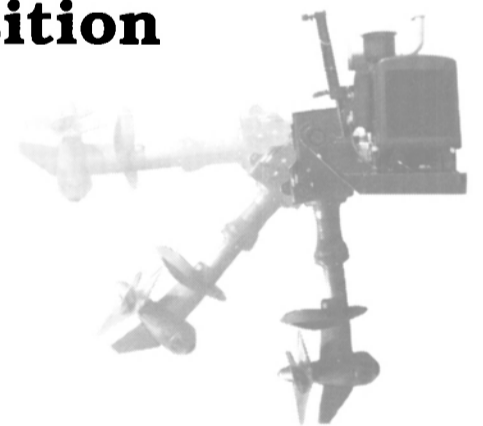
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doesn't do a tremendous amount of business. In the last four years, GE has only underwritten about \$350 million in financings — some of which, like Essar's suezmax facility, they syndicated.

It's worth noting that while other finance companies move in and out of shipping, GE has maintained a perma-

nent presence in our industry for more than two decades. Even when the company isn't originating loads of loans, GE has made the decision to keep a relationship manager "on-duty" in the marine finance market. One of bi-products of this permanent presence is that the company has spawned lots of ship financiers, including Great Circle Mar-

itime's dynamic duo **Kevin Kennedy** and **Bob Burke**. During 2001, the baton was passed to veteran shipping financier Ron Dal Bello, formerly of FleetBoston. At press time, **Arvid Bergvall**, formerly of OneSea.com, is sitting on the GE marine desk. He is employed by V Ships and is on a rotation with partner GE.

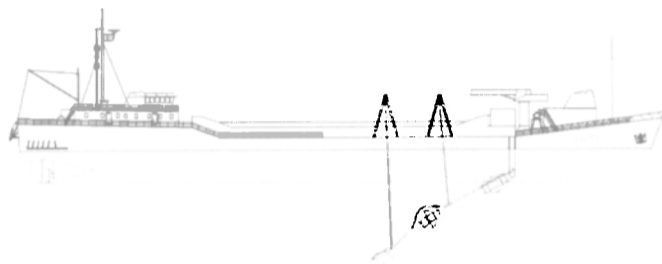
### Conclusion

While historically finance companies have not been competitive lenders, changes in the shipping and banking industries may allow them to be in the future. We think finance companies have the potential to become very important members of the U.S. shipping community and we hope that you will feel free to contact us to learn more.

*Matt McCleery, president of Marine Money International, can be reached at (203) 406-0106, or via e-mail on [mmc-cleery@marinemoney.com](mailto:mmc-cleery@marinemoney.com) and on the web at [www.marinemoney.com](http://www.marinemoney.com)*

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### Cummins Inc. And CitiCapital Launch Alliance

Cummins Inc. and CitiCapital have reached an agreement to promote a co-sponsored marine finance program. Under the agreement, customers who purchase Cummins engines for various commercial vessels will receive exclusive finance products provided by CitiCapital.

This agreement demonstrates the cooperative efforts of both companies by bringing together the premier manufacturer of marine engines and the world's largest financial services conglomerate. The agreement will initially cover the U.S. and Canada with expectations to rollout worldwide.

"Financing solutions are critical with any marine projects, whether it's a new vessel or a major repower. Cummins Marine customers deserve the very best in products and services. We are very pleased to now offer CitiCapital's considerable strength and marine experience to Cummins Marine customers," said **Dennis Spriggs**, Financing marketing manager for Cummins, Inc.

"By bundling power and financial solutions, the end user customer gets better overall service than they would if they sourced the separate parts of the transaction individually.

The alliance between Cummins and CitiCapital will save customers time, provide a high level of quality and service and potentially money by taking advantage of this powerful alliance," said **Joe Pitch**, vice president of CitiCapital's marine operation.

CitiCapital will provide dedicated marketing and sales support to Cummins Marine distributors located in the United States and Canada. The goal of the program is to provide marine financing solutions to customers who select Cummins marine engines to power their commercial vessels.

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## Halter Marine Selected to Build Tugs For Lockheed Martin

Halter Marine, Inc (HMI), a division of Friede Goldman Halter, Inc., received a Letter of Intent from Lockheed Martin Overseas Corporation to design, and build two Voith Schneider Tractor Tugs. This is a portion of a contract that Lockheed Martin signed with the Egyptian Ministry of Transport earlier this month. Lockheed has released funding for design and planning at this time, with details on the remainder of the project to be finalized later. The project is expected to take 26 months to complete.

**Anil Raj**, Chief Operating Officer for Friede Goldman Halter said, "The partnership between Halter Marine and Lockheed is added confirmation that demand for quality vessels produced by Halter continues to grow internationally.

When coupled with Lockheed Martin's Vessel Traffic Information Management System (VTIMS), Egypt will have all the necessary capabilities to support navigation traffic management and maritime response efforts in the Gulf of Suez. This selection is important to Halter as it finalizes its' plan to emerge from the Chapter 11 process"

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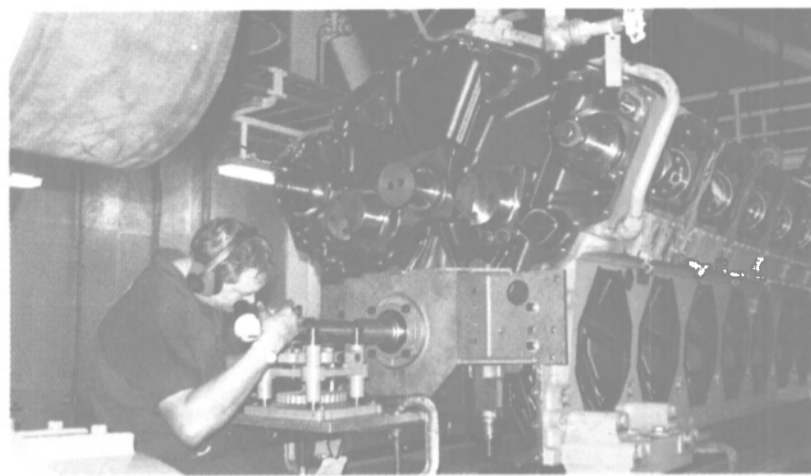
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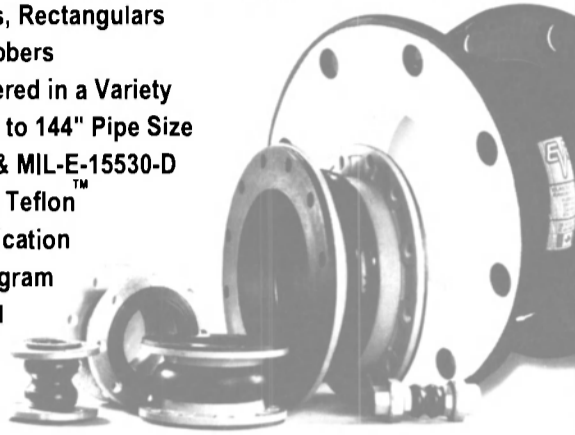
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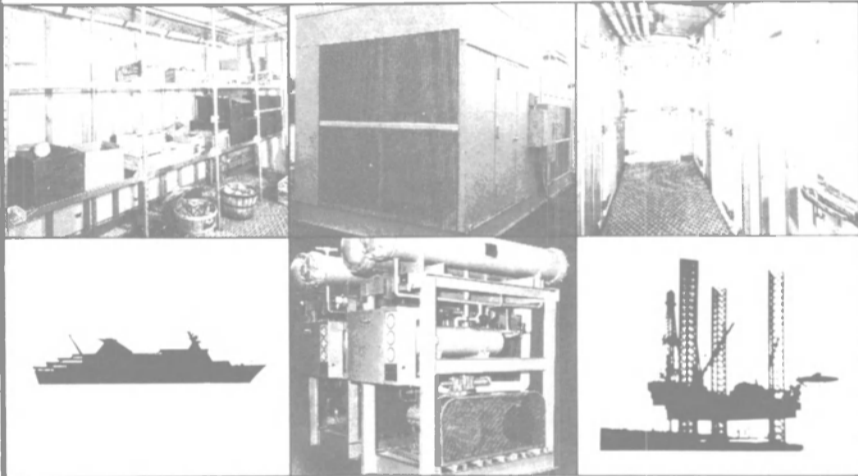
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## ACR — On The Road To Safety And Survival Technology



Beginning in the 1950's when the company manufactured the first electronic flash unit for cameras that utilized photo flash batteries, ACR Electronics was well on its way to making a name for itself as a leading manufacturer of high-quality strobe lights for the marine and aviation industries.

Through government projects, the Fort Lauderdale, Fla.-based company involved itself with the research and development of marine and aviation rescue and survival items, including EPIRBs, personal utility lights, marker lights, radios, SARTs and safety accessories — eventually evolving into a leading manufacturer of 406 MHz beacons and other marine GMDSS products. In addition, the company's full in-house team of professionals provides the muscle behind advanced technology products within the marine industry, and more recently, the dive market.

ACR recently introduced GlobalFix 406, which is being touted as the next generation of EPIRB. The product, which provides an entirely new functionality to the satellite-aided search and rescue system, includes an integral GPS to add latitude/longitude coordinates to the emergency signal transmitted by the unit. Available in either Category I (automatically deployable) or Category II (manually deployable) models, GlobalFix also provides users with the latest in test features to ensure that all systems all performing up to par. With Lat/Long include GlobalFix provides an immediate, precise position that is given to one of the new GEOSAR satellites in high-earth orbit to the closest SAR response agency.

ACR has also carved a niche for itself in the area of strobe lights — by two. The company's Firefly2 Doublefly combo light boasts an incandescent lamp as well as a Xenon strobe in a single compact body. The light, which was originally designed to comply with innovative electronic circuitry, recently gained notoriety for surviving a four-year, 40-million-flash endurance test. The tests, which were given by both military and civilian authorities, demonstrate that strobes have high visibility in a variety of conditions. Measuring a compact 4.4 x 2.2 x 1.1 in. (11 x 5.6 x 2.5 cm), and weighing 4 oz., the ACR Firefly2 Doublefly is waterproof at up to 200 ft. (60 m), and can withstand the sometimes, harsh rigors of the marine environment. Other roles include a diver distress light, locator light and personal flotation rescue light.

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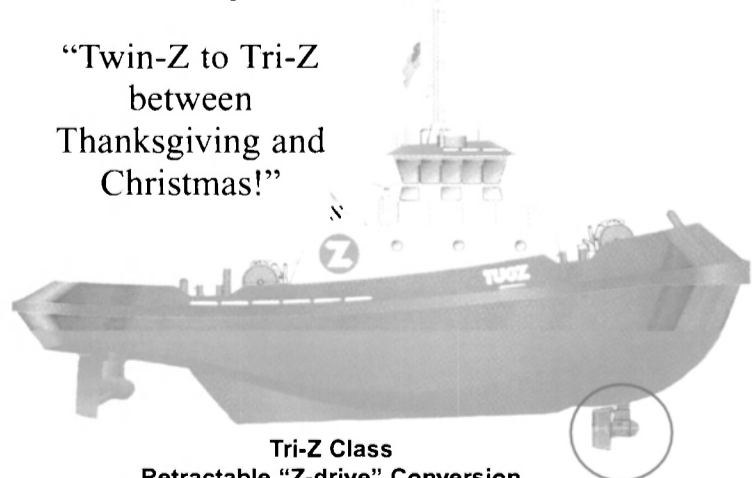
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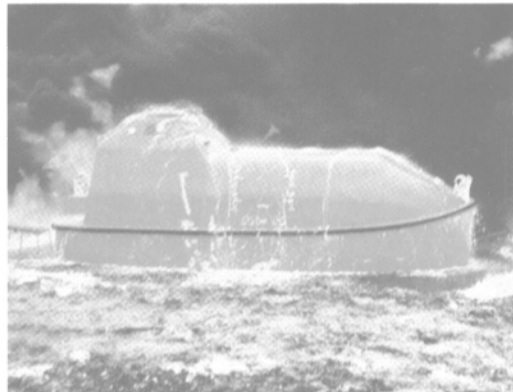
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## Wolong Fassmer Lifeboats Promote Affordable Quality

Based in Singapore, Wolong International has signed a licensing agreement with Fr Fassmer GmbH of Germany for the production of Wolong



(Fassmer licensed) totally enclosed lifeboats. The agreement, which was finalized on October 1, 2001, calls for Fassmer to provide technical support to Wolong International in upgrading and improving the quality of its lifeboats.

Production of the lifeboats, which will be carried out in China, commenced this past fall.

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## Schat-Harding Launches Miami Service Center

Schat-Harding has opened a new service and sales center in Miami. Focused initially on improving service to the cruise industry, it will also coordinate sales and service for all ships using Florida's ports.

The Miami facility will be developed to include a technical team to provide quick response to service needs, a spare parts depot and a sales coordination center.

"We have 60 percent of the market share of lifeboats and davits for cruise ships," says Trygve Kjerpeseth, manager of the service department of Schat-Harding. "Miami and the Florida ports are at the core of the global cruise industry, so we need a team there to support our clients."

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## Hammar Automatic Life Jacket Inflator Approved in U.S.

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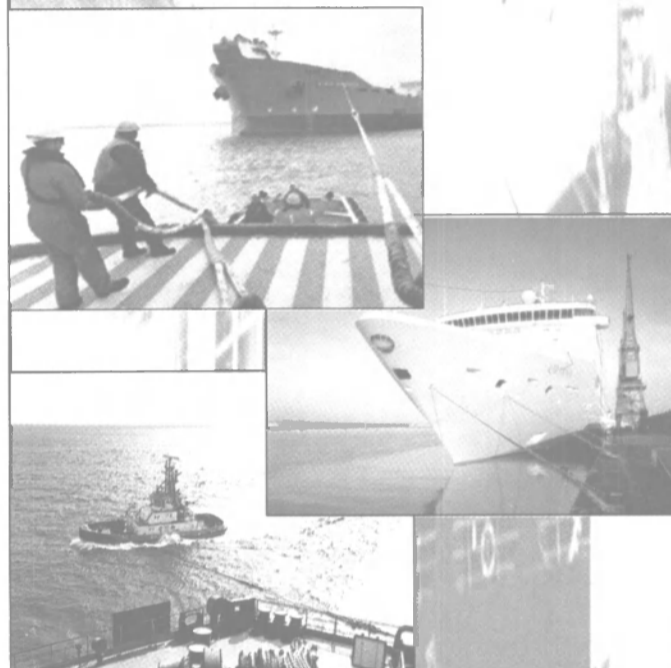
## New Service Frees Ships From Hostile Situations

Vessel Extractions LLC (VessEx) has launched a service to free ships from hostile situations and sail them to safety. Although the company focuses on repossessing ships for mortgagees, it also assists owners whose ships have been seized, detained, abandoned or stolen. Freeing strategies range from negotiating and resolving disputes to sailing ships out of hostile ports. VessEx is the first company to combine the real-world operational experience of shipmanagers, the superior technical expertise of class surveyors, and the legal skills of maritime lawyers to perform ship recovery operations. These skills are essential to overcome the many obstacles to freeing ships. As explained by Captain Max Hardberger, the Operations Director of VessEx, "the ships we deal with could be manned by a defiant crew, hunted by agitated creditors, or held for ransom by corrupt local authorities. To make matters worse, such ships are often in unseaworthy condition, lacking necessary repairs, certificates, supplies, and insurance." Captain Hardberger notes that VessEx's robust capabilities allow it to overcome all such problems, usually under adverse conditions and on short notice.

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# Positive Outlook for Global Subsea Development, Deepwater Strengthening

by Paul Hillegeist, president,  
Quest Offshore Resources, Inc.

There are 2,511 identified pending, probable and possible subsea production wells forecast (base case) worldwide over the next six years. Some 18 percent of these subsea completions will be installed in North America, 30 percent in Africa/Mediterranean, eight percent in Asia-Pacific, 26 percent in the North Sea and 18 percent in Brazil.

These subsea projects are in various development stages, including: 23 percent at the pending/construction stage, 11 percent bidding, 9 percent in detailed engineering, 16 percent at the front-end engineering design (FEED) stage, 16 percent of the wells probable and 26 percent possible indicating possible development in the future.

Quest Offshore estimates that there will be about 335 subsea completions installed this year worldwide growing to 364 in 2003 and 372 in 2004 (Base Case). The Gulf of Mexico (GOM) will account for about 18 percent of this activity or 188 subsea completions over the next three years. Last year, according to Quest Offshore's survey of operators and suppliers, there were about 260 subsea trees installed globally.

Several major contract awards for subsea production trees have materialized over the last 12 months, 307 in total, which are keeping the world's five main subsea manufacturers satisfactory utilized. Including the 307 subsea trees booked last year, there are presently 571

trees pending construction for installation between 2002 and 2007, plus 302 subsea trees bidding and 219 in the detailed engineering phase. As illustrated in Figure 3, ABB, Cameron and FMC are dominant suppliers



of subsea production hardware to the worldwide market followed by Kvaerner (KOP) and Dril Quip. Each of the manufacturers has strengths in specific geographical regions, however, with FMC Technologies possessing a significant majority of the market (last 12 months) in the GOM. ABB meanwhile, has a strong footing in the North Sea with a 37 percent market share

(trees booked over the last 12 months) along with FMC (a very strong 32 percent) and KOP (growing at 18 percent). With respect to the burgeoning African market for subsea trees, Cameron has a favorable market position with a 55 percent share following on the heels of several significant ExxonMobil contracts including Kizomba in Angola, Erha in Nigeria and Leased Production System (LPS). With the award of Shell's deepwater Bonga trees offshore Nigeria in early 2001, ABB will supply about 34 trees into the market or a 33 percent share of the 104 subsea trees booked for Africa during the last 12 months.

### Deepwater Trends

The majority (65 percent) of identified subsea wells are in deepwater. With respect to ultra-deepwater subsea production, the present share of subsea trees worldwide over 3,437 FSW (Feet Sea Water) or 1,200 MSW (meters sea water) is 39 percent. Of the remaining subsea wells forecast, 26 percent are planned for installation in 1,650-3,960 FSW (501-1,200 MSW) and 35 percent in 0-1,650 FSW (0-500 MSW).

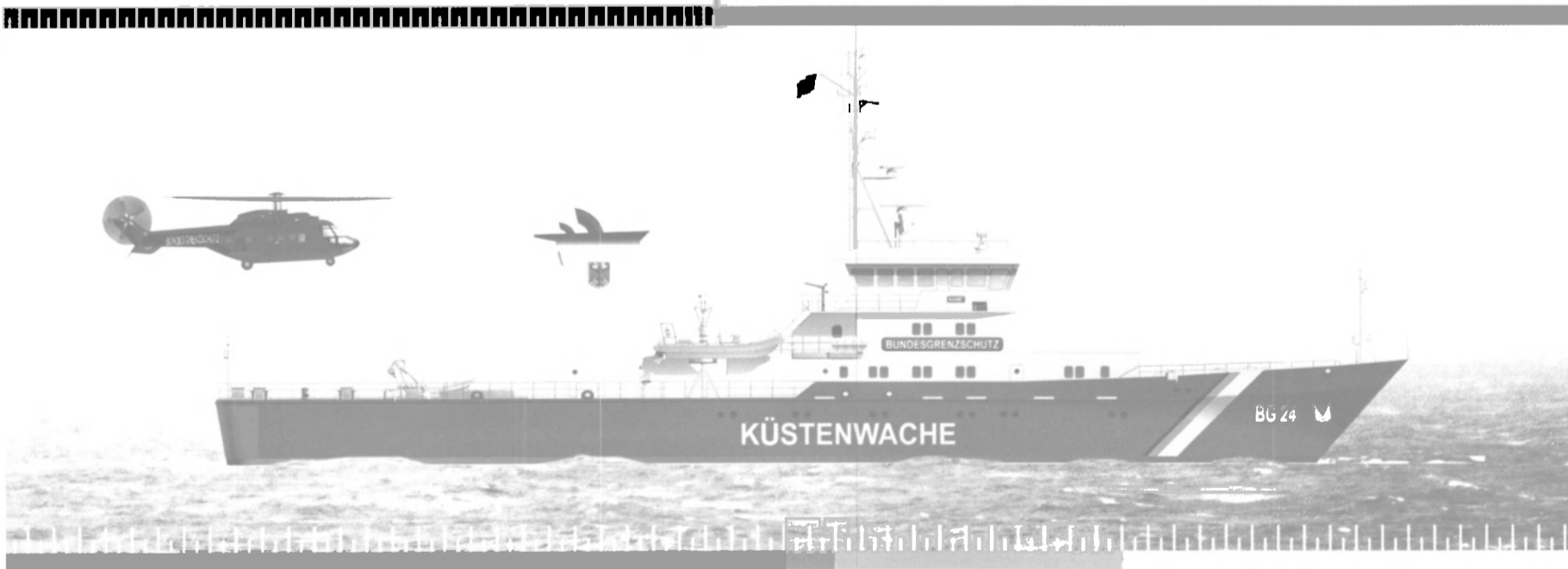
### Gulf of Mexico

The GOM ranks second behind West Africa with approximately one-third of the world's estimated deepwater reserves. The great success of deepwater production in the GOM is due in part to the technological advancements and reliability of subsea production systems.

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Despite declining oil & gas prices, deepwater and ultra-deepwater drilling activity in the GOM has held up reasonably well. An analysis of GOM deepwater wells drilled (> 1,000 ft.) over the last two years from January-December reveals a six percent composite increase in activity. According to the Minerals Management Service and Quest Offshore estimates, there were 116 deepwater (>1,000 ft.) wells drilled in 2001, compared with 109 deepwater wells in 2000. This seems modest, but is quite steady compared with the measured nine percent decline in shallow water wells (under 800 ft.) over the same period.

According to Rigzone.com, there are presently eight to nine deepwater drillships under contract in the GOM or a measured 50 percent increase over two years compared with five to six units working in 2000. The market for semi-submersibles also has held relatively steady at about 76 percent utilization with 30 to 32 semis under contract up from an average 27 units working in 2000.

Ultra-deepwater GOM drilling activity (over 3,000 FSW) experienced an extraordinary gain in 2001 with a 43 percent increase compared with 2000. Once these discoveries are commercialized, these projects will be candidates for stand alone subsea development schemes or mixed with dry or wet tree floating production solutions.

Statistics from Quest Offshore's Quest SUBSEA-DATA-BASE reveal a six-year forecast for 459 subsea production wells (trees/completions) in the GOM, and Canadian Atlantic waters. This compares with a five-year average of 22 subsea trees from 1999-2000 or 53 subsea trees in 2001, a robust year.

**The Market Has Strengthened**

Several major contract awards for subsea production equipment in 2001 have accelerated the pace of activity with 99 booked subsea trees in the GOM last year for installation during 2001 to 2005.

The North American market for subsea suppliers has grown from approximately \$600 million over the last six years to an estimated \$1.8 billion during the next six years. This market size denotes subsea hardware supply comprising trees, wellheads and controls and excludes costs for flowlines, umbilicals and offshore installation activities (See figure 5.).

**Project Round Up**

Noble Affiliates' (Samedan's) Lost Ark development consists of East Breaks 420, 421, 464, 465 located in 2,750 FSW (920 MSW), which will connect to a platform 27 miles (45 km) away at East Breaks 110. Kvaerner Oilfield Products (KOP) seized the contract to

supply an electro-hydraulic multiplex control system. Platform equipment includes a hydraulic power unit to generate hydraulic pressure for operating the subsea tree valves, manifold valves, and the SCSSVs; a master control station; an uninterruptible power supply; and a topside umbilical termination assembly. Subsea equipment includes a subsea umbilical termination assembly,

flying leads, and a subsea control module. Samedan Oil inked a Letter of Intent (LOI) with Global Industries' (CHICKASAW) for its Lost Ark pipeline at East Breaks Block 421. Project workscope comprises the installation of one 26 mile, six-inch dia. rigid steel flowline. The 1,100-ton umbilical (CSO-DUCO incorporating both Super Duplex and Carbon Steel Tubes, six in

total) will be tied-back to a platform at East Breaks Block 110 in 660-700 FSW including saturation diving work and the installation of a new riser at the platform.

A record setting deepwater development presently underway in the GOM is TotalFinaElf E&P USA, Inc. (TFE) Canyon Express Project. Workscope includes a single Methanol Distribution

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line and the deepest installed flowlines (2 @ 12-in. dia.) and Electro-hydraulic Umbilical ever, in up to 7,200 FSW. Kvaerner Oilfield Products (KOP) is designing, manufacturing and supplying the subsea controls and a single continuous length subsea umbilical. The route length initiates from Marathon's Camden Hills prospect (MC 348) and is then

routed to TFE's Aconcagua prospect (MC 305). The pipeline is linked further to BP's King's Peak development (MC 217) and finally onwards to the Canyon Station Platform at Main Pass 261 for termination on the shelf in 1,132 FSW. Sonsub Clough Partnership's MSV MAXITA (soon to be Saipem 100 percent) is installing the primary Canyon

Express 57 mile (91 km) super duplex umbilical plus over 20 km of infield umbilicals. The umbilical system will control four subsea wells at the King's Peak field, three to four subsea wells at the Aconcagua field and two subsea wells at the Camden Hills field. Transocean Sedco Forex's drillship Discover Spirit will install and complete the


~10 Canyon Express subsea wells. TFE estimates completion costs at approximately \$21-30 million per well.

### Africa/Mediterranean

West Africa is certainly a bright spot for deepwater exploration and development around the globe. It ranks first in estimated deepwater reserves with approximately a 38 percent share of deepwater reserves. West Africa also possesses the world's largest deepwater fields with an average deepwater field size ranking significantly above the rest with Brazil a distant second and the Mediterranean a close third. Quest Offshore estimates a significant 735 subsea wells forecast for Africa and the Mediterranean regions. This represents approximately 29 percent of the world market.

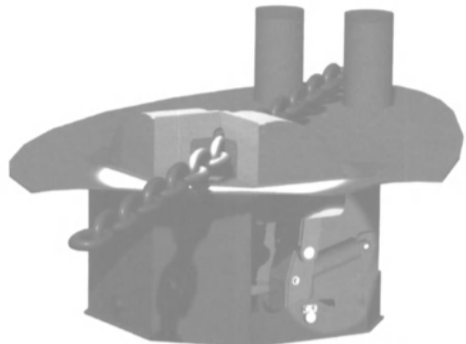
### African Project Highlights

Bonga is the first deepwater development offshore Nigeria in 3,609 FSW (1,100 MSW). The biggest contract went to AMEC in the U.K. — a \$435 million contract to build the process system for the massive Bonga Floating Production Storage and Offloading (FPSO). The fabrication and assembly of the 225,000 BOPD process deck, expected to weigh in at 17,000 tons, will be centered at AMEC's Wallsend yard on Tyneside. The FPSO hull, designed for storage capacity of 2 MBO, is being fabricated at Samsung in South Korea and is due to arrive in the U.K. during Q3 2002. Early last year, ABB seized a final \$180 million contract for the sub-



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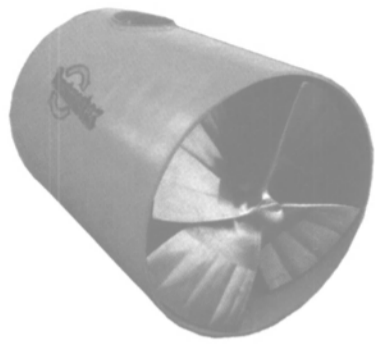
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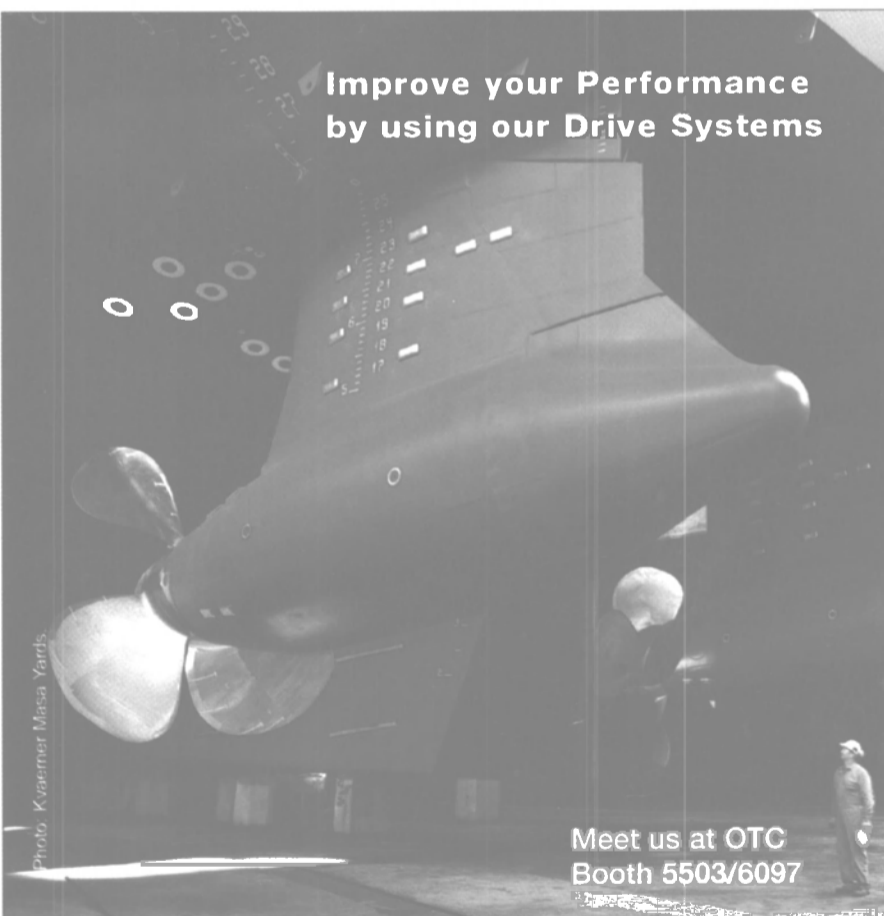
sea production hardware. Delivery for the equipment will begin in mid-2002 and carry on through 2009. As a result of the contract, ABB is building a \$2 million sub-sea operations base at Onne. Shell International ordered 29 conventional deepwater trees plus the control system and five manifolds. An added bonus for ABB is supply of the control umbilicals, subcontracted to Kvaerner, and the gas lift risers. Single Buoy Moorings (U.K.) Ltd. is executing the main contract for the mooring and installation of Shell's Bonga FPSO system.

ExxonMobil is well under way with its \$3.1 billion deepwater Kizomba A development offshore Angola in up to 4,022 FSW (1,219 MSW). The development scheme for Kizomba Phase 1 incorporates a TLP plus FPSO, 32 dry production well-heads, approximately 28 Cameron spool trees to be utilized for re-injection of the gas into the reservoir, and crude export to a surface buoy.

Elsewhere offshore Angola, BP issued pre-qualification documents for the Engineering, Procurement, Installation and Commissioning (EPIC) of umbilicals, flowlines and risers for its Block 18 Greater Plutonio development offshore Angola in 1,300 MSW.

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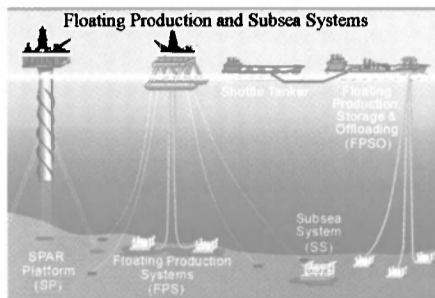
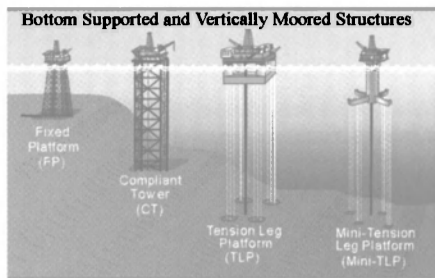
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will comprise around half of the total, and investment in new facilities around 25 percent. The NPD anticipates a 15 percent increase in overall spending in 2003 and 2004 to an estimated \$6.7 billion annually and sees average spending of \$24.7 billion during 2002-2005, excluding investments in ongoing opera-

tions and exploration. Investments for the most notable development targets include the following:

*Statoil's \$4.5 billion Snow White development, for which bids are imminent;*

*Norsk Hydro's \$2.8-3.3 billion Ormen Lange development, for which bids are*

*expected to be called either late this year or in 2003;*

*BP's \$1.6 billion Skarv development, for which bids are expected to be called in late-2002 or 2003.*

In addition, a number of smaller oil and gas fields such as Svale, Norne expansion, Skirne and Byggve are

**North Sea-U.K.**

Quest Offshore forecasts 341 subsea wells in the United Kingdom (U.K.). As a mature province, the U.K. North Sea has become increasingly dependent on more numerous, but smaller fields where subsea developments play a large role.

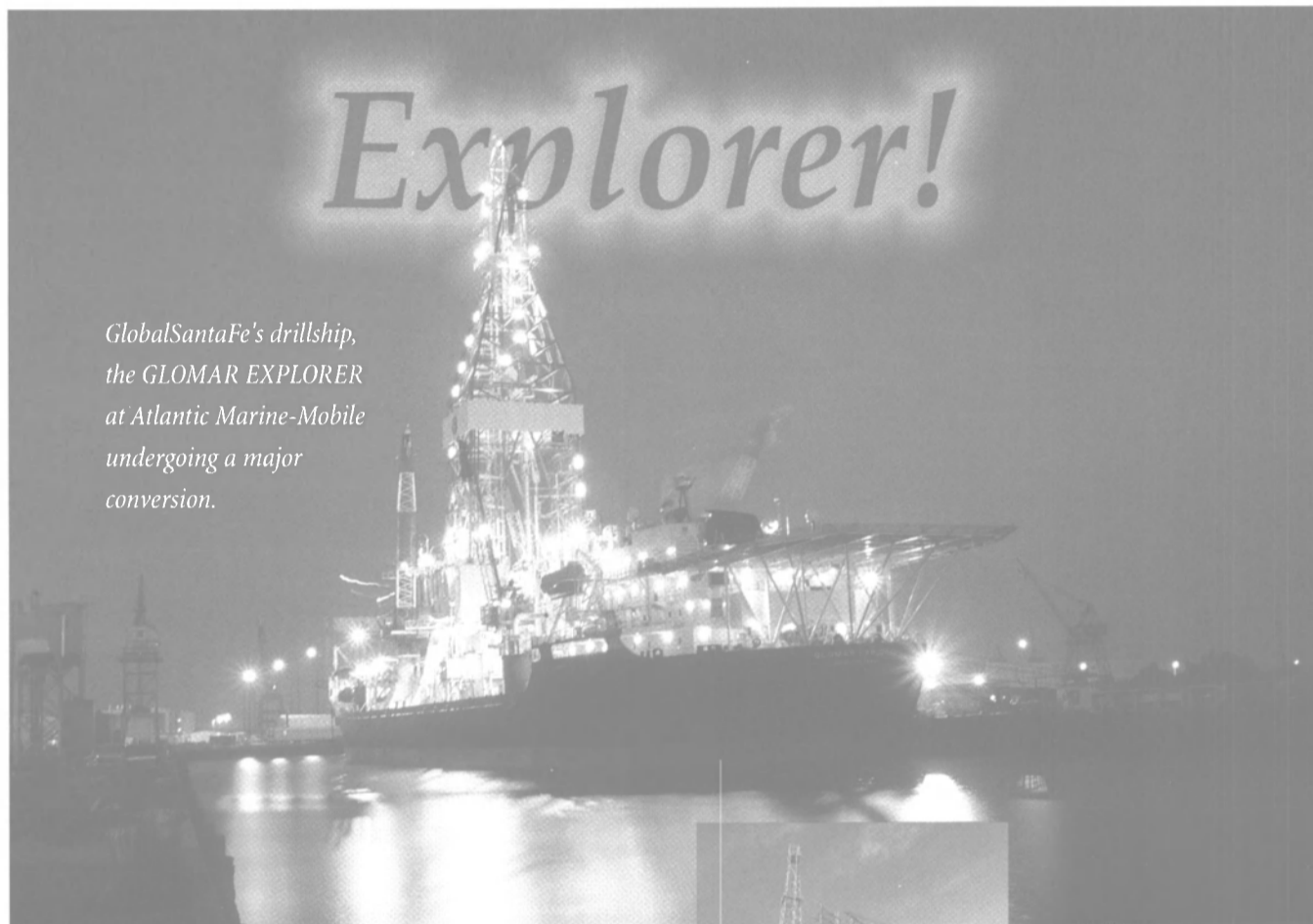
**U.K. Project Highlights**

The UK's Oil and Gas Directorate approved a further \$244 million in development for Madoes and Mirren using a total of five new wells tied back through multi-phase pipelines into the existing Central North Sea Eastern Trough Area Project (ETAP) infrastructure. Shell-operated 22/23b Madoes will be tapped with three horizontal subsea wells tied to a subsea manifold. Multi-phase production will be exported via a 12-mile (19 km) pipeline to the Central Processing Facility within the ETAP complex, which is situated over the Marnock field. BP-operated 22/25 Mirren will use two horizontal subsea wells and export via a second subsea manifold and another multi-phase pipeline 7.5 miles (12 km) into the system. Oil and gas from the new fields will be exported via the Forties Pipeline and Central Area Transmission Systems. BP expects first production in early 2003.

Shell U.K. Exploration and Production is developing its Penguin field, 93 miles (150 km) northeast of the Shetland Islands, with four horizontal wells at a cost of \$333 million. Successful results from these wells will result in the drilling of up to five additional horizontal wells, increasing total investment to \$507 million. Penguins cluster comprises a group of five fields with reserves of oil, gas and condensate estimated at about 90 MBOE.

**North Sea-Norway**

The Norwegian North Sea sector comprises 311 forecast subsea wells from 2002 to 2007 or 12 percent of the worldwide total. For 2002, the Norwegian Petroleum Directorate (NPD) sees investment hitting around \$5.9 billion, of which spending on production wells

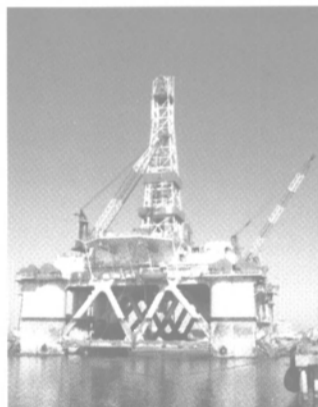


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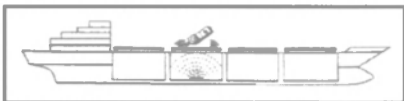
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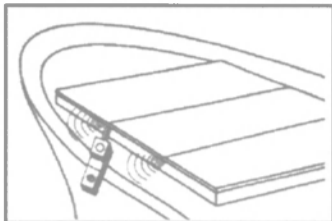
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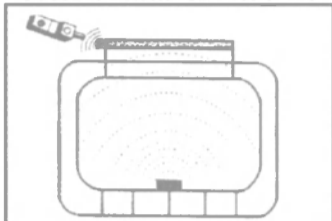


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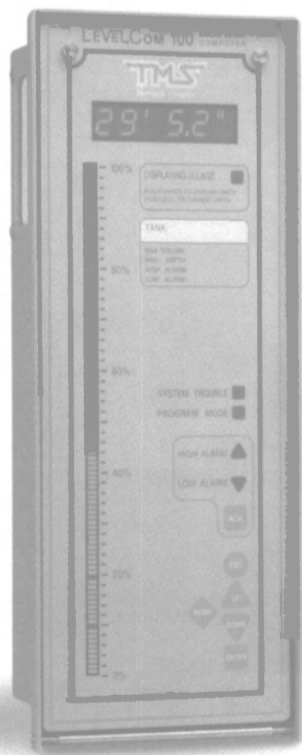
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expected to be developed during 2002 to 2005.

**Project Round Up**

Partners in Norway's Barents Sea Snohvit (Snow White) field submitted a Plan for Development and Operation (PDO) to authorities for approval, following tax concessions by the finance ministry. Workslope comprises pipelines, subsea production facilities, receiving facilities and a gas liquefaction plant.

Field development work is slated to begin in the spring of 2002, with production to be brought on stream in 2006. Engineering, Procurement and Construction (EPC) contracts in the first phase of the \$6 billion Snow White (Snohvit) LNG project are soon to be issued to fabrication contractors and subsea facilities suppliers.

Design work for a newbuild steel barge, measuring at 492 x 164 x 30 ft. (150 x 49.9 x 9.1 m), on which the LNG plant will be built is close to completion, and a contract for the construction of the barge is likely to be awarded by the first half of 2002.

The \$500 million-plus facility will accommodate up to 38,580 tons of top-sides and can produce up to 203 BCF of LNG per year. Phase one of Snow White will comprise eight subsea production wells and one carbon dioxide injection well. Drilling and completion of these wells will be carried out in 2004 and 2005, with production to start in 2006.

A further eight subsea wells for Askeladden and five subsea wells for Albatross are intended for later phases. Requests for Quotes (RFQ's) for the subsea facilities and 66 mile (106 km) 27-inch dia. export pipeline from the field are imminent with contract awards anticipated in 2002 or early 2003. Kvaerner Oilfield Products (KOP) received a Letter of Intent (LOI) worth \$110 million to provide equipment for ten subsea wells, production controls and support structures for the Statoil-operated Kristin field.

Workscope includes the delivery of wellheads, valve-trees and subsea production control systems for ten wells plus four, four-slot wellhead templates. KOP in Houston will provide high-pressure components for the valve-trees, and Kvaerner in Aberdeen will build control systems.

The company will assemble the wells at its Tranby site outside Oslo, Norway. The templates will be built at Kvaerner's yard in Egersund, Norway, where it will also undertake integration testing of the wellhead equipment.

**Asia Pacific**

Quest Offshore forecasts 203 subsea completions during the next six years in

the Asia Pacific led by 17 projects in Australia comprising 138 subsea trees and nine projects in Indonesia comprising 72 subsea wells. Woodside, Western Australia Petroleum (Wapet) and BHP Billiton are the most active operators in Australia. Woodside Petroleum plans to

invest \$2.54 billion in growth projects by end 2005, including the Laverda/Enfield oil project by end-2002 offshore Western Australia and the Greater Sunrise gas project in the Timor Sea.

**About the Author**  
Paul Hillegeist is President & Co-Founder of Houston-based Quest Offshore Resources, Inc. (Quest Offshore), which is a leading provider of specialized market intelligence information and consulting services to the offshore sector of the oil & gas industry worldwide.

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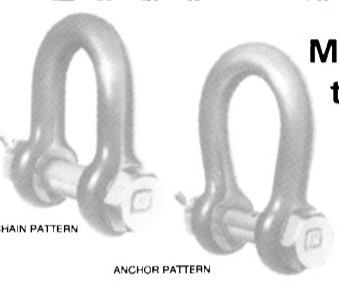
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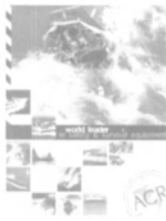
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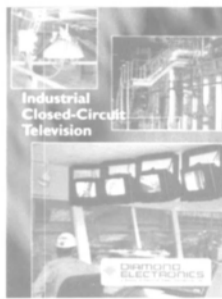
ACR Electronics, Inc., designs and manufactures a complete line of safety and survival products including EPIRBs, personal utility lights, marker lights, radios, SARTs and safety accessories. The quality systems of this facility have been registered by UL to the ISO 9000 Series Standards. Recognized as a world leader in safety and survival technologies, ACR has provided safety equipment to the aviation and marine industries as well as to the military since 1956.



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**Diamond Electronics**

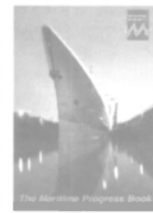
Diamond Electronics designs, manufactures, and installs closed-circuit television systems for virtually any high-temperature application. Diamond's extensive line of high-temperature camera equipment and accessories is custom configured to your requirements.



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Maritime Progress specializes in supplying marine signage, safety posters and safety products. Maritime Progress has established itself as one of the largest suppliers of photoluminescent signage and a manufacturer of high performance photoluminescent materials. The company has a reputation for knowledge of marine safety legislation that resulted in the introduction of the range of safety awareness and training posters, which now number over 40 titles, with additional titles being added on a regular basis.



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**Regulateurs Europa**

Regulateurs has launched a new hand held version of its Viking HMI for adjusting and viewing of parameters within the company's leading range of Viking products. The development of the hand held Viking HMI provides the ability to interrogate alarms and status information through a display and keypad linked to Viking control units via an RS232 serial communications line.



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**Western Fire and Safety**

Western Fire and Safety, a Seattle-based marine-oriented fire safety business, offers fire equipment and a variety of specialty products. The company offers the Firemans outfits in sizes that are a full complement of equipment per the CFR, and are well recognized in the industry, and soon to have ABS type approval. They have manufactured and installed fully self-contained Containerized CO2 cargo hold CO2 fire suppression systems, which have been approved by Lloyds Register and NK Japan.



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**Fleet Medical Resources**

Fleet Medical Resources supplies first aid kits for the marine industry, including customized kits according to vessel registry (WHO, ISM, USCG, Solas, etc.).



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**Stearns**

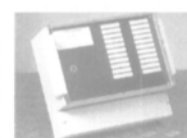
Stearns offers a wide selection of personal flotation devices (PFDs) to meet all safety requirements and conditions. The Deluxe Merchant Mate II is a non-reversible vest style Type I PFD is designed for comfort and performance. It is an offshore life-jacket with encircling body belt, a foam-filled collar for additional head support and a hinged back panel. Its soft Aquafoam flotation foam provides a minimum of 22 lbs. of buoyancy.



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**Martek**

Martek's Centurion is a high level & overfill alarm system designed in compliance with USCG & IMO requirements for tankships. Electrically independent alarm systems for both 95 percent and 98 percent tank levels, are housed in the Centurion controller in the cargo control room. Level alarm detection is carried out by MMS500 stainless steel float switches, which come in either dual or single (overfill) versions. It is designed for simplicity of use, with clear indication of alarm status in each tank and any faults that may occur.



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**C.M. Hammar**

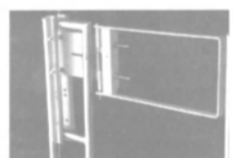
The Hammar MA1 manual/automatic life jacket inflator, manufactured by Sweden-based C.M. Hammar AB, is the first and only inflator approved to the USCG's highest standards: 1E. It features a unique hydrostatic valve which protects the automatic inflation system with no activation in rain, spray, splash or humidity. It also has a single point indicator that shows it is ready for use. A cylinder seal indicator ensures that the cylinder has not been used and the no service requirement of the inflator cap for five years.



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**FabEnCo**

The FabEnCo Self-Closing Safety Gate is an adjustable swinging gate for Fall Protection at your ladder, platform and stair opening as required by OSHA. Shipped complete with all hardware for mounting to existing walls or handrails, the Safety Gate, which is now available in safety yellow, can be easily installed in minutes.



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**Lolamat**

Lolamat is extremely shock-proof and at the same time, extraordinarily resistant to wear and tear. The panels offer planners, architects and users remarkable freedom in design. Noise and fire protection are two additional important factors, which guarantee the desired degree of comfort and safety. With Lolamat, excellent acoustic sound proofing results are achieved so that the passengers' use of all rooms is as pleasant as possible.



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**Maritime Associates**

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**WolongFassmer**

WolongFassmer Shipyard offers various service works in the field of development, construction and manufacturing of ships, maintenance and repairing of lifeboats, delivery of spare parts. Fassmer-Shipyard has, over the years, turned more and more to new materials such as seawater resistant and/or high quality precipitation-hardened aluminum and aluminum semifinished products as well as high-tech fiber composites.



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## Products

### Adrick

Adrick Cooling Corporation is a supplier of marine air-conditioning machinery, self-contained units, refrigerators, coolers and freezers, including design, engineering and fabrication of custom-built units and systems.



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### William E. Williams

William E. Williams Valve Corporation manufactures valves that are designed, engineered, manufactured and tested to meet all applicable standards including, ASTM, ANSI and API. Gate Valves are designed to offer minimum pressure drop in the fully open position and are dependable for use in steam, water, oil, vapor and other high pressure services.



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### Land Sea Systems

LandSea Systems introduces the new Capsat Fleet77. The Fleet77 consists of a transceiver, antenna and handset w/cradle providing mariners with 64K connections to the Internet, the ability to network with your companies Intranet, high quality voice communications and high-speed fax in a smaller system than previously available. The system also supports shipboard computer networks.



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### Canon

Canon U.S.A. Inc., has expanded its line of Image Stabilizer binoculars with the introduction of the new 8x25 IS model, the world's smallest and lightest binoculars with Image Stabilizer technology. Canon incorporated the Tilt Mechanism Image Stabilizer system, which uses a variable-angle prism composed of two glass elements and a flexible bellows, the 8x25 IS model works by "tilting" a single lens element in the left and right lens barrels to counteract shake.



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### Liebherr

LIEBHERR-Werk Nenzing GmbH, located in Austria, was founded in 1976 for the purpose of designing, selling, manufacturing and providing after-sales service for ship and offshore cranes. Since then the product range has extended to include crawler cranes, as well as harbor mobile cranes. The network of Liebherr service stations throughout the world provides a continuous and reliable after-sales service for all our customers.



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### Transas Marine

In October 1999, Transas Marine became the first company in the world to achieve official type approval with the Navi-Sailor 2400 ECDIS (Electronic Chart Display and Information System). The new generation of Transas Navi-Sailor systems, Navi-Sailor 3000, incorporate all the functionality of the previously type-approved ECDIS, with an addition of innovative features.



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### Man B&W

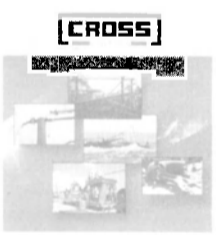
Man B&W has released its new brochure, The Electronically Controlled Engine, which describes some of the principal features and advantages of the new ME engine versions. With the introduction of the electronically controlled engine, Man B&W offers an engine with reduced running costs, better emission characteristics and more flexibility in operating modes.



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### Cross Logistics

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### Lintern

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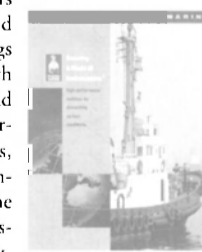
Units include Window type and Split configurations. Features include: 100% stainless steel chassis and cabinetry. Epoxy coated coils with wide fin spacing and tempered fin stock. Durable Scroll compressor. Designed to run in ambient temperatures up to 120F (49C) continuous operation. Applications for environments where Corrosion and High Temperatures would exclude commercially designed equipment.



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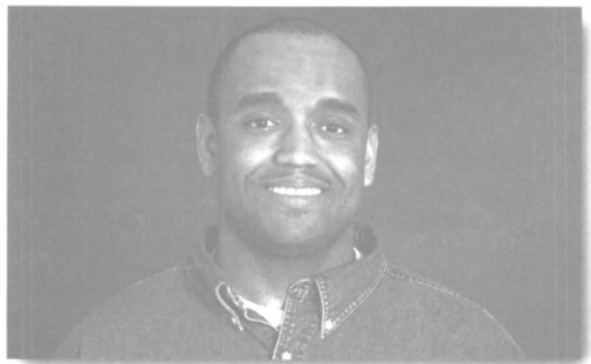
### Sherwin-Williams

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## Products

### Hatteland

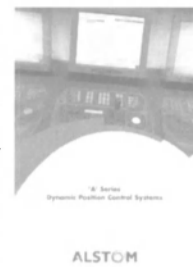
Maritime Multi Display is part of the complete product line for marine and naval applications from Hatteland Display. Display range from 15 to 23.1 in. Marine tested and type approved.



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### Amatech

Amatech Corp.'s broad line of marine fans and blowers is recognized for its quality and reliability. The fixed mounted axial and centrifugal units are used for engine room, crew quarters and cargo hull ventilation, as well as paint and battery room venting. They are available with electric, air or hydraulic drives, in either carbon steel, stainless steel or fiber glass construction.



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### Rolls Royce

The offshore supply and service sector embraces a range of vessels that perform a variety of tasks to support offshore oilfield infrastructures, ranging from transporting cargoes to positioning rigs. Safe, efficient and reliable operations must be maintained in often extremely hostile waters around the world. Ship types include offshore supply vessels, multipurpose anchor-handling/tug/supply vessels, and safety standby vessels.



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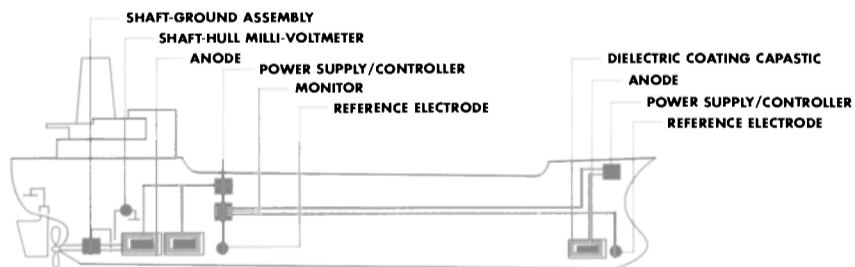
### USFilter

USFilter has released a new brochure describing the company's CHLOROPAC electrochlorination system for biological fouling. The CHLOROPAC system is designed to prevent biological fouling from contaminating seawater or freshwater that is used in the circulatory cooling systems that are crucial to such engineering processes as electric power generation, petrochemical works, or desalination.



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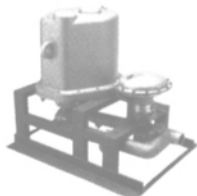
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# A World of Controversy

*It was a concept like no other. A floating home where guests could virtually visit a variety of exotic ports in far off places from the comforts of their own luxurious accommodations. Imagine pulling into Cannes during its renowned film festival, stepping out into Monaco during its Grand Prix, or ringing in the New Year in Hawaii.*

*The World of ResidenSea, a Bahamas-based company envisioned by well-known cruise shipping magnate Knut Kloster Jr. was established to offer these amenities via its luxury apartments ranging from 1,106 to 3,242 sq. ft. Costing anywhere from \$2.2 - \$7.5 million per apartment, the vessel was touted as a breakthrough in luxury cruising.*

*While this may sound too good to be true — it actually is. As the construction of the World of ResidenSea was anything but smooth sailing. Plagued with roadblocks and glitches from day one, ResidenSea, according to various Norwegian news sources, was deemed a risky undertaking.*

*Following is the story of a unique ship with a shaky start and an uncertain future.*

by Regina P. Ciardiello,  
managing editor

After literally "shopping around" Europe for a shipyard that would undertake a project of this magnitude, the German yard HDW was originally hired to perform this task. According to a Norwegian news source, the yard pulled out before signing on the dotted line simply because it, like other yards, felt it to be too much of a risk. When the contract was finally signed in the fall of 1999 with Fosen Shipyard in Trondheim, Norway, no one envisioned the long, hard road ahead for the yard and the ship ResidenSea.

Once it was agreed that Fosen would construct the ship, the company, which also has a hull yard, Bruce Shipyard in Skane, Sweden, began selecting subcontractors and designers who would bring this project to life. While there have been no reports of problems with interior designers, there were various allegations that much of the vessel's delivery delay had to do with conflicts between the yard and subcontractors. According to Norwegian newspapers, one specific subcontractor, Austrian-based company List, had major difficulties with the yard. List was reportedly responsible for the pre-fabrication of the apartments, which were completed according to technical drawings provided by the yard. When it came time to fit the apartments into the vessel, they did not match. It has



The Core of the controversy — ResidenSea's hull was launched in Sweden on February 27, 2001.

been reported that List, which had little experience designing shipboard apartments (the company was hired for its experience within the hotel industry), blamed the shipyard, stating that their drawings were incorrect for prefabrication. As a result, the yard had to replace much of the steelwork — running into added costs. It has been estimated that the original price that ResidenSea paid for construction of the vessel ran into an excess of \$9.1 - \$10.2 million - due to a miscalculation by the yard. In addition it has also been reported that only 80 per-

cent of the vessel's apartments have been sold.

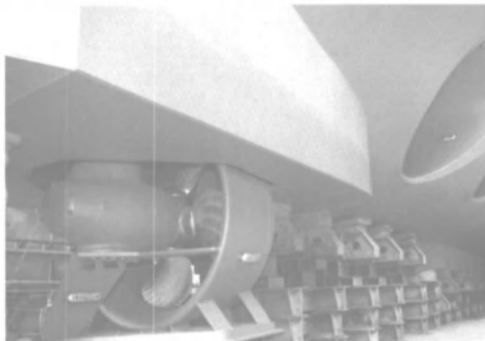
## Building A Concept

Before the swirl of controversy surrounding the World of ResidenSea began throughout the last few months, the project can be traced back to 1997 when, according to ResidenSea's senior vice president of Design, **Lonnie Schorer**, "things started to shape up." Schorer, who joined the company that same year, shared Kloster's vision of "why can't people live on a ship." Once investors and management were in place, ResidenSea tapped the firm of Yran & Storbraaten to design the actual vessel.

At first, residents were allowed to bring their own interior designers onboard to create their onboard apartments, but according to Schorer, this interfered with the SOLAS and IMO regulations, not to mention DNV, the classification society governing the vessel, which did not allow this. There was no way that all these different designers would be able to ensure that these laws were indeed met. Therefore, Schorer came up with a simple solution to coordinate the interior designs — she hired four different design firms — offering an array of choices for potential residents. "We wanted buyers to have what they originally envisioned — homes — not ship's cabins," Schorer said. "We pre-selected designers who therefore fit that category."

Selected by a panel based on their respective floor plans and classic, contemporary designs were, Yran & Storbraaten, of Oslo, who would create a maritime, nautical theme; London-based Nina Campbell for its traditional comfort; TMT Design of Milan; and New York City-based J.P. Molyneux,

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Designed by the New York City firm of J.P. Molyneux — a living room — as depicted onboard one of ResidenSea's apartments.

who combined antiques with stone floors, columns and French style furniture. Based on each designer's style or "color way" as Schorer has dubbed, residents had a choice of these four groups - providing that they used only one firm for the entire apartment.

For instance J.P. Molyneux wanted to capture the essence of a residence at sea rather than a conventional ship's cabin. Therefore, the firm's owner and lead project manager, **Juan Pablo Molyneux** treated his floor plan as that of a regular luxury apartment. "We divided the living room and dining room into two columns with moldings on the ceilings," Molyneux said. "Similar to one you would see in a deluxe apartment."

#### Design vs. Safety

According to Schorer, "No two apartments onboard ResidenSea are alike." due to the selection of color ways (ranges of fabrics and finishes) that residents may choose. While the option to choose several different carpets and/or paneling was available, these materials had to meet maritime standards. The maritime industry has an exhaustive list of safety standards, which exceed traditional shoreside installations. While ResidenSea broke ground as the first ship to have kitchens onboard every apartment, those kitchens had to be built in the presence of A-60 steel, as directed by SOLAS, which has certain requirements for combustible materials. "Interior design was definitely impacted by fire calculations and certifications," Schorer said.

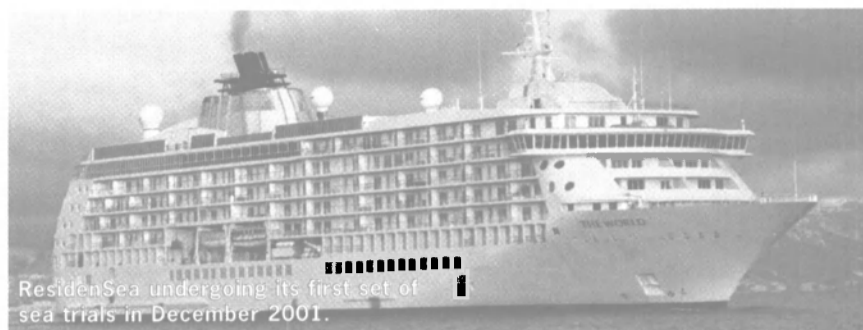
"For example some of the moldings in the paneling had to be simplified because of this. Also many of the original wall fabrics had to be duplicated using Trevira CS as stated by DNV regulations."

#### What Does the Future Hold?

At press time, the vessel had just been delivered and residents were scheduled to board. However, the controversy continues at the Fosen Shipyard, this time from a legal standpoint.

According to various Norwegian news sources, it was reported that Fosen Shipyard was being investigated by the Norwegian Cabinet for pocketing \$4 million

in illegal subsidies largely due to the vessel's hull fabrication. The yard, which has adamantly denied any wrongdoing, stands by its decision to construct the vessel's hull at its sister yard in Sweden — where it was less expensive to perform hull construction. Following the hull's launching in Sweden on February 27, 2001, it was then towed to Fosen for outfitting.



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## INTERTANKO Holds Firm Position on Maritime Security

Speaking via a roundtable discussion at the annual Connecticut Maritime Association (CMA) Exhibition 2002 on March 19, Intertanko managing director Peter Swift summed up — in just a few words — the position that the organiza-

tion has established since the terrorist attacks of September 11. Swift has made it known that the Oslo, Norway-based organization is working closely via its Washington D.C. affiliate with both the U.S. Coast Guard and IMO to ensure

that the tanker market is not the next victim of a terrorist attack.

According to Swift, **Dragos Rauta**, the organization's technical director and regional manager for North America,

who is based in Washington, D.C. is actively involved in bilateral discussions with the USCG to ensure that these security measures are met. As discussed at the meeting that occurred at the Shipping 2002 Exhibition, a series of measures has been introduced by Intertanko to enhance the awareness of maritime security — beginning with the hot topic of Automatic Identification Systems (AIS). Intertanko's position regarding this is an accelerated of the implementation schedule for the mandatory fitting for all vessels of 500 gt and higher - on International voyages. The final decision regarding this matter is set to be decided at the Diplomatic Conference of MSC in December 2002.

It has also been recommended that SOLAS Chapter XI should focus on special measures on maritime security, thus amending the title accordingly. New regulations should include requirements for vessels and port facilities, supported by a draft International Code for the Security of Ships and Port Facilities.

In addition to AIS, all ships more than 500 gt engaged in international voyages should have available security plans (SSPs) — plans, which could be audited in the same way with the audits under ISM Code. This same Code also requires a Ship Security Officer (SSO) and Company Security Officer (CSO) onboard each vessel; training needs of this officer should be developed as part of the STCW Convention including the responsibility for instruction of the crew.

### Taking A Stance

Intertanko is known for its active role in all relevant security conferences, both those arranged in the U.S. in early January 2002, as well as the ISGW that occurred in February. The organization steadfastly supports that a world-wide focus be placed on maritime security and that current regulations are examined to enhance safety to seafarer, ship, cargo and the environment, and that the work is based upon IMO and its sub-committees. In addition, the organization, which will continue to attend relevant meetings regarding maritime security, states that measures taken to protect tanker owners should be practical, cost-effective and adaptable to local requirements.

According to Rauta, Intertanko technical director and regional manager for North America, the tanker industry is always working to ensure that is prepared for terrorism — even before September 11.

"Tankers will always be targeted because of the nature of their business," Rauta said. "As a result we are in a much better position to deal with potential terrorist attacks because our industry's expectations are so high already."

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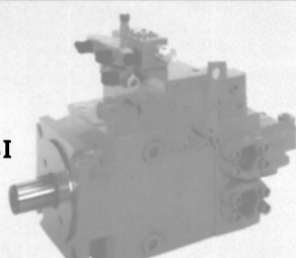
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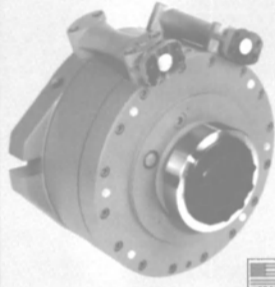
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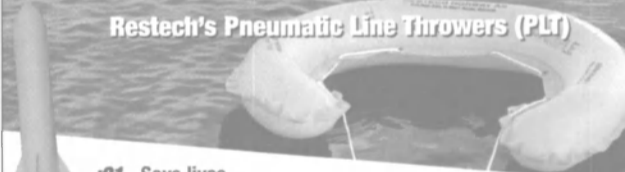
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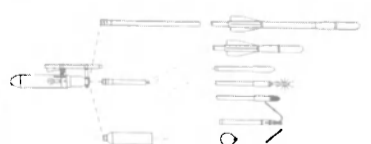
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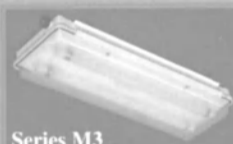
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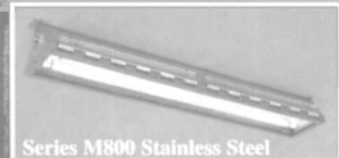


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## North Mariner — In A Class of Its Own

The new supply vessel North Mariner is the first British-ordered vessel to be built to DNV's new environmental class. Companies, organizations and the public at large are now realizing the importance

of limiting ships' emissions to the air and sea that have the potential of adversely affecting the environment.

This focus has caused a trend among leading companies of implementing an

environmental management system. Assigning a DNV environmental class notation such as CLEAN or CLEAN DESIGN tells the market something about a company's environmental performance and efforts and addresses issues such as reducing the amount of waste produced and emissions to the air

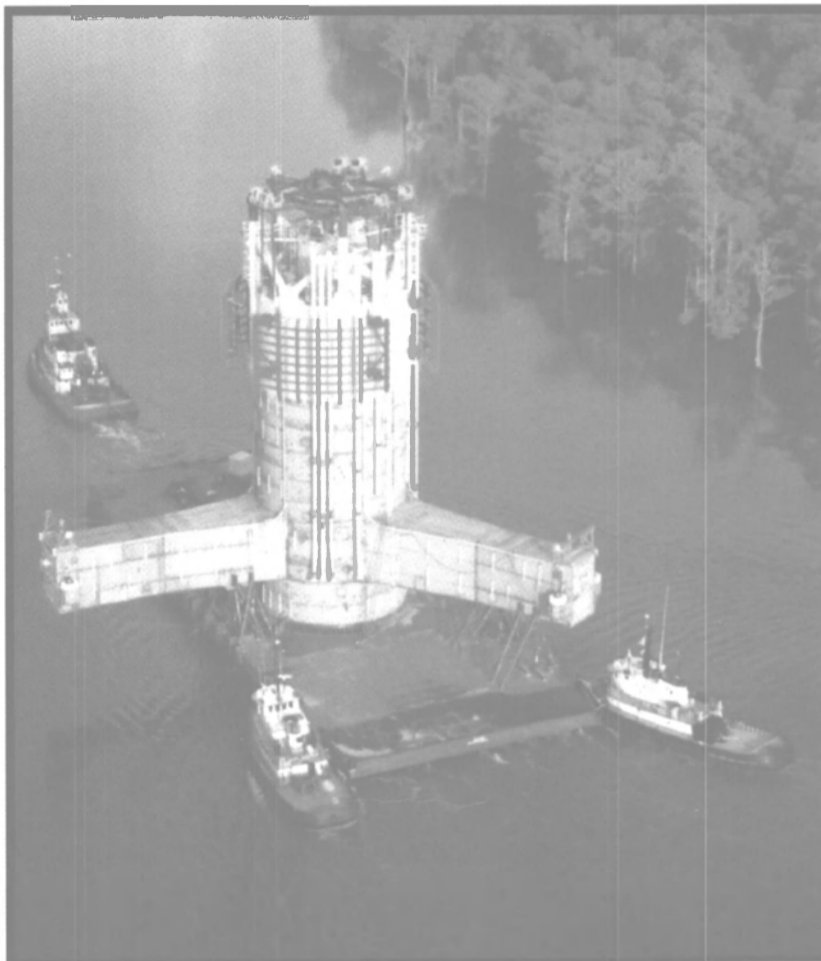


and sea.

This new Platform Survey Vessel (PSV), named North Mariner, was designed and built in Norway to Det Norske Veritas' main class notation (+1A1) and new voluntary CLEAN class notation. It will be commissioned to join Gulf Offshore's worldwide fleet of supply vessels.

Gulf Offshore currently operates/manages 33 vessels in the North Sea, 13 vessels in Singapore, three in Brazil and three in West Africa, and is still expanding. Further new ships will be commissioned this year. In providing offshore marine services, primarily to companies involved in the offshore exploration and production of oil and natural gas, Gulf Offshore is committed to delivering a safe, environmentally clean and cost-effective service.

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## Volvo Penta Engines In Clean Design Ferry

Norway's M/F Nordfjord is reportedly the world's first ferry that fulfills requirements for the "Clean Design" classification. Among the strict demands of clean design are low-level emissions to water and air, as well as a high level of reliability against environmental impact in the event of an accident; the engines on board were supplied by Volvo Penta.



### Main Particulars - M/F Nordfjord

Built by	Fiskerstrand Verft AS
Length, (o.a.)	237 ft. (72.2 m)
Max. Beam	(14.6 m)
Draft	16 ft. (5 m)
Max. passengers	200 persons
Max cars	54
Propulsion engines	2 x Volvo Penta D49A MT
Generating sets	2 x Volvo Penta TAMD103A

M/F Nordfjord was built at the Fiskerstrand yard, outside Alesund in Norway. In collaboration with the Multi Maritime consulting company and the customers, Fylkesbaatene i Sogn and Fjordane developed a concept for environmentally friendly ferries. The requirements for Clean Design classification focus on three types of emissions:

- Operational emissions to the air
- Operational emissions to the water
- Emissions in conjunction with an accident or shipwreck

The ferry that was delivered in January 2002 will operate within scheduled traffic on the Norwegian west coast, transporting cars and passengers. The emissions to the air are restricted by catalytic converters being fitted to the propulsion engines. In this way, the ferry's total emission of nitrogen dioxides (NOx) can be reduced by as much as 45 percent, which is well within the demands of Clean Design. Double-hulls at all tanks minimizes the risk of emissions in the case of an accident. Propulsion engines and auxiliary engines are duplicated in separate engine rooms. This means that the ferry can retain its maneuver capability even if one of the engine room is damaged.

With all engines on board manufactured by Volvo Penta, propulsion is provided by two D49A MT, 12-cylinder marine diesel engines of 1,040 kW each. The two generators for the ferry's electrical requirements are each driven by a six-cylinder TAMD103.

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nis 400 CCTV System consists of a serial link that is intended mainly for automatic triggering of camera selections and release of camera pre-set positions in the event of alarms detected by the AM 5000 system. The AM 5000 mimic, which shows the General Arrangement of the vessel, has all alarm sensor, doors, etc. superimposed on it. In the event of an alarm, the operator will immediately

receive an indication of which sensor triggered the alarm and which camera selections the alarm event has selected.

Further development of the interface may be to interconnect the systems on LAN and adding a simple window for camera control.

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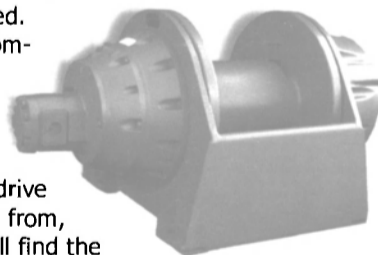
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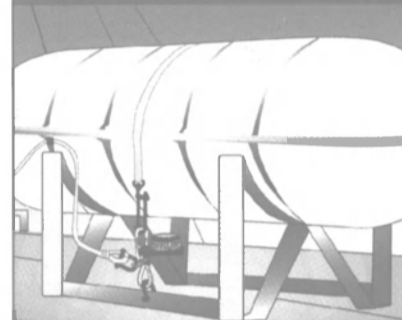


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If the vessel sinks, the water pressure will activate the sharp knife which cuts the strong rope that holds the lashing and the liferaft will float free.



As the vessel sinks, the painterline will be stretched and the liferaft starts to inflate.

Red weaklink breaks and survivors can board the inflated liferaft.



- Revised model with a single point connector for painter line
- Simple to install, safe and has a more effective construction
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- It's approved by most shipping authorities

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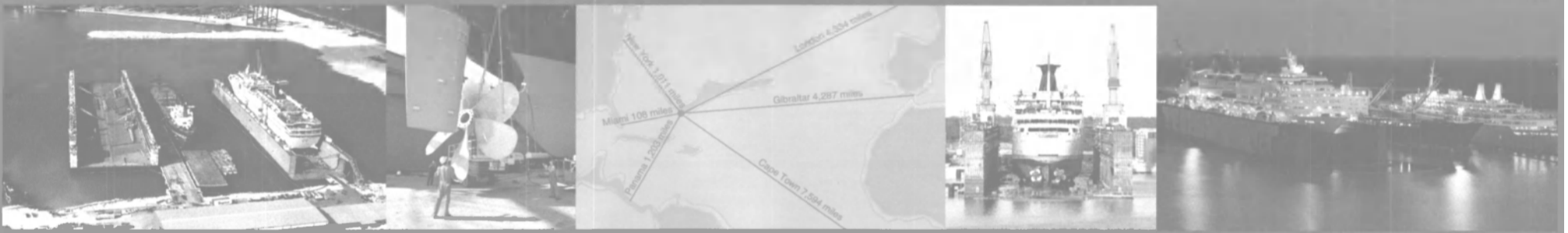
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The Grand Bahama Shipyard offers a comprehensive range of docking and wet-berth services. The yard now features 2 floating docks, including one of the largest in the northern hemisphere. These are supported by brand new shoreside facilities including workshops, a waste water treatment plant, and a range of specially designed subcontractor site units.

#### Two Wet-berths

- Fully serviced for vessels up to 304m (1000ft) in length

#### Workshops

- 34,000 sq ft
- 20 tonne overhead crane
- 30ft shaft lathe
- Wide range of machinery

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- Engineering repairs
- Pipework repairs
- Electrical overhauls
- Hull treatments
- Survey & Inspection

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#### DRYDOCK 1

Length	268m	(880ft)
Breadth	33.5m	(110ft)
Vessel draft	9.1m	(30ft)
Lifting capacity	30,000	tonnes

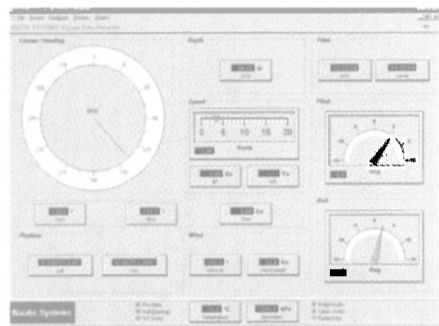
#### DRYDOCK 2

Length	300m	(985ft)
Breadth		
between fenders	56.5m	(228ft)
Vessel draft	9.1m	(30ft)
Lifting capacity	82,500	tonnes



## Nautic Systems Goes VDR

The Nautic VDR is a voyage data recorder system that was developed to meet the extensive and varied requirements of the marine industry. A modularized system that is tailor-made for each installation, the Nautic VDR is designed according to the Regulations laid down by IMO/IEC/EC.



The system consists of a dedicated PC and instrument rack with a range of sensors as required; data is then stored in the Final Recording Medium, FRM with locating devices.

Known as a safety system with a user-friendly operational data system, Nautic VDR consists of a dedicated PC, interfaces, power supply and can be rack mounted. It has also been proven from offshore installations in extreme weather conditions.

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## Schat-Harding Delivers More Kisses

The first two KISS 700, 50-person boats are ready for delivery to Elcano's Castillo de Monterreal, at IZAR's Cadiz yard. Orders have been received also for the 70-person KISS 800, which should be ready for prototype testing in April 2002 together with the 90-person KISS1000. Schat-Harding also plans to release new VIP multiple pivot davits and new on load release hooks later this year.

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## KMSS Receives Type Approval For Black Box

Kongsberg Maritime Ship Systems (KMSS) has received type approval for its advanced VDR (Voyage Data Recorder) the 'Maritime Black Box' (MBB). The first orders have already been taken for Viking Lines passenger vessels, which have been eagerly awaiting type approval of the superior VDR from KMSS.

The new KMSS Maritime Black Box MBB consists of three main units:

- 61623; A Data Collection Unit
- 61623; A Protected Storage Unit
- 61623; Replay and Evaluation Unit

The Replay and Evaluation Unit,

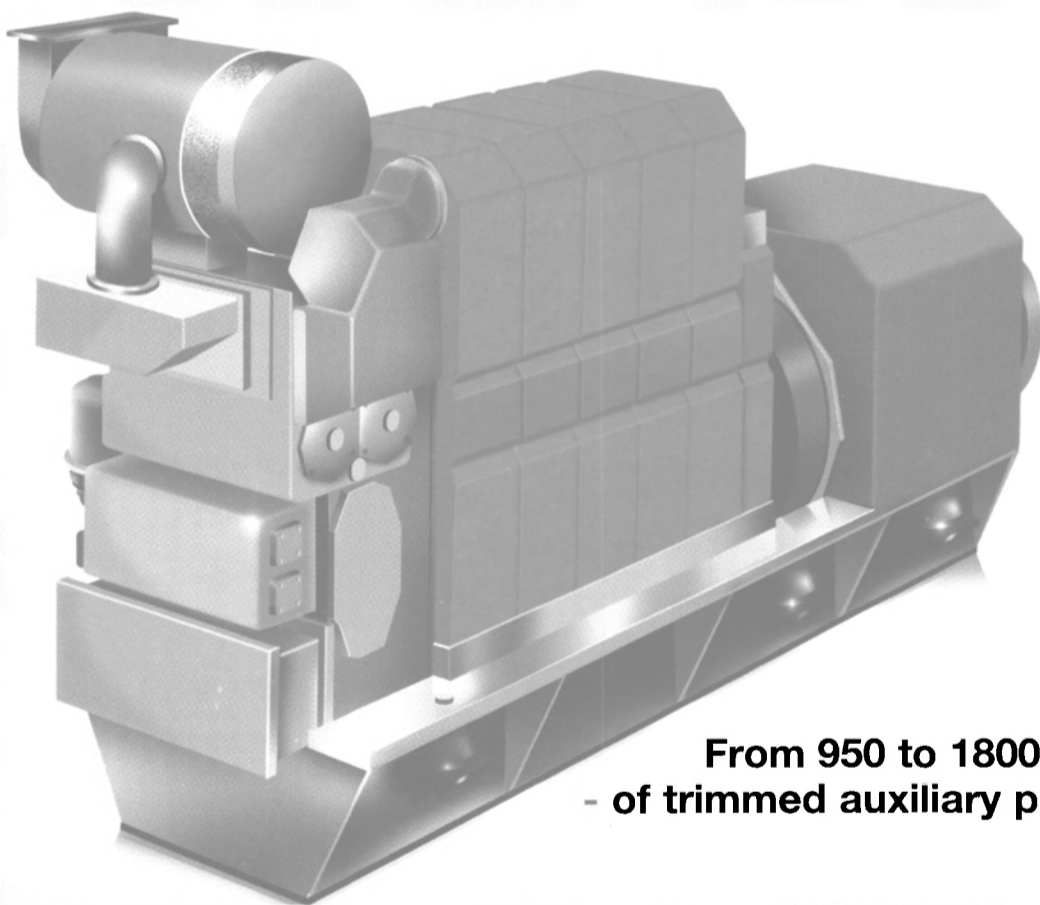
which is used to replay events, can also be used as an excellent tool for training purposes, such as entry to port.

Other functions that can be included in the MBB include the recording of data for reports and training, such as voyage reports, engine logs, analysis of parameters.

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# The World's Strongest Composite Plastic Pile

The need for structural components for waterfront and marine civil construction has become ever more evident over the past ten years. In general there is the need for construction materials that provide for in the water structures that are more durable, yet fully functional and aesthetic. Traditional pilings and piling materials are limited in durability due to, inter alia: Corrosion, especially of steel and steel pipe pilings;

Sea worms and decay, especially of wooden pilings; and Fracture, and subsequent corrosion, especially of reinforced and/or pre-stressed concrete pilings.

These problems have become worse in recent times due to the purification of the waters and the need for lower cost construction. Increased durability is also important so as to reduce maintenance costs and minimize the disruption associated with repairs and rebuilding of degraded pier or wharf structures. For these reasons considerable effort has been placed during the past ten years on the development of new classes of marine pilings that are suitable for the construction of marine civil structures such as piers, wharves, fendering systems, dolphins, etc. Among these new systems are pilings built from fiber-reinforced plastics and recycled plastics, or hybrids thereof such as the steel/plastic pilings described herein.

Plastic Pilings, Inc. has developed a new pile that is reinforced with a steel cage over which recycled high and low density (HDPE/LDPE) plastic has been extruded. The steel reinforcing bars used in the manufacturing process are A706 weldable type. The spiral cage is unusual in that it is located at the interior to the stiffening longitudinal reinforcing bars.

This new piling was tested to determine the flexural stiffness of the piling, the maximum point load up to failure and the manner in which the piling failed. Specifically, it was of interest to document whether the piling would fail in a ductile manner, thus absorbing large amounts of energy, or by a more catastrophic manner, thus absorbing relatively small amounts of energy. Accordingly, a three-point bend test was developed designed to subject the piling to a concentrated point load at the center of span of the simple supported beam.

See photo below showing pile test configuration. During the test two hydraulic rams were used. Loading was applied cyclically between zero and a peak downward load, in other words the load amplitude was grad-

ually increased by increments of between 2 and 4 kips. Displacements were continuously monitored via 5 potentiometers located symmetrically about the piling's center. The effective free span of the piling was 5.8 meters, which was the length to be used in determining stiffness and the yield stress.

Loading was found to be linear up to a peak load of 22,700 kg. Beyond a 22,700 kg. peak load the piling displayed offsets due to yielding of the steel reinforcement cage. Fully yielded behavior occurred at a peak load of approximately 32,688 kilos. See peak deflection curve below at the center of the piling.

The photo below shows the final state of the piling under the load point after the ultimate load was

330mm. The moment capacity at yield of the test pile was found to be:

$$M_{yield} = PL/4 = 3.35E + 05 \text{ N-m}$$

When calculating the moment capacity mathematically, the moment was found to be:

$$M_{yield} = S \times \text{Stress} = 710,000 \text{ cu. mm.} \times 482\text{N/sq. mm.} = 3.42E + 05 \text{ N-m}$$

Where S = the section modulus and Stress = that for ASTM A706 weldable steel re-bar

The difference between the moment calculated mathematically and the moment derived through testing was found to be 0.07 N-m or 2.09 percent.

It was interesting to find that all test results prove to show that mathematically calculated values of stiffness and moment capacities are accurate to within 3 percent of the tested value for the pile.

The energy absorbed by the 5.8 meter section of piling, at the limit load of 32,688 kg., was approximately  $3.50E + 04 \text{ N-m}$ . Within the range of loads where the behavior is linear, the flexural stiffness is estimated to be approximately  $14.9E + 06 \text{ N-sq. m}$ .

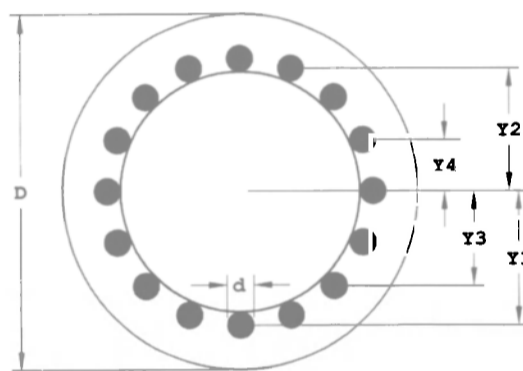
Moment of inertia and section modulus for the steel cage profile was calculated using the configuration of steel re-bar shown to the left.

It was discovered that common wood piling sizes of 330 mm and 406 mm could easily be replaced with composite plastic pilings having like properties in terms of stiffness and moment capacity. This in turn provides for a pile replacement that will stand up to loading equally to that of wood piles.

Further, testing has been performed to study the possible corrosive intrusion of salt water. After five years of salt-water exposure, piles were removed from the U.S. Navy Ammo Pier at San Diego, California for test purposes. U.S. Naval Materials Engineers with the Waterfront Materials Division of the Naval Facilities Engineering Service Center, Port Hueneme, Calif., were present during the complete dismantling of the steel rebar pile. They found the steel rebar completely free of any corrosive intrusion.

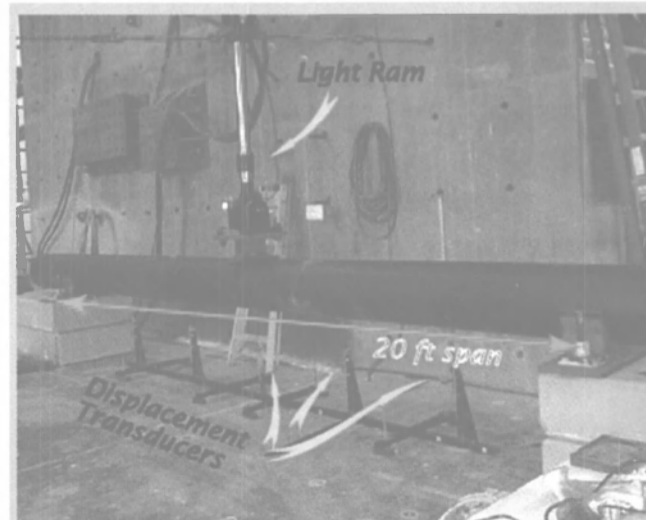
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16-25.4mm Bars

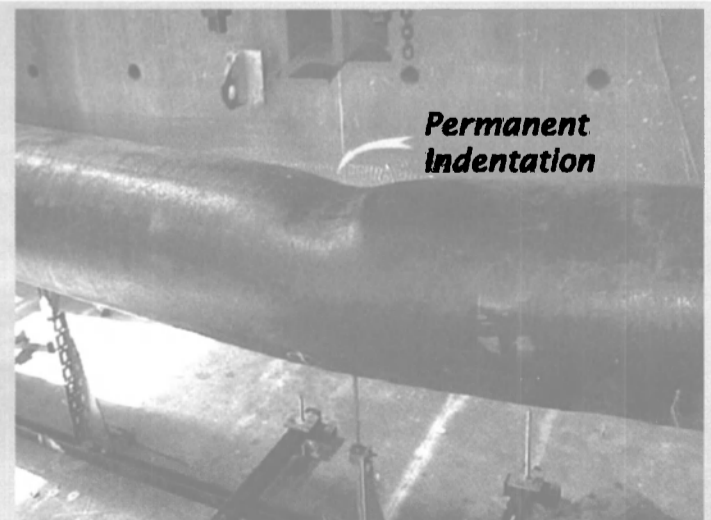


removed. The large permanent indentation was indicative of the fully yielded state of the steel reinforcement cage. The piling did not undergo catastrophic failure at peak loads of 22,700 kg., but attained a fully yielded state where the maximum load was reached. It was also noteworthy that at no stage did the plastic (HDPE/LDPE) extrusion appear to crack or spall. This is particularly important with respect to the possible exposure of the steel cage and its subsequent corrosion in seawater.

The 387mm diameter test pile was designed with 16 - 25.4 mm diameter reinforcing bars welded to a 9.5mm diameter spiral cage. The spiral cage pitch was approximately 150 mm and the steel circle diameter was



During a pile test configuration conducted by Plastic Pilings, two hydraulic rams were used and load amplitude was gradually increased by increments of between two and four kips.



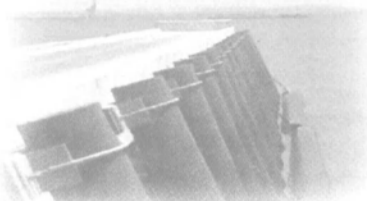
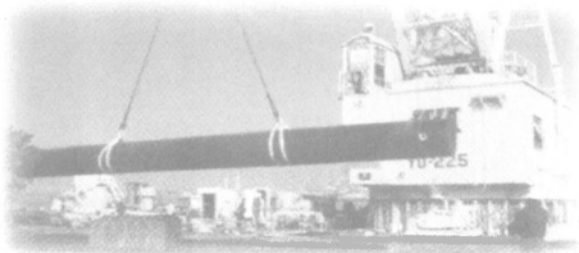
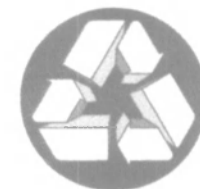
Permanent Indentation





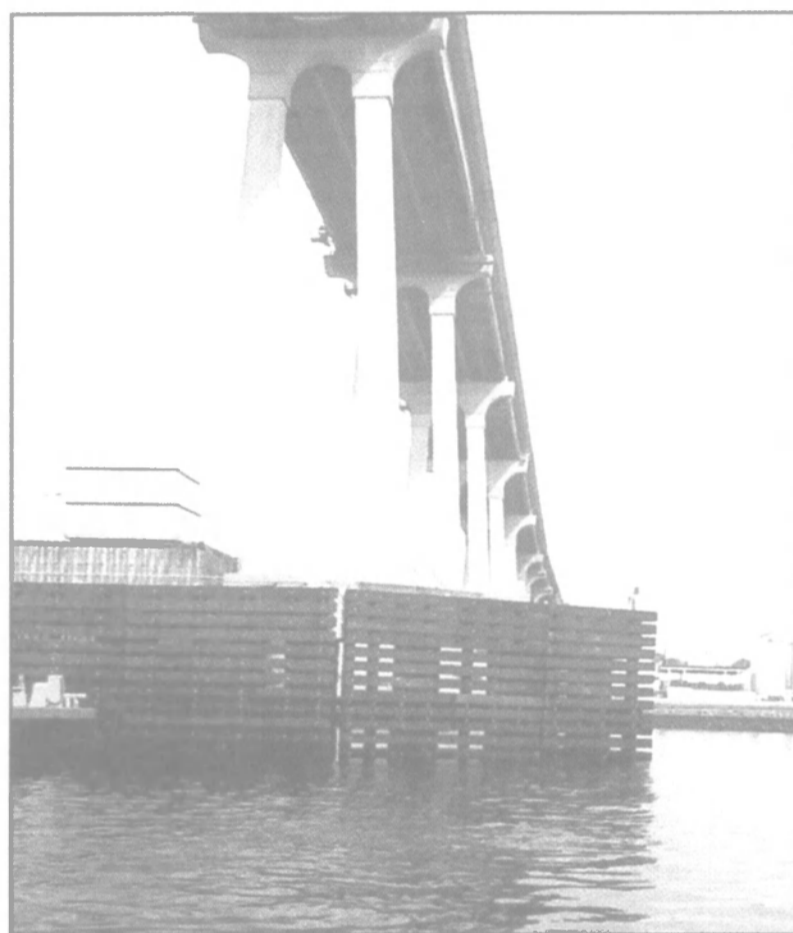
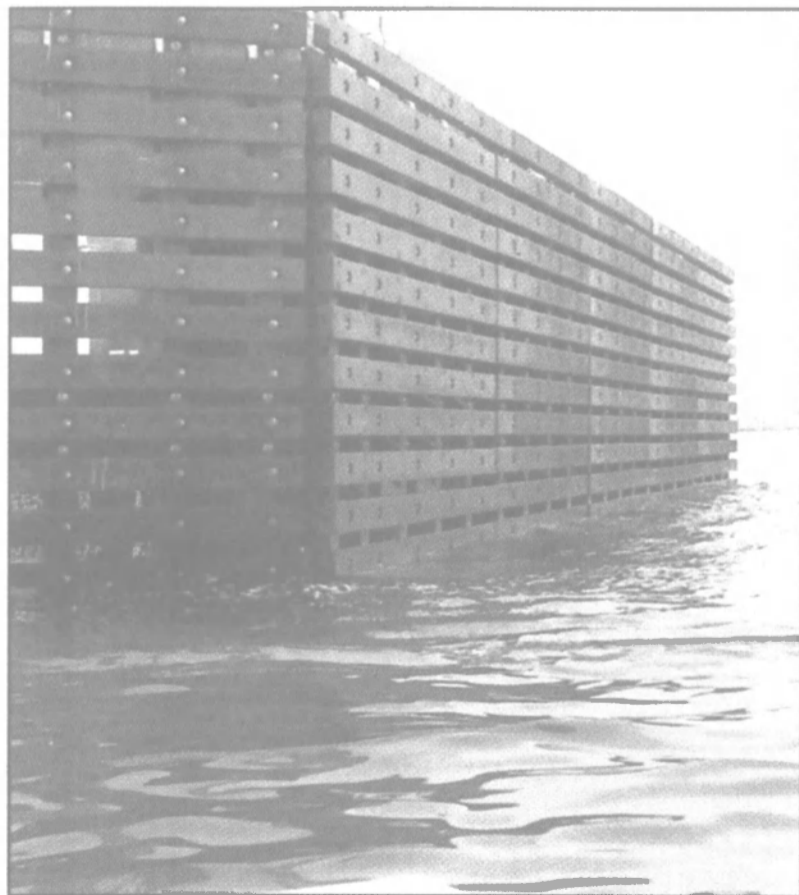
# PLASTIC PILINGS INC.

STRENGTH & INNOVATION



## CAL-TRANS SPECIFIES PPI'S PLASTIC LUMBER

The California Department of Transportation designed new fendering panels to utilize PPI's fiberglass reinforced plastic lumber. The project is a seismic retrofit for the Coronado Bridge in San Diego, California. The plastic fender portion of the work included over 650,000 pounds (295,000 kilos) of plastic material at the base of the bridge bents. The plastic fendering systems will serve to protect the hull of vessels making contact with the footings supporting the concrete pylons. The plastic is immune to the marine borer, is UV protected and will not dry rot. The plastic is estimated to have a life of greater than fifty years.



Benefits of the plastic as compared with wood were addressed at a meeting with Cal-Trans officials. It was important to show that the life cycle value of the plastic material far exceeds that of wood. When the existing wood fendering material was removed it was found to be badly deteriorated as a result of dry rot and marine borer infestation. The different member sizes were reinforced with 25mm diameter fiberglass re-bars with a tensile value of 80ksi.

For additional information, phone, fax or e-mail  
[ppi@plasticpilings.com](mailto:ppi@plasticpilings.com)

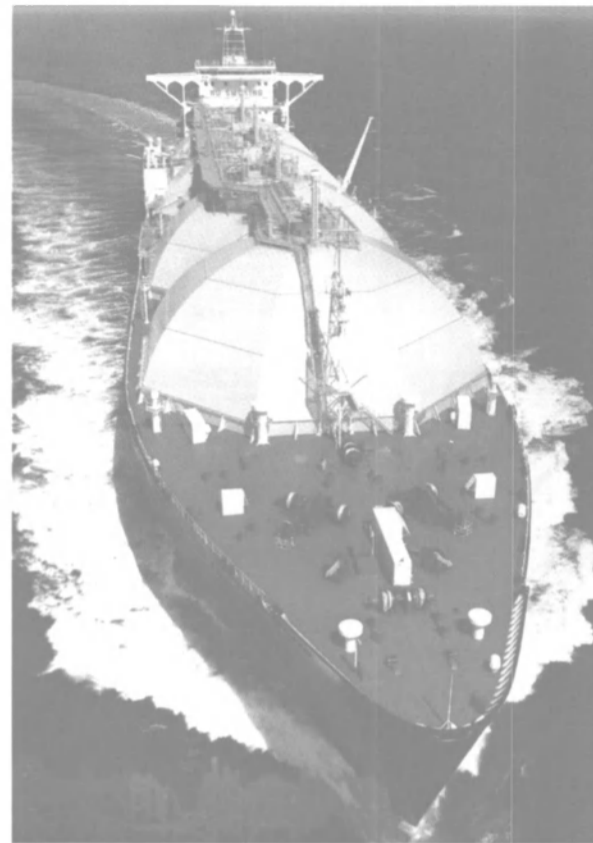
# The Dash for Gas

by **Graham Marshall,**  
**VP Marine Business Support,**  
**Lloyd's Register Americas Inc.**

The gas market is exciting, but only for those with a steady nerve and long-term commitment. Over 20 new LNG import projects have been mooted for the U.S. alone. We are witnessing an unprecedented expansion of shipping capacity to meet this and worldwide expansion of demand. Nearly 30 percent of the world fleet of LNG ships by gross tonnage (excluding options) have been ordered within the past two years. A number of these are already earmarked for U.S. import projects. If these projects succeed many more ships will

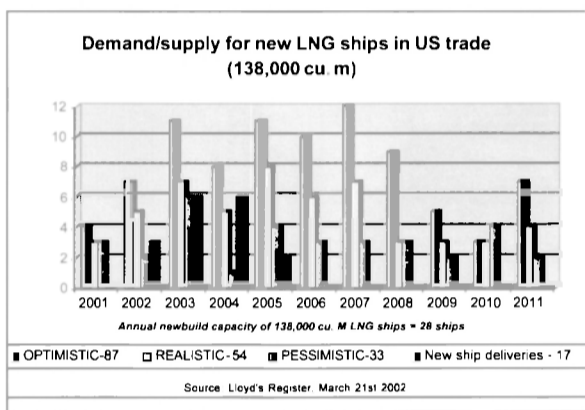
be needed. The price of gas has still not recovered above the magical \$3.50 to make projects profitable - what will happen to these projects? Will we see a glut of LNG ships as these orders hit the seas in the next three years as we now see in the box ship sector? The break-up of the traditional long-term charter arrangement for this ship type is happening, this has the potential to reduce the number of LNG ships needed but how far will this eat into the LNG ship market? Gas ship newbuilding prices over the past decade have fallen from \$350 million apiece to \$160 million and now shipyard order books for LNG ships at these low prices are full for at least the next three years. Gas carriers have been barred entry to ports. What extra work does the shipowner have to do to ensure these ships can enter U.S. ports. How will the collapse of Enron affect the gas trading companies? The global economy is in recession.

The U.S. has been here before. The gas balloon expanded rapidly and deflated just as quickly in the late 80's leaving flat gas prices and minor imports for over a decade. Until 1996 Algeria was almost the sole supplier of LNG to the U.S. Demand has picked up considerably since and recently spot cargoes have arrived from Australia, Abu Dhabi, Qatar, Malaysia, Trinidad and Nigeria. U.S. energy demand outstripped supply in the winter of 2000/2001 causing prices to rise dramatically - many players decided LNG is the green



energy fuel of choice and over twenty LNG import projects have been proposed for the U.S. alone, to mention but a few :

- Pipe gas from mid-Alaska to West Coast and ship to California.
- Pipe gas from the Barents Sea to Norway and thence



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by ship to the US East coast.

- Pipe gas from Bolivia to Chile and ship to California and Mexico
- Ship gas from North-West/Northern Australia/Timor/Indonesia/Bolivia to California and Mexico
- Ship gas to the Bahamas and pipe to Florida
- Ship gas from Trinidad, Venezuela and Angola into the US Gulf and ashore via pipeline
- Re-opening of mothballed LNG plant (Cove Point and Elba Island) - now complete.
- Expansion of existing LNG plant (Everett, Lake Charles and Cove Point)

Those will succeed where the long haul is the objective. Potentially, if most of these projects succeed, up to 70 ships will be ordered for delivery in the period 2005 - 2011. Projects in other countries are anticipated to require about 30 ships over the same period making the US a very important market.

Forecast demand for LNG ships showing the annual number of ships for optimistic (100 percent utilization within 3 years and ship replacement at 30 years), realistic (50 percent utilization within three years and ship scrapping at 35 years) and pessimistic (25 percent capacity utilization and ship replacement at 40 years) scenarios together with the current confirmed new-building deliveries destined for trade into the U.S. It can be seen that between now and 2003 the tight ship supply market will remain and in 2004 we may even see ships without cargoes but this will only be a short term dip, provided that the project completions are not delayed.

The current (Feb. 14, 2002) world fleet of LNG ships including only confirmed orders stands at 177 ships with 49 ships on order. The majority of which (32) are building in Korea with twelve in Japan and five in Spain.

There is unlikely to be any bottleneck in delivery of these ships since the world capacity is in the region of 28 ships per year.

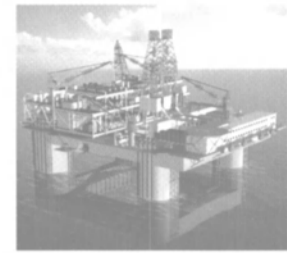
An El Paso spokesperson was quoted recently as saying "LNG will be among the fastest growing segments of the energy industry, with a 10-15 percent annual growth rate over the next decade." U.S. natural gas demand is forecast to increase by more than 50 percent over the next 10 years, pushing the gas share of the total energy mix up to 36 percent from 24 percent today.

The recent State of the Union address made it clear that seeking independence from overseas energy supplies is a priority and the recent terrorist attacks will no doubt affect plans for new LNG facilities — the question is how much will this restrict commercial development which is primarily sourced by private capital, albeit with government approval?

The energy needs of both the developed and developing world will continue to grow — the issues are of course central, at what pace will this continue? What share will LNG capture and who will ship the LNG? In the authors view the short term dip we are seeing may quite rightly worry the speculators, however, there is a substantial degree of solid long-term business both in progress and still to be secured in the dash for gas.

## BP's Discovery Is Re-Named Thunder Horse

When BP signed a Letter of Intent with Daewoo Shipbuilding & Marine Engineering Company, Ltd. of South Korea for the Crazy Horse project in the Gulf of Mexico, it would never have expected that the project would stir up a pot of controversy regarding its name. The project, which



was named Crazy Horse by BP this past February, was disputed by the family of the Lakota warrior and spiritual leader of the same name. The tribes objection, according to BP, was based on Lakota tradition, which holds it sacrilegious to use the name outside a spiritual context.

"It is not our intent to dishonor and disrespect any individual or group of people," said Thunder Horse project general manager **Mike Janssen**. "BP's system of values rests upon certain strongly held beliefs, one of which is respect for individuals and the cultures they represent. When this matter was raised, we felt strongly that the project should be re-named."

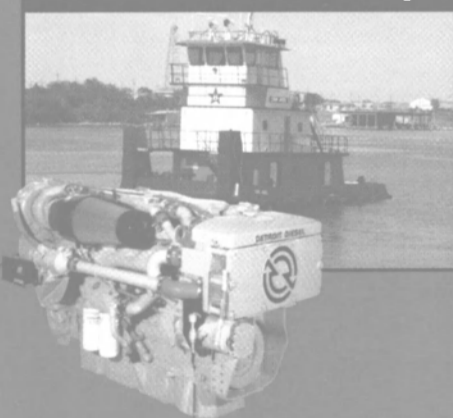
The new name, Thunder Horse, was selected because of its overall image similar to the previous project name — in keeping with the already established theme.

The \$380 million contract calls for delivery in the first quarter of 2004, in time for module integration and production startup in early 2005. The scope of work includes the lower hull, deck box, some process and utilities equipment, a 188 person quarters, and a complete dual-hoist two million-lb. capacity fifth generation drilling system.

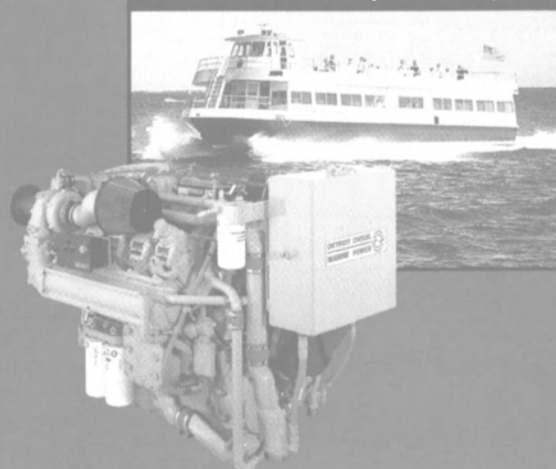
Measuring 350 x 350 ft. (106.6 x 106.6 m) the lower hull; and the upper hull, which will measure approximately 350 x 450 ft. (106.6 x 137.1 m) will be constructed at Daewoo's fabrication yard in Okpo, Korea.

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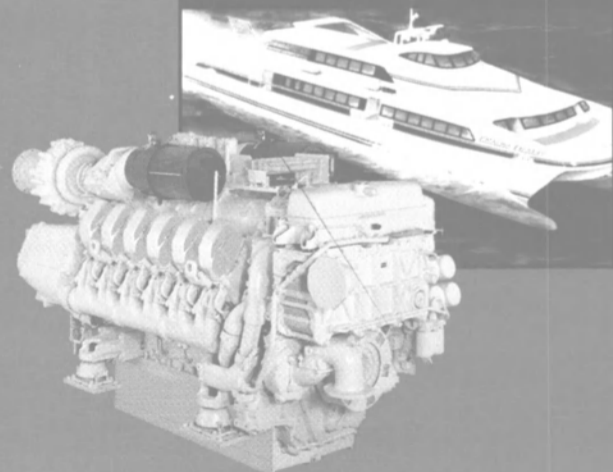
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# Crowley Moves ExxonMobil Concrete Island Drilling

Crowley Marine Services' Energy and Marine Services business unit has successfully moved the 312-ft. (9.5-m) square concrete island drilling structure Orlan from Prudhoe Bay, Alaska, to Sovetskaya Gavan in the Russian Far East for Sakhalin I Project operator, Exxon Neftegas Limited (ENL), a subsidiary of Exxon Mobil Corporation. The Orlan (ex Glomar Beaufort Sea I) Concrete Island Drilling System (CIDS) was purchased from Global Marine Drilling Company and will be used for oil production as part of the Sakhalin I project, offshore Russia. It was moved from its stack site near Northstar Island, off Prudhoe Bay using two Crowley Sea Victory Class 7,200 bhp twin screw oceangoing tugs with more than 110 tons bollard pull each. Arctic ice management was handled by Crowley with a third tug contracted for the job, the 23,200 bhp Arctic Kalvik. The certified Ice Class Lloyds +100 A1 Arctic Class 4 tug offered high bollard pull, ice-breaking ability and was well suited with tow gear for arctic and ocean towing.

"The Orlan has a 34-ft. draft and consists of four basic components — a steel mud base, a concrete brick caisson, and

two steel deck barges on which the drilling rig, support equipment, and quarters are mounted," said **Craig Torn-ga**, General Manger, Alaska Services for Crowley Marine Services.

For the Orlan move Crowley and The Glosten Associates, Inc. developed a risk assessment and readiness review for a table top exercise prior to initiating the job; implemented a Health, Safety and Environmental (HSE) plan, and executed an HSE and Quality Assurance interface program to ensure that the sub-contracted tug was fully compliant with Crowley's Environmental, Safety and Quality Assurance (ESQA) management system.

ENL contracted with The Glosten Associates, Inc. for overall management of the project and with Crowley Alaska, Inc. for the towing. Energy and Marine Services' **Jim Macaulay**, Director of Marine Operations, was Project Manager for the operation, and **Al Anderson**, Manager of International Operations, was the tow master. The Crowley team and tugs arrived at Point Barrow in early August to commence the tow, with Crowley making daily flights in the area to monitor ice melt until suitable pas-



sage out of Alaska was possible August 31.

"We flew the ice for 25 days until we felt it had melted sufficiently to permit safe passage from Prudhoe Bay to Barrow," said Anderson. "On August 31 the Sea Victory and sister tug the Sea Venture departed Prudhoe Bay with the Orlan in tow, and the ice breaker tug Arctic Kalvik working ahead to make way through the ice as needed."

When the tow arrived off Barrow, Alaska on September 4 the Crowley

team set up the Arctic Kalvik with the Sea Victory and Sea Venture for the ocean tow from Barrow to Russia. Because of the large size of the tow, the tugs were refueled along the way by a Russian tanker. A little over a month later, on October 14, Crowley delivered Orlan to Russia, cleared the structure through customs and began arrangements to put the Orlan down in the Sovetskaya Gavan harbor.

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## Dresser-Rand Equips Petrobras FPSO

A new floating production, storage and off-loading (FPSO) facility being built to extract oil and gas from offshore Brazil will include gas compression modules worth approximately \$35 million from the Dresser-Rand Company. The FPSO, which will operate in the Petrobras Albacora Leste field, is anticipated to produce approximately 180,000 barrels of oil and 6 million cu. m. of gas a day.

The compression equipment will be used for gas lift oil production as well as for gas transmission from the FPSO by pipeline to shore. Operation is expected to begin in September 2003. Dresser-Rand will provide three compression trains including DATUM high-efficiency centrifugal compressors driven by variable speed drive (VSD) electric motors, and a control room.

Manufacturing of the compressors and string testing will be conducted at Dresser-Rand's facility in

LeHavre, France. In addition, the company will conduct full Class I hydrocarbon testing of the compression equipment. Each of the three compression trains will be shipped in late 2002 for delivery at the Port of Rio. In addition, Dresser-Rand will be responsible for the engineering, procurement of materials and construction of the gas compression modules in Brazil.

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## Transas Launches LNG Tanker Simulator

Transas expanded its range of Liquid Cargo Handling simulators with the LNG tanker simulator. The LCHS/LNG system realistically imitates the fourth tanker type in the Transas simulator range, which also includes Chemical Tanker, Liquefied Petroleum Gas Carrier and Large Crude Oil Carrier models.

Main components of the PC-based LNG simulator

include Ship's Hull, Ballast System, Cargo System, Terminal Operations, Machinery Room and Inert Gas Plant. All the processes in tanker systems are displayed on the simulator screen using 2-D animation. The simulator also incorporates a comprehensive Load Calculator system for cargo calculations, such as draft, trim, heel, stability, shearing forces and bending moments. The new LNG simulator from Transas is provided with Unit Fault introduction capability.

Using this facility, the Instructor can create and initiate faults during the exercise involving the operation of valves and pumps.

The LCHS/LNG simulator uses the MS Windows 2000 Operational System platform. Up to 12 interactive LNG Trainee workstations can be connected for common exercises under the supervision of an Instructor.

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## Corpus Christi - Sept. 11<sup>th</sup>

The Lift Boat GULF ISLAND V, a 3-legged jack-up, sank off Corpus Christi, Texas. The vessel sank in 100 feet of water on to her port side with half her deckhouse beneath the sea bed.

### Response & Results:

After unsuccessful recovery attempts by others, Titan's salvage team removed the wreck and placed it on shore using the 500-ton sheerlegs Southern Hercules.

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Tel: 954-929-5200 • Fax: 954-929-0102

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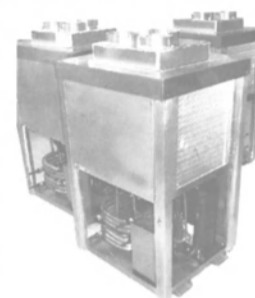
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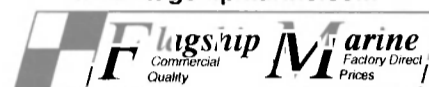
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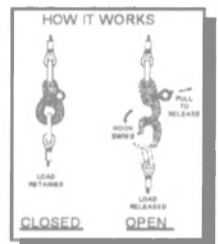
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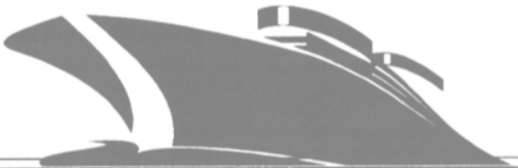


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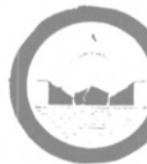
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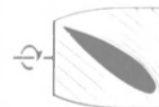
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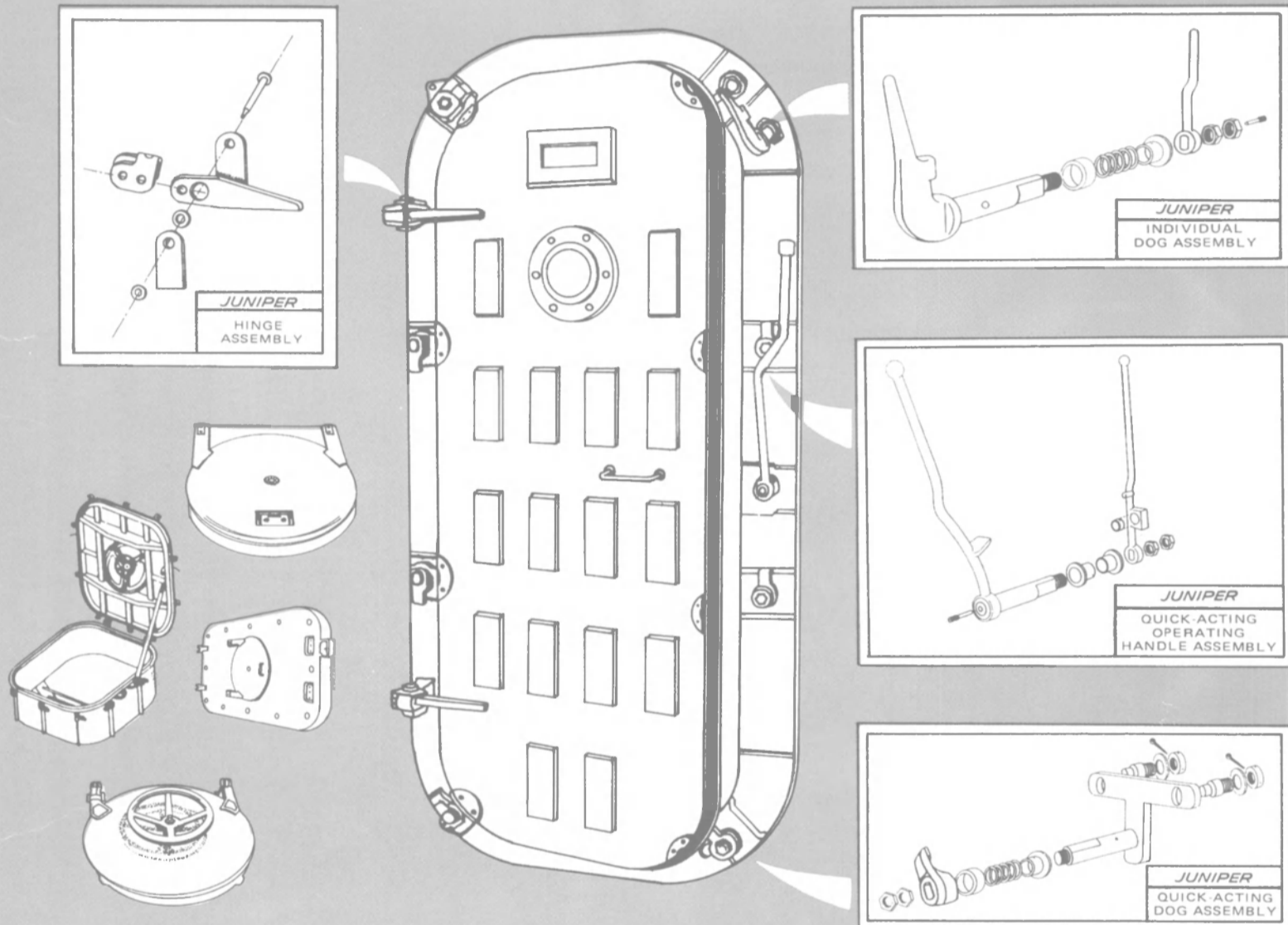
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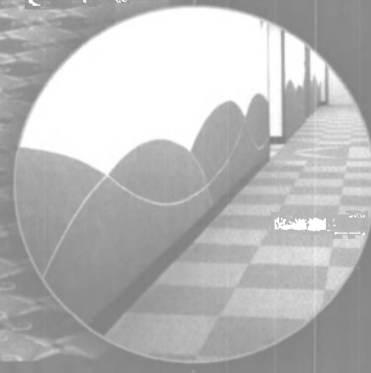
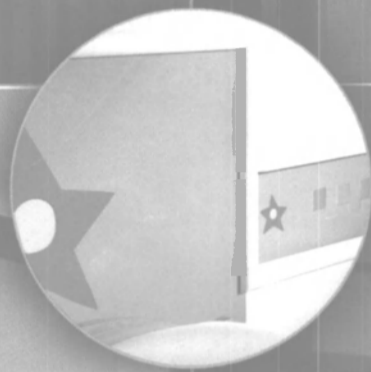
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