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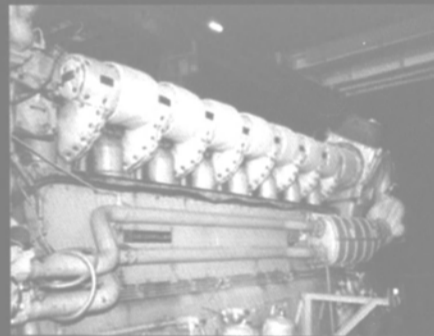
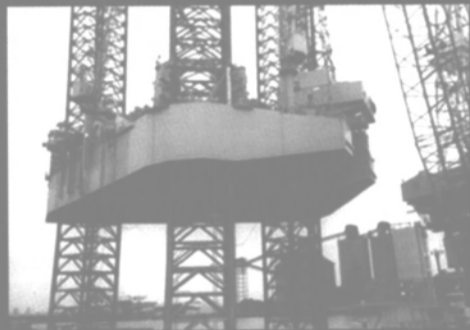
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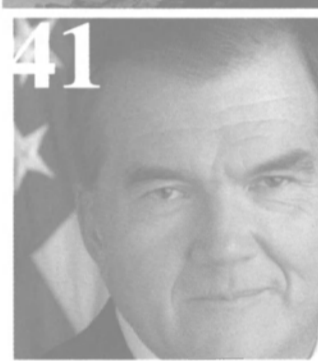
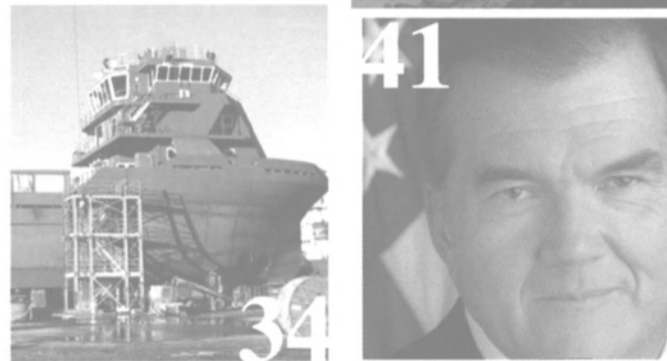
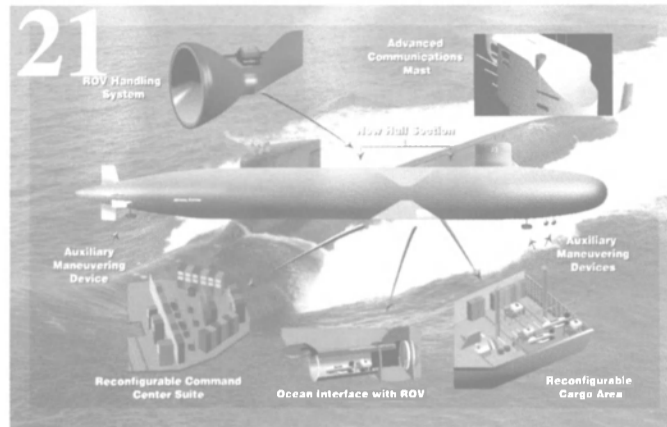
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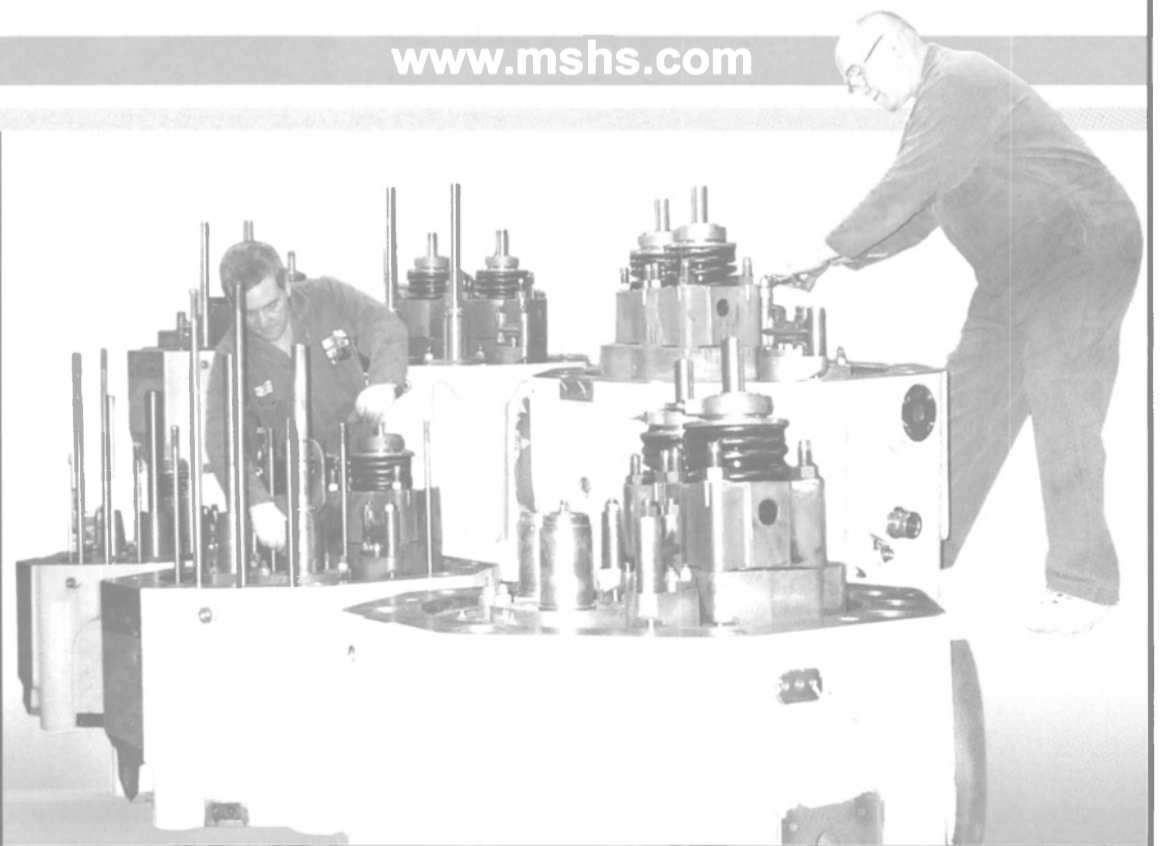
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Editor's Note

July, a time when the maritime industry traditionally slows to a crawl, is proceeding full-bore, fueled by activity and anticipation surrounding the implementation of MTSA and ISPS. While July 1 was still hours away as of this writing, it is expected that the deadline will not bring commerce in these United States, or around the world for that matter, to a screeching halt. Simply put, we — as in the U.S., the world's leading trade hub — will not allow it.

They that can give up essential liberty to obtain a little temporary safety deserve neither liberty nor safety.

Benjamin Franklin
(Source: www.ushistory.org)

However, it is foolhardy for any company delaying the implementation of new required security measures to hesitate further. Make no mistake, the maritime security culture resulting from the terrorist attacks of 9/11 is here to stay, and it will be the companies that embrace the change and devise the means to use it for strategic advantage that will lead our industry for the next generation. While the Department of Homeland Security will exercise due diligence to ensure the world's leading economy is not unduly damaged solely in the name of security, it is an equally safe bet that companies and organizations that resist the call to comply will significantly damage their long-term prospects for profitability. Starting on page 41 of this edition you will find a special section entitled *Maritime Security Compliance • 2004*, meant to serve as a primer of sorts for those still fuzzy on the nuances of new security measures and their effect on the marine business. At press time it appears that port and port facilities lagged significantly in the security compliance race, according to statistics released by the International Maritime Organization and presented on page 41. While vessel owner rejoice in compliance, realize that a port or port facilities' non-compliance can and will serve to slow the shipping process, and should be examined thoroughly.



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On the Cover



Pictured on this month's cover is U.S. Homeland Security Secretary **Tom Ridge**, who has been the very public face on everything security in the U.S. On the eve of July 1, 2004, Secretary Ridge and colleagues were making a strong push to get compliance in the critical maritime sector. See Maritime Security Compliance section starting on p. 41.

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Leading Off

Maritime Meanings

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(as in "I've got your number")

You don't fool me; I can see through your game; I twig. The emphasis is upon recognition, and the usage derives from the fact that each mer-

chant vessel from every maritime nation in the world is allocated, by international agreement, a group of four letters that constitutes her recognition signal. This signal is made, when necessary, by hoisting flags in the International Code of Signals, and it is called, oddly enough, the ship's "number." Clearly, it was — and still is — impor-

tant for a vessel to be able to correctly identify another vessel on the high seas in time of war; indeed, it was a favorite tactic of certain enemy ships to camouflage their outlines, hoist a false number or recognition signal when challenged, and then to attack the unsuspecting victim. To have someone's number under these circumstances would be to see through the

deception, and to take whatever action was appropriate.

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

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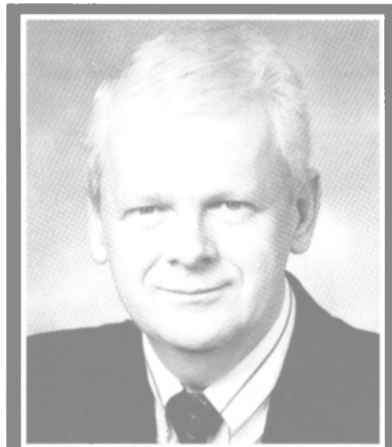
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Ballast Water Management Acquiring Teeth



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

Effective August 13, 2004, the U.S. Coast Guard will have the authority to impose civil penalties of up to \$27,500 per day against vessels that fail to submit ballast water management reports. The basic ballast water management program has been in existence for some years, but submittal of reports has been largely voluntary since the agency lacked the power to require submittal. As a result, participation in the program has been abysmal - at less than 30 percent. It is expected that participation will rapidly become universal as the penalty regime takes hold.

The goal of ballast water management is to reduce the risk of transport in a ship's ballast tanks of aquatic species from one location to another where the species is not indigenous and may have no natural enemies. A prime example of dangers pose by nonindigenous aquatic species is the zebra mussel. In the early 1980s, these shellfish were apparently brought to the North American Great Lakes by ships involved in transporting wheat from the United States to Soviet Union ports on the Black Sea. Return trips were largely made empty, carrying only ballast water. Now zebra mussels invest the Great Lakes and other water bodies in North America, clogging water intakes and driving out native species. Damages and resultant control expenses are estimated to cost \$500 million annually.

While zebra mussels are the best known of the non-indigenous aquatic species, they are by no means alone. The European Green Crab, now found on the both coasts of North America, is a voracious predator that feeds on bivalve mollusks and small crustaceans. The Chinese Mitten Crab (which may have been introduced illegally as a food source) has spread through the San

Francisco Bay region, burrowing into and weakening dikes and levees, as well as competing with local species. A recent study indicates that between 6

percent and 25 percent of the different species of plants and animals found in coastal waters of California may be non-indigenous. For many of these, it is too

early to determine whether they will have deleterious impacts on the local biosphere.

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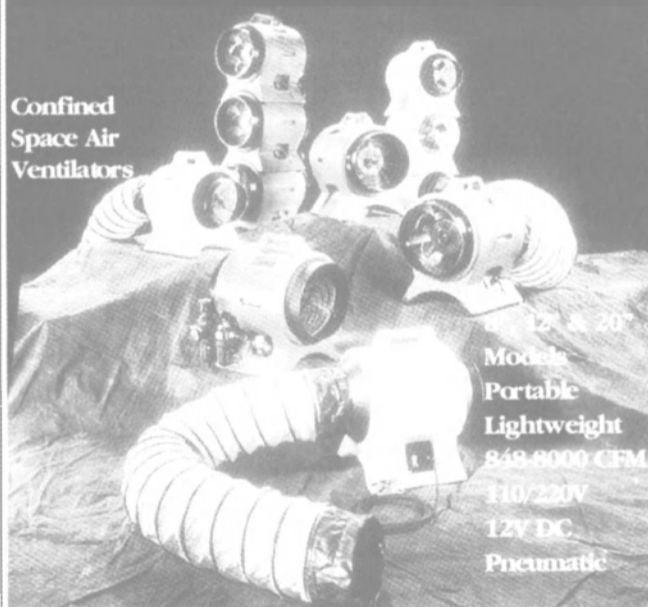
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Government Update

aquatic non-indigenous species, ballast water management programs have been introduced. One of the first was mandated for ships entering the Great Lakes from outside North America. These ships are required to demonstrate that they have exchanged their ballast water on the high seas while en route. High seas ballast water exchange remains the most widely accepted and widely utilized of the control techniques. This is true despite its downsides. Disposal of ballast water on the high seas may expose the ship to stability risks, particularly in heavy weather. Even the best current ballast water pumping systems do not fully empty the ballast tanks, leaving some water and sediment (along with the potential for non-indigenous critters) in the tanks when they are refilled. Some ships transit exclusively in coastal or shallow-water areas where ballast water exchange may provide minimal value. Australia has introduced a ballast water management program that includes a risk analysis to determine the likelihood that a ship's ballast water might contain harmful non-indigenous species.

To reduce the probability that ballast water would contain significant numbers of non-indigenous species, the International Maritime Organization (IMO) established a set of voluntary guidelines. These include cautions against uptake of ballast water in very shallow water or in darkness when bottom-dwelling organisms may rise up the water column. These guidelines were

adopted by the U.S. Coast Guard (and have been made mandatory by the State of California).

The United States initially adopted a voluntary approach to ballast water management (except in Great Lakes and in the Hudson River north of the George Washington Bridge).

The original program included a requirement that ships arriving from overseas report what ballast water management techniques were utilized on the voyage, but the techniques were only recommended and there was no penalty for not utilizing them and there was no penalty for failure to make the report. After three years, the results were not good. Only about 30 percent of arriving ships submitted the reports and only about 50 percent of the reporting ships stated that they had exchanged their ballast water or utilized other techniques.

The Coast Guard asserts that a major reason for the new mandatory reporting requirement is to "generate more data that will allow for a more thorough understanding of ballast water delivery and management practices and how these relate to invasions of non-indigenous species (NIS) from vessel's ballast water on both a national and regional basis."

A stronger basis for the regulation is that Congress mandated such an effort. The voluntary program was, from the beginning, a three-year program to see if the marine industry would substantially participate on its

own. When it did not, the Coast Guard had no alternative to making the program mandatory.

The Coast Guard is also engaged in an effort to encourage development of experimental techniques for ballast water treatment that could eventually be used instead of high seas ballast water exchange. The agency established a program through which ship owners can apply for acceptance of experimental treatment systems.

Once accepted, the installation could be utilized for the life of the ship. This effort promises long-term, albeit long delayed, benefits for masters and crew, who will no longer face the uncertainties and dangers of high seas ballast water exchange.

A second effort involves establishing water quality standards for ballast water discharged into U.S. waters. The Coast Guard is attempting to develop a ballast water treatment goal and an interim ballast water treatment standard. This standard could then be used to judge the efficacy of new ballast water treatment techniques.

In addition to the reporting requirement, the Coast Guard has prepared a rulemaking to expand the mandatory ballast water management program from the Great Lakes and Hudson River to all U.S. waters. The draft rule was submitted for review to the Office of Management and Budget (OMB) on April 7, 2004. Its approval and subsequent official promulgation are

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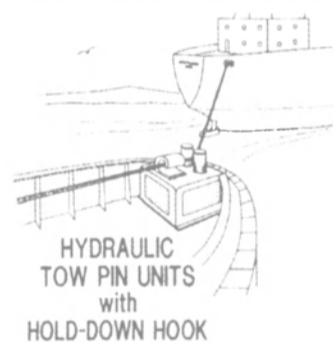


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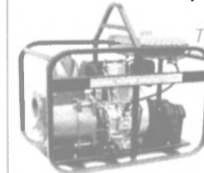
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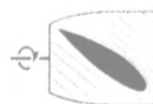
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anticipated shortly - possibly before this article you are reading is published.

The IMO has been engaged in a similar effort to improve ballast water management programs worldwide. An International Convention for the Control and Management of Ships' Ballast Water and Sediments was adopted in February 2004. Wide acceptance of the

Convention is expected to follow rapidly.

The newly developed international standards and the proposed U.S. standards have minimal inconsistencies, which will hopefully remove any objections to U.S. ratification of the new Convention.

Ballast water management has moved

from a vague concept to specific guidelines and soon to universally mandatory requirements in rapid succession. Unfortunately, the technology is still in its infancy.

Ships are still relying largely on the antiquated method of ballast water exchange, with all its shortcomings and hazards. Both the new Convention and

U.S. Coast Guard policy address prototype ballast water treatment technologies. It is premature to predict when viable treatment equipment will be commercially available for use on ships. It is hoped that government regulation at the international, national, and local level will enhance, rather than impede, such development.

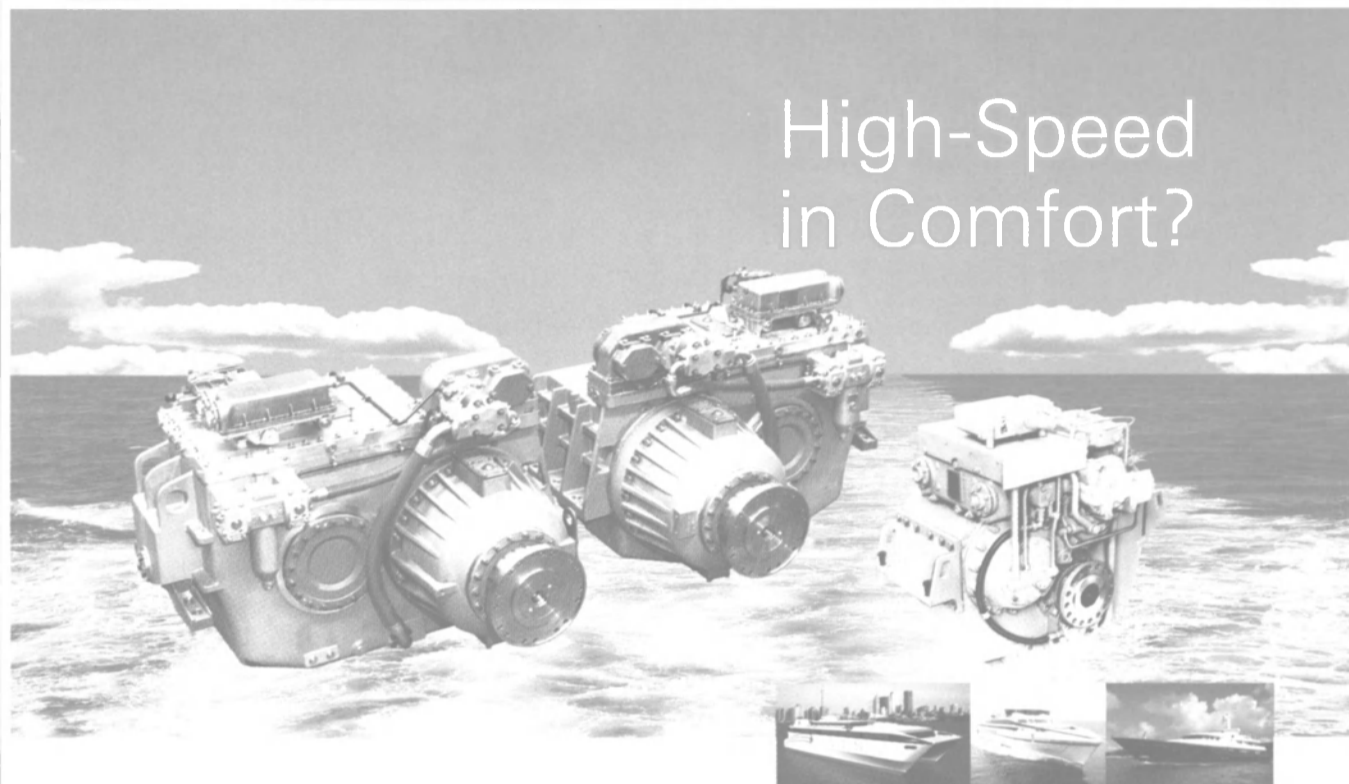
ABS Guidance for Ballast Tank Inert Gas Systems

A major step forward in tanker operation safety was taken as ABS announced technical guidance for inert gas systems for ballast tanks. Compliance to the guidelines leads to the class notation IGS-Ballast. ABS is the first society to set standards and offer a notation for complying with design criteria and procedures for inerting ballast tanks on double hull tankers. The timely introduction of the ABS Guide For Inert Gas System For Ballast Tanks addresses industry concerns regarding the potential leakage of volatile gases from oil laden cargo tanks into the ballast or void spaces. This concern has been further heightened as double hull tanker configurations become the standard with mandated phase in by 2010.

"Leakage of oil into the double hull ballast space for tankers, even from minor cracking or corrosion pitting, can lead to volatile gas build up in these spaces. Installation of an appropriate inert gas system reduces oxygen levels, thus reducing the atmospheric conditions that could lead to risk of explosion in the ballast tanks," explains Yoshi Ozaki, Manager, Marine Engineering Systems, ABS.

Along with design criteria for the systems and guidance procedures on properly inerting (reducing the oxygen content of the atmosphere) and gas-freeing (introducing fresh air into the tank's atmosphere) the ballast tanks, another important secondary benefit gained from the ABS guide is the control of corrosion in the ballast tanks. "By reducing the oxygen content in the space you can control or reduce corrosion," adds Ozaki. "An inert condition exists when the oxygen content throughout the ballast tank's atmosphere has been reduced to 5 percent or less by volume. By introducing inert gas such as nitrogen or a mixture of gases containing a reduced level of oxygen this decreases the corrosion rate."

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New Crowley Tug Joins Fleet

Crowley's petroleum services group has taken delivery of its newest tug, Avik, to serve in the company's oil transportation and distribution fleet. The 76-ft. tug was designed by Crowley's Vessel Management Services team and built by Dakota Creek Industries. It was delivered on June 3 and has been put into service in Alaska. The purpose-built tug was designed for both shallow water and ocean towing ops. It features a raised bridge for improved visibility, an electric tow winch for coastal towing and fendered push knees for river or beaching operations, and is powered by three Caterpillar 3406E diesel engines generating 1,350 hp.

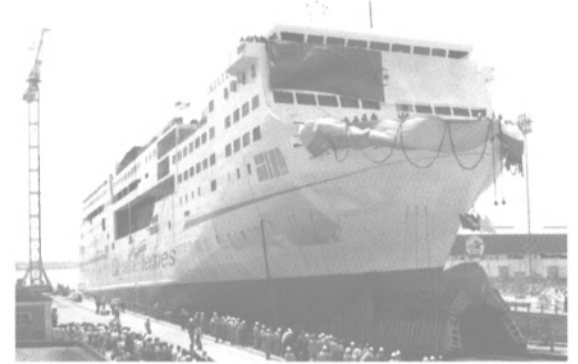
It will handle barges transporting fuel and general cargo to communities in Alaska where shallow water and lack of docking facilities is common. In those cases, tugs and barges make a beach landing to load and unload cargo.

Crowley's petroleum services group is also adding another vessel to its fleet. Barge 180-1, also being built by Dakota Creek, is scheduled for delivery in July. This 180-ft. combination tank and deck cargo barge will be the first double-hull tank barge constructed specifically for Alaska service. It features a dual anchor system, coated cargo tanks, a pedestal-mounted deck crane, portable cargo ramps and onboard oil spill response



equipment. The 180-1 will operate in either a push mode or as a conventional towed unit.

Izar Sevilla Launches Ferry




IZAR Sevilla Shipyard launched El Djazair, a car ferry for the Algerian Company ENTMV (Entreprise Nationale de Transport Maritime de Voyageurs). This vessel is the second of a series of two for the same owner. Each ship can transport 1,300 passengers and 135 crew, along with 300 cars (1,350 car lane metres) or 42 trailers (550 trailer lane metres) on its two garage decks. This ship is significant in that it is the first to use new shipyard production facilities, facilities which allow the shipyard to improve its lifting capacity to blocks of up to 240 tons. With this, the yard can achieve a 20 months delivery time for specific types of such as ferries, ropaxes and asphalt carriers.

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Hawaiian Catamaran: Environmental Awareness In Comfort

Hawaiian maritime tradition traces its roots to the huge ocean going outrigger canoes that took sophisticated navigators island hopping around the expanse of the Pacific Ocean. Today fiberglass versions of these canoes are put through their paces by canoe racing clubs. Other reincarnations of the outrigger's twin hulls are the many catamarans, both sail and power, that take thousands of tourists out into the island waters every day of the year. The Pacific Whale Foundation's Ocean Voyager well represents this modern class of vessel. Designed by the noted Australian firm Crowther Multi-Hulls and built by Kvichak Marine Industries in Seattle, the 65 x 28-ft. aluminum boat comfortably carries up to 150 passengers out from the island of Maui on whale watch and 130 for snorkeling tours. A much favored destination is the tiny island of Molokini. Formed by the lip of an ancient partially sunken volcanic crater just off the coast of Maui. Within its U-shape, is a thriving coral reef ecosystem. Boats can enter Molokini crater and moor inside. The coral reefs inside the cone attract as many as 2,000 snorkelers per day.

Departing Ma'alaea Harbor on Maui, on a recent trip in early May, the twin hulls of the Ocean Voyager rose on a two to three foot swell brought on by morning's stiff trade winds. The hundred plus passengers hardly noticed the vessel's motion as Capt. **Erik Bergmeyer** brought the Voyager's twin 700 hp Cummins KTA19 M3 main engines up to an 1,800 rpm cruising speed. The engines turn a pair of five-blade 32 x 36-in. props through ZF IRM350 marine gears. With the GPS showing 18.5 knots the choppy miles washed quickly aft and the rocky outcrop of the crater grew. Demonstrating the boat's potential, Bergmeyer pushed the twin control levers all the way forward and the tachometers climbed past 1,950 rpm and the GPS showed over 22 knots of speed.

Coming up to the weathered rock outcrop of Molokini the captain circled to check the boats moored inside the ancient crater. Bergmeyer, who spends his off duty hours surfing, decided that the chop on the blue waters was a little too much to be safe for his load of snorkelers. But this is an area of many coral reefs and he turned the boat's twin bows toward a point in the lee of Maui noted for green sea turtles. The arrangement of the twin deck vessel is such that three tiers of seats face forward over the broad bows giving excellent "wind in

your face" views to passengers. Others lounge around the upper deck and still more find comfort in the enclosed seating area where the food services are located. While one of the boat's natural-

ists explained what the swimmers might see and gave a brief explanation of snorkeling to the uninitiated, the crew checked the preparation of 130 sets of masks, snorkels and fins. Because this is

primarily an environmental organization, the five member boat crew includes four naturalists who have extensive experience or degrees in biological sciences. Another two crew handle galley

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The Pacific Whale Foundation's 65 x 28-ft. aluminum Ocean Voyager was built by Kvichak Marine and can comfortably carry up to 150 passengers.

responsibilities.

Like other commercial dive vessels, the Ocean Voyager doesn't anchor in order to avoid damage to the sensitive reefs. A number of mooring have been carefully set out and it was to one of these that the catamaran was made fast as the crew began handing out equipment. To put this many snorkelers into the water in a reasonable period of time is no small undertaking, but the crew handles it with calm professionalism. Central to the operation are transom-mounted four-foot wide twin stairs leading down to port and starboard swim grids from which a ladder takes one into the water. A pair of life guards on light kayaks are in the water watching over the flock of bright snorkelers and their attached swimmers.

With a little luck the swimmers will see a four-foot green sea turtle while underwater. Failing that they are virtually guaranteed an opportunity to see them from the boat at some point on the trip. Given the boats wide beam, the construction of the aft swim grid includes space for a pair of big stainless steel barbecues. On these the crew grills hamburger and chicken breast that is ready to serve in buns when the swimmers return tired and elated from the swim.

With the swimming gear returned for

cleaning, the moorings released and the swimmers fed, Capt. Bergmeyer pushed the controls forward and the Ocean Voyager heads back to port clipping smoothly through a growing chop with another load of satisfied customers. The year round efficiency of is remarkable. Since 1980 the boats of the Pacific Whale Foundation have taken nearly two million guest from around the world for an ocean voyage and a greater appreciation of the marine life of Hawaii.

Circle 50 on Reader Service Card

Lake Express Vessel Enters Service

The new Austal Auto Express 58 catamaran Lake Express entered service on June 1. Operating between Milwaukee, Wis., and Muskegon, Mich., Lake Express provides a crossing time of 2.5 hours, slicing in half the time it would take to drive around the southern tip of the lake, through a congested Chicago. Launched on March 20, Lake Express is the seventh vessel launched at Austal's U.S. shipyard and is the largest built at that facility to date.

The vehicle deck can carry 46 cars. Catering for the size of cars found on roads today, the vehicle lanes are larger than normal with bay sizes of 17.7 ft..



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On the bridge of the new Lake Express.

The inner two lanes offer a clear height of 9.5 ft. while the outer lanes are 8.5 ft. high. The maximum axle load is up to 3.5 tons. The 9.5 ft. high forward door slides open to facilitate drive-through loading, thus keeping turnaround times to a minimum.

The catamaran is powered by four MTU 16V 4000 M70 diesel engines, each producing 2,320 kW at 2,000 rpm, which is sufficient for service speeds of 34 knots at 90% Maximum Continuous Rating. "Speed trials showed Lake Express reached a maximum of 39

knots," said **Randy Naker**, of Hornblower Marine Services, which is managing the vessel's operation for Lake Express. "Thanks to the motion control system the ride was very comfortable" he said. In this application, the state-of-the-art motion control system uses hydraulically actuated interceptors fitted aft to provide motion damping as well as control of running trim. The interceptors are controlled by commands from a central unit which receives motion data from an array of onboard sensors, computes the required damping forces, and then issues the command signals.

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Circle 38 on Reader Service Card

VT Halter Tapped to Build Two Tugs
VT Halter Marine signed a contract with Lockheed Martin to design and build two 30-m Voith Tractor Tugs at its Jackson County, Miss., shipyard. The two tugs, due by the end of 2005, are valued at approximately \$18 million. VT Halter Marine will modify existing designs and apply construction techniques used for similar tugs previously built at VT Halter Marine's shipyards.

Circle 39 on Reader Service Card

FERC Authorizes Freeport LNG project
The Federal Energy Regulatory Commission (FERC) issued an order authorizing the construction and operation of a LNG terminal on Quintana Island, near Freeport, Texas. The facility is to include an LNG ship maneuvering area, a protected single-berth unloading dock, and a storm protection levee. Plans call for the facility to be in operation for the 2006-2007 winter heating season. Docket No. CP03-75-000 (HK Law).

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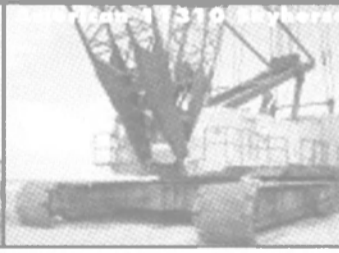
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Complete Vessel Structure Modeling and Part Nesting by Autoship

Autoship Systems Corporation (ASC) has developed a complete CAD/CAM suite to meet the CAD/CAM needs in marine vessel design and construction, including two key programs in the CAD/CAM suite: Autostructure 3.0 and Production Manager 3.0. Autostructure and Production Manager are key components in the Autoship CAD/CAM suite, offering shipyards complete solutions in structural design, pre-construction drawing preparation and part nesting.

Autostructure is used to create a 3D model of a vessel structure and to output the parts of that model in CAD format. The CAD representation can be used either to prepare construction drawings or for input to NC cutting processors. Autostructure utilizes an Autoship-generated hull and/or superstructure and can also include the shell plate information created in Autoplate. (Autoship and Autoplate are programs in the Autoship Systems CAD/CAM suite.)

Autostructure was designed to allow parts to be created quickly and with minimal input. While there is a general workflow, no set ways or sequences are forced upon the user. And

since parts can be generated rapidly, mistakes can be quickly and easily remedied. Also, if a part is changed or moved, Autostructure can update the surrounding structure.

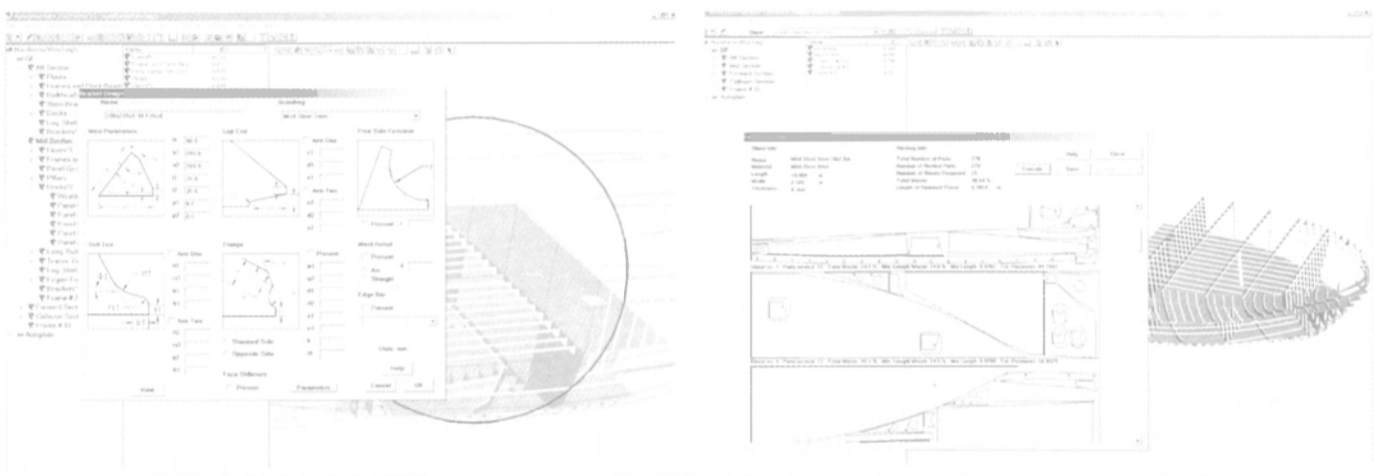
Autostructure has an interface with the piping design system "AutoPLANT" by Bentley Systems Inc. Data exchange between the two programs allows for coordination of design between piping designers and structure designers, hence avoiding costly rework on the vessel construction site.

All parts designed in Autostructure can be imported into Production Manager for nesting and related processing.

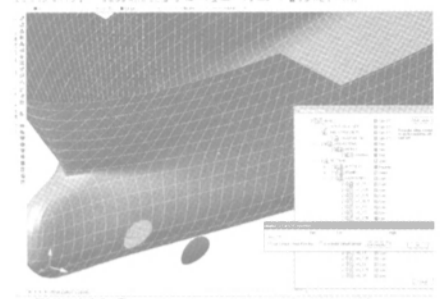
Production Manager provides sheet and linear (extrusion, flat bar) nesting, part subdivision, weld shrinkage compensation, stock definition, stock inventory and stock remnant management.

Together, Autostructure and Production Manager provide complete control over vessel structure design and nesting, plus integration with third party piping. These components have completed the ASC CAD/CAM suite.

Circle 43 on Reader Service Card



ARL Releases ShipConstructor2005



Smart Hull module surfaces empower user creativity

Albacore Research Ltd (ARL) released ShipConstructor2005, the latest version of its AutoCAD-based 3-D product modeling software for the design and fabrication of complete ships and offshore structures. ShipConstructor2005 was developed under AutoCAD2005 with backwards compatibility to AutoCAD2004, providing many new functions that are designed to improve productivity, not only while operating the software, but also downstream in production and through integration of ShipConstructor with other business processes. "The last development cycle had been a very short one, with ShipConstructor2004 released in October 2003. We decided to move our 2005 release date to June in order to take advantage of functional enhancements in Autodesk's spring release of AutoCAD2005," said **Rolf G. Oetter**, Founder and President of ARL.

With the introduction of the Hull module, ARL brings much of the functionality of the proven but so far stand-alone ShipCAM solution into ShipConstructor, thus running inside of AutoCAD. Users will be able to open ShipCAM files, import 3DM (Rhino) and IGES (most hull design programs) files.

The Hull module's functionality provides trim-able surfaces, stringer layouts, pin-jigs and inverse bending. Plate expansion, including forming templates, accuracy control data and strain maps are also included.

Established ShipConstructor modules (Manager, Structure, Pipe, Penetrations, Equipment, HVAC) are boosted by numerous performance improvements to offer users more flexibility, fine-grain control and quicker functionality. Notable features of ShipConstructor2005 include: Smart Bill of Materials; Improved Database Integration; and Pipe Module Enhancements.

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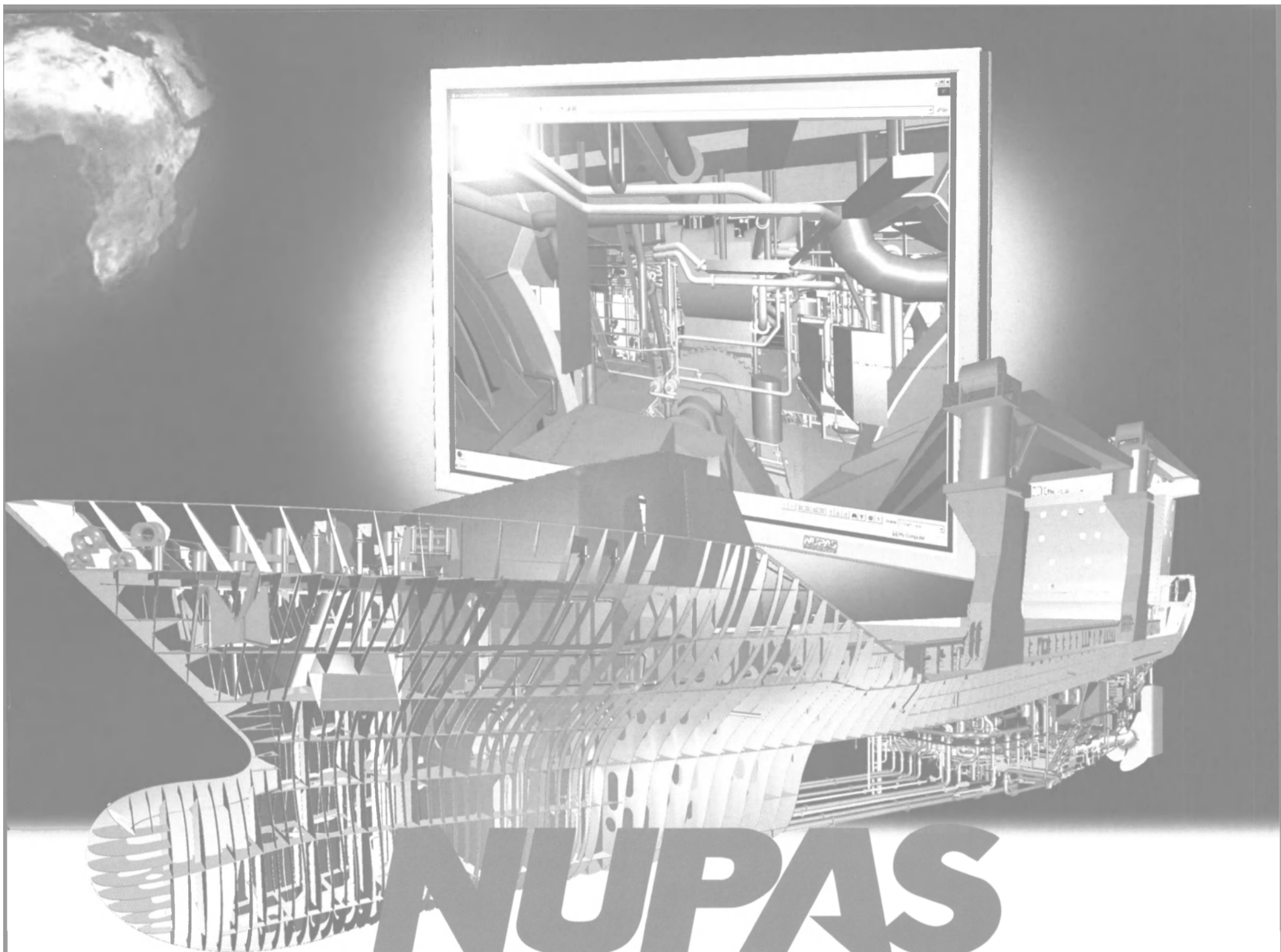
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The Nupas-Cadmatic eBrowser is an handy browsing tool which enables all parties involved to easily view and check the 3D model via internet at any time. This reduces the need for regular design reviews and the amount of drawings.

Nupas-Cadmatic runs on the Windows platform and requires regular PC hardware.

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Internet www.ncg.nl, e-mail sales@ncg.nl

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CAD/CAM

The following CAD/CAM directory is the result of an e-mail survey conducted in June 2004. Please e-mail any additions or corrections to mren@marinelink.com

Publisher assumes no responsibility for errors or omissions

ARL Albacore Research

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Victoria, BC V8X 4A3
Canada
www.ShipConstructor.com
Larry Varga
tel: +1-888-210-7420, +1-250-479-3638

fax: +1-250-479-0868
email: ARL@ShipConstructor.com
Descr: Albacore Research Ltd. (ARL) is the creator of ShipConstructor, the easy-to-use, AutoCAD based Product-Modeling software for the design and fabrication of ships and offshore structures.

Products: ShipConstructor provides functions for curved plates, structure, pipe, HVAC, equipment, and NC-processing and also generates sophisticated production documentation.

Autoship Systems Corporation

Suite 312 - 611 Alexander Street
Vancouver, BC V6A 1E1
Canada
www.autoship.com
Brig Henry
tel: 604-254-4171
fax: 604-254-5171
email: info@autoship.com

Descr: Market Leader in Marine CAD/CAM and Customized Load Planning Software.
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Finland
www.cadmatic.com
Matti Juntunen
tel: +358-2-412 411
fax: +358-2-412 4495
email: matti.juntunen@cadmatic.com

Descr: Ship Design Software
Products: Ship Design Software

Creative Systems

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USA

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Mike Roth
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fax: 360-385-6213
email: ghs@olympus.ne
Descr: CAD/CAM Supplier
Products: CAD/CAM Supplier

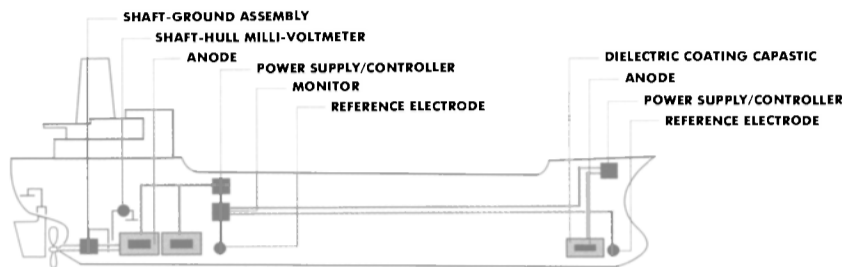
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email: info@formsys.com
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Descr: software developer

Products: NAPA system for initial and basic ship design

Proteus Engineering

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 USA

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Bruce Hays
 tel: 410-643-7496, ext 3006
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email:flagship@anteon.com

Descr: Proteus provides the FlagShip line of ship design software, as well as specialized naval architectural services.

Products: FlagShip is a complete line of design software, including ship structures, hull fairing, stability, powering, seakeeping, maneuvering, weight estimating, and detail design.

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Navy

ABS To Class LCS

ABS will class the U.S. Navy's Littoral Combat Ship (LCS), by applying technical Rules and standards established in its newly developed Naval Vessel Rules. "We have been working with the U.S. Navy for a prolonged peri-

od to merge commercial processes with naval technical requirements to produce a ship classification approach tailored to the needs of the military," said **Glenn Ashe**, Director, ABS Government Operations. ABS has been working to develop a stand-alone set of classifica-

tion standards for a wide range of non-nuclear surface combatants. It worked with the Navy to develop the ABS Guide for Building and Classing High Speed Naval Craft which supports the development of several new military vessels.

Circle 30 on Reader Service Card

DRS Technologies Wins Aircraft Carrier Contract

DRS Technologies won a \$5.6 million contract to continue to design advanced propulsion steam turbines for the U.S. Navy's next-generation CVN-78 class of aircraft carriers. The award was received by DRS from Dresser-Rand Company in Wellsville, NY, a unit of Ingersoll-Rand Company Limited.

Circle 5 on Reader Service Card

GE to Power Australian Frigate

GE Marine's LM2500 aeroderivative gas turbine will power the Royal Australian Navy's (RAN) eighth ANZAC-class frigate, Nuship Ballarat, which was recently delivered to the RAN. The ANZAC ship program is a collaboration between Australia and New Zealand, and involves the construction of 10 new ANZAC class frigates - eight for the RAN and two for the Royal New Zealand Navy.

The 387.1 ft. (118-m) ANZAC frigates are based on the MEKO 200 platform design for worldwide operation under climatic and oceanographic conditions ranging from tropical to sub-arctic, built by Tenix Defence Pty Ltd. at the Williamstown shipyard. Each frigate features one GE LM2500 aeroderivative gas turbine in a combined diesel or gas turbine configuration with two MTU 12V1163 TB83 diesel engines.

Circle 1 on Reader Service Card

FDGM Wins Navy Engine Upgrade Contract

FDGM won a U.S. Navy contract to upgrade the performance of diesel engines on the USS Warrior and USS Gladiator. The contract value is more than \$4 million and includes refurbishment and upgrades of all engines to a configuration that demonstrated improved reliability and performance in a previous one-year test. All work is to be performed in the Ingleside, TX, area by FDGM's Gulf Coast Operation, located in Aransas Pass, TX.

Circle 3 on Reader Service Card

First Hybrid Sub

BMT announced it has designed, in cooperation with Rolls-Royce, an innovative non-nuclear, all-electric submarine. The SSGT (Ship Submersible Gas Turbine) can reportedly travel faster and further than conventional diesel-electric submarines using novel power generation. In semi-submerged mode it can travel up to 20 knots using air-breathing gas turbines for ranges in excess of

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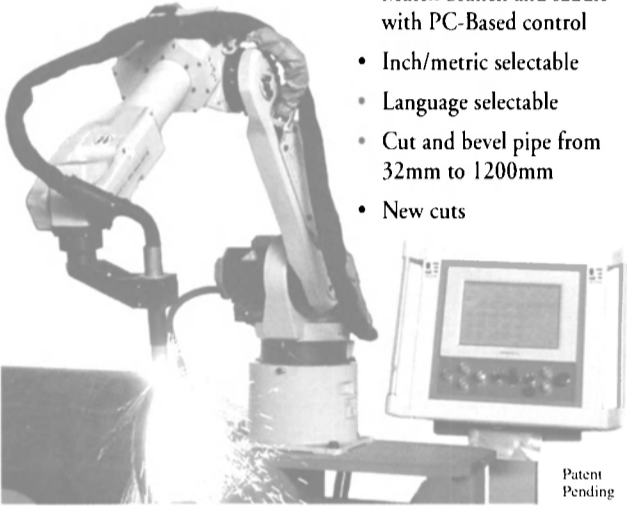
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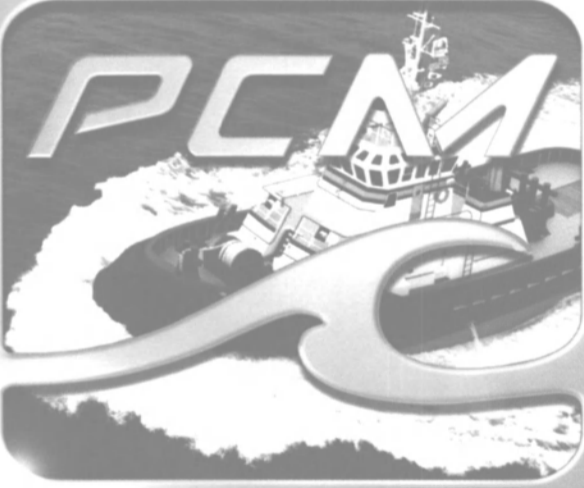



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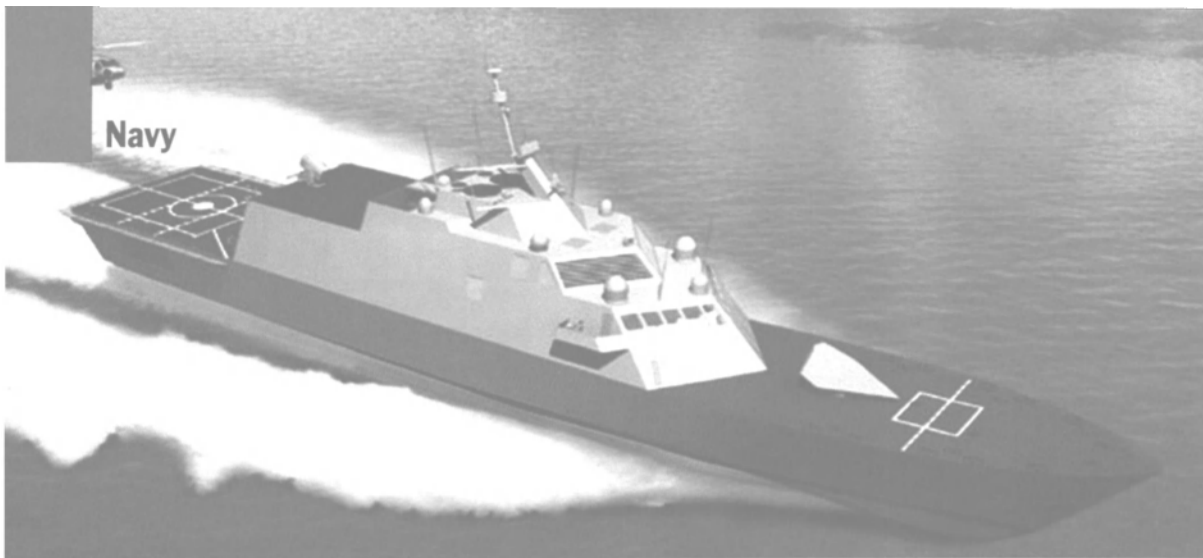
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Artist rendering of the Lockheed Martin Corp. team concept.

And Then There Were Two

The long-awaited awarding of the contract to construct the new series of Littoral Combat Ships (LCS), a series that could total 60 ships worth \$14 billion over 15 years, will have to wait just a little longer. However, the U.S. Navy in late May did pare the competition to two, with teams headed by General Dynamics - Bath Iron Works and Lockheed Martin Corporation - Maritime Systems & Sensors tapped to continue construction plans. LCS has generated fierce competition among the few remaining, large corporate entities that dominate the military markets today. While General Dynamics (\$78,798,188) and Lockheed Martin Corporation — Maritime Systems & Sensors (\$46,501,821) will continue - both awarded contract options for final system design with options for detail design and construction of up to two Flight 0 Littoral Combat Ships (LCS) — the Raytheon-led team was eliminated. The LCS is a key component in military transformation, as it embodies the U.S. military's evolution towards a network-centric approach, which relies on a vast and integrated network of information that allows any number of air, land or sea assets to "plug-in" to successfully complete a mission. The LCS will, in essence be a smaller, faster craft when compared to traditional navy ships, operating as part of a network of information from land, air and sea-based assets, able to operate closer to shore — in the "littoral" — while being flexible enough to change its outfitting and alter its mission rapidly. "Today's Littoral Combat Ship decision represents an important milestone for the warfighter and the acquisition team," said **John Young**, assistant secretary of the Navy for research, development and acquisition. "The acquisition team is successfully changing how we buy ships — completing the source selection on schedule and developing affordable designs that can adapt to changing technology. The strong efforts by our industry partners have produced LCS seaframe designs that deliver solid value for the taxpayer's dollar and provide the speed, ride quality, and mission payload capacity sought by the fleet." Apart from warfighting, LCS will perform Special Operations Forces (SOF) support, high-speed transit, Maritime Interdiction Operations (MIO), Intelligence, Surveillance and Reconnaissance (ISR), and Anti-Terrorism/Force Protection (AT/FP).

"The future for the Navy-Marine Corps team requires our naval forces to dominate the near land battlespace and provide access for our nation's joint warfighting team," said Chief of Naval Operations Adm. **Vern**

Clark. "LCS will deliver capabilities to enable our Navy to dominate in this critical littoral region. These ships will be a vital component of tomorrow's carrier strike groups (CSGs) and expeditionary strike groups (ESGs). We need this ship today."

General Dynamics - Bath Iron Works Team

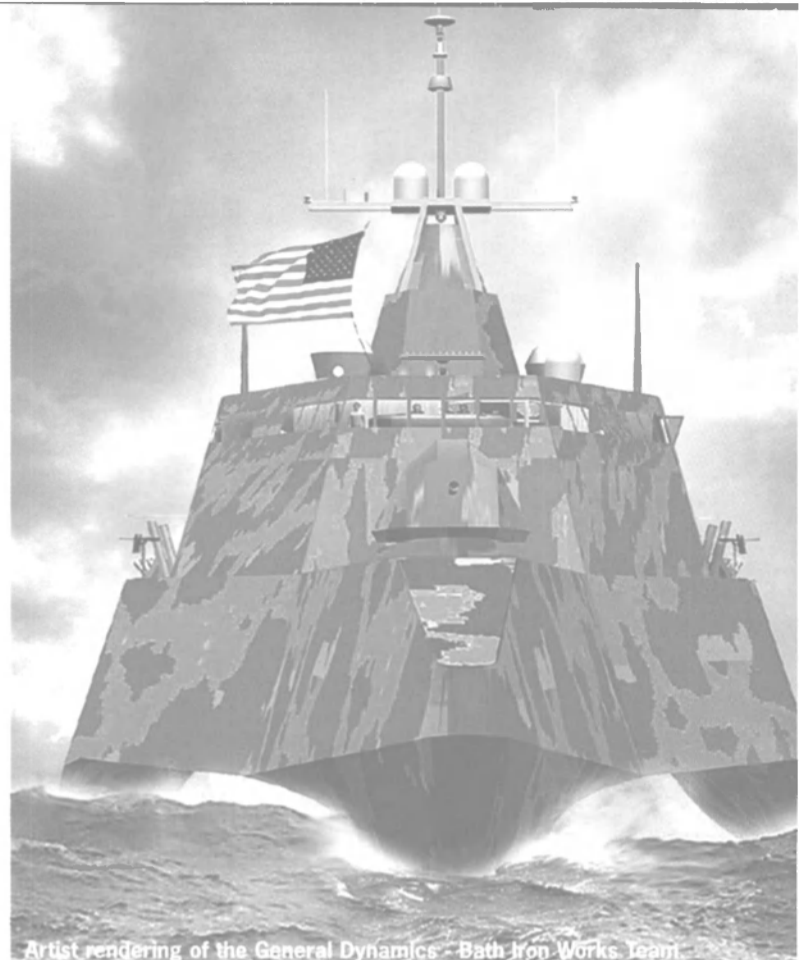
The General Dynamics approach features a trimaran hull designed to enable the ship to reach sustainable speeds of nearly 50 knots and range as far as 10,000 nm with an unprecedented interior volume and payload. With an eye on reducing manning demands, the ship is designed to allow a crew of fewer than 40 sailors to fully operate, maintain and defend it.

"We're very pleased to have been selected by the Navy to continue development of the design for this next generation of surface combatants," said **Dugan Shipway**, president of General Dynamics Bath Iron Works. Bath Iron Works is the prime contractor on the program. Austal USA, of Mobile, Ala., a subsidiary of Australian shipbuilder Austal Ships, is supporting final design efforts for the team's aluminum and steel trimaran warship. General Dynamics Advanced Information Systems, of Arlington, Va., is leading the ship's open-architecture based Core Mission System design and integration from its Pittsfield, Mass. facility. Other team members include CAE of Leesburg, Va.; BAE Systems, Rockville, Md.; Maritime Applied Physics Corporation, Baltimore, Md.; Northrop Grumman Electronic Systems, Baltimore, Md.; and three other General Dynamics companies: Armament and Technical Products (Burlington, Vt.), Electric Boat (Groton, Conn.) and General Dynamics Canada (Ottawa, Ontario).

"This award is a major accomplishment in Austal USA's plans to become a major competitor in high speed applications for the U.S. defense programs," said Austal USA's CEO, **Greg Metcalf**.

Following completion of the 16-month LCS final design stage, the Navy will exercise options for Austal USA to build the first two ships. The first vessel will commence construction in late 2005 and the other in late 2006. Navy plans also call for the additional construction of three ships starting in 2007 and six in 2008.

CAE's Leesburg, Virginia-based Marine Systems division has been selected to provide an automated ship control system for the LCS. "CAE Marine Systems will provide the ship's automated control sys-



Artist rendering of the General Dynamics - Bath Iron Works team.

tems and seamlessly integrate them with the combat system," said **Joe Lee Frank**, president, CAE USA Marine Systems. CAE, interestingly, is now participating in all four of the U.S. Navy's major surface combat vessel programs, including the DD(X) destroyer, the LPD-17 amphibious assault ships and the CVN-77 aircraft carrier.

Lockheed Martin Corporation - Maritime Systems & Sensors Team

Lockheed Martin is teamed with naval architect Gibbs & Cox and ship builders Bollinger Shipyards and Marinette Marine. A number of international companies, including Spain's IZAR, are also contributing to the Flight 0, or initial production, program. If all options are exercised, construction of the first LCS will begin in January, 2005 at Marinette Marine with the launch scheduled in late 2006. Construction of the second ship will be at Bollinger Shipyards beginning in 2006. The Navy is expected to announce a selection for additional LCS Flight 1 production in 2007.

The Lockheed Martin-led team approach is an innovative semi-planing monohull seaframe, based on technologies introduced on the 60+ knot, 1,000-ton *Destriero*, which holds the trans-Atlantic speed record. It was scaled up and used to build a series of 3,000-ton Jupiter class ocean-going vessels. Both ships were designed and built by Italy's Fincantieri. With a length of 378 ft. and a beam of 57 ft., the Lockheed Martin LCS will operate in less than 13 ft. of water.

"Our team has developed an exceptional design to meet the Navy's LCS requirement and we're eager to complete the final design phase and begin construction," said **Carol Hulgus**, vice president of programs for Lockheed Martin Maritime Systems & Sensors. "The ship will display extraordinary agility and speed in littoral warfighting operations."

Gibbs & Cox is working closely with the team's shipyards to ensure a smooth and timely transition from final design to production. "We have been working closely with our partner shipyards throughout the design process to incorporate shipyard producibility initiatives into the final design products," said **Kevin**

Moak, Chairman of Gibbs & Cox. "ARL is proud that ShipConstructor is being applied to the LCS project by Gibbs & Cox Inc., Marinette Marine Corp. and Bollinger Shipyards Inc.

We are confident that the Lockheed Martin team will benefit from the new features added to ShipConstructor2005 under the NSRP Second-Tier Design Enhancement Program (STDEP). Future ShipConstructor functions will see a link between product lifecycle management (PLM) data and the ShipConstructor 3D product model in a virtual reality environment, thus lowering the total costs of ownership," said **Rolf G. Oetter**, President of Albacore Research Ltd. (ARL). "The simplicity of our LCS design is evident both in its performance as well as its producibility," said **Dennis McCloskey**, president of Manitowoc's Marine Group and Marinette Marine Corp.

"Producibility was built into the design from day one. And between both the Marinette and Bollinger shipyards, the team has the capacity and personnel in place today to build six ships per year in support of the Navy's long-term production requirements."

The propulsion system consists of from two diesel powerplants and two Rolls-Royce MT30 gas turbines driving acoustically optimized waterjets.

The Lockheed Martin ship is designed

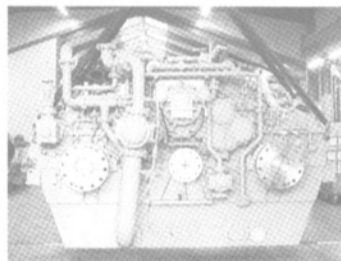
For more information on the companies participating in this project, circle the appropriate number on the Reader Service Card in this edition.

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DRS Technologies	29

to launch, handle, and recover manned and unmanned systems, such as small boats and robotic watercraft. The design uses an overhead tracked crane system for loading and handling mission packages, significantly accelerating ship reconfiguration both pierside and at sea with a small crew and higher levels of

safety. "To give the Navy the ability to alter the mission of the ship in less than 24 hours is a transformational option that isn't available today," said **Mike Ellis**, COO of Bollinger Shipyards. "The same handling system is used for off-board vehicle launch and recovery. It allows a wide-variety of manned and

autonomous mission vehicles to be launched or recovered simultaneously. The ship's low profile enhances its stealth qualities, and supports excellent water access through stern and side doors, making it a superior platform for special operations forces."



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Offshore Drilling: 5-Year Projection is \$189B

"Over the next five years it is expected that 15,000 offshore wells will be drilled worldwide, at a total cost of some \$189 billion. Of these wells nearly 4,500 will be exploratory costing \$75 billion, and around 10,500 will be development, costing \$114bn. It is estimated that drilling and completion expenditure in 2003 was \$36 billion. Spending levels are expected to grow somewhat over the next two years and then decline slightly, stabilising at about \$37 billion per year." These are among the findings of the second edition of *The World Offshore Drilling Report*, published by Douglas-Westwood.

Going Deeper

The largest change that is forecast by the energy analysts is continuing growth in deepwater drilling (over 500 m water depth) which contrasts with a long-term decline in shallow water activity. "In the last decade reductions in available shallow water drilling opportunities have been counter-balanced by increasing deepwater activity. On average around 3,000 to 3,200 offshore wells are drilled each year of which 12 percent are now in deepwaters. These are expected to increase to around 17 percent of all wells drilled in 2008, with \$56bn (30 percent of the total) forecast to be spent globally on drilling and completing deepwater wells over the next five years. This is an increase from \$37bn (22 percent of the total) in the previous 5-year period," said study author, Dr. **Michael R. Smith** of EnergyFiles Ltd.

Africa and Latin America saw deepwater drilling expenditure exceeding shallow water drilling expenditure for the first time in 2003 and the gap will increase in both regions through the forecast period. With the exception of the Middle East where there is no deepwater activity, all other regions should see some shift from shallow to deepwater. "There will be significant changes in some regions. North America, at \$57 bn will again have the highest share of the total spend, increasing (compared to the previous five-year period) by \$3.4 bn (six percent growth) even though the total number of wells drilled will decline slightly."

"Latin America and Africa are forecast to see an increase in expenditure of \$6.1bn and \$8bn respectively, a growth of around 43 percent. Although Asia's forecast five-year spend is about the

same as the previous period, the outlook for Western Europe is a decline of 12 percent, despite cost escalation."

High Spec Rig Demand

"The deep and ultra-deepwater rig market is expected to remain at high utilization rates throughout the period, especially for drillships and fifth generation semisubmersible rigs water depth rated greater than above 1,500 m. Water depth capabilities will continue to grow beyond the current drilling record of 3,053 m. "The shallow water semisubmersible market will be generally weaker, but decline in the Gulf of Mexico and the North Sea will be counter-balanced by a pick-up in demand in West Africa, India and China, at least over the first two years of the five-year period.

"Demand for high specification jackups is likely to remain strong as new gas projects are identified, particularly for Gulf of Mexico deep reservoir gas drilling. Consequently, most new expenditure on drilling rigs is expected to be directed at upgrades of both jackups and floating rigs to allow faster drilling and deeper water and/or deeper reservoir drilling."

Opportunity Constraints

"Drilling levels increased through the 1990s in an environment of increasing energy demand and stable energy prices linked to improvements in technology. However, over the next five years drilling levels will become opportunity-constrained and a slight decline is forecast of around 8 percent. Numbers of wells drilled and expenditures may not increase dramatically even if there is real oil price growth. Furthermore, better development wells mean fewer will be needed per field.

"Some growth is possible in the Persian Gulf but this would depend on the controlling governments, primarily Iran and Saudi Arabia, encouraging investment to a much greater extent than they do now.

"The World Offshore Drilling Report" contains 215 pages, 93 figures and 49 tables. It is published by energy analysts Douglas-Westwood and is part of a series used by over 200 organisations in 32 countries worldwide. For more information visit: www.dw-1.com, or e-mail John Westwood at john@dw-1.com

Atlantic Drydock Provides Roehrig Fix

Atlantic Dry Dock Corp. (Atlantic), in Jacksonville, Fla., completed a six-week overhaul on the Francis E. Roehrig, a 85 x 24 ft. (25.9 x 7.3m) tugboat owned and operated by Roehrig Maritime, Port of New York. Comprehensive refit and repairs included changing out the two Caterpillar D-398 engines with new 3512 Caterpillar engines, a new steering system, overhauling or replacement of shafts, propellers and rudders, installation of Fernstrum keelcoolers, and other general life extension repairs. To complete the life extension of the tug, the underwater hull and topside was blasted and painted. The Francis E. Roehrig was delivered on-time and on-budget.

"I picked Atlantic because of their competitive pricing, reputation for quality workmanship and fast, on-time delivery," **Chris Roehrig**, President of Roehrig Maritime said. "I am very pleased with the project outcome, it met all of my expectations and I would use Atlantic for any of my future work."

Circle 45 on Reader Service Card

FPSO Conversion Begins in Brazil

In working on what is claimed to be the largest and most complex offshore conversion project undertaken to date in Brazil, the conversion of the FPSO P-48 (formerly the VLCC Stena Concordia), FELS Setal SA, the Brazilian subsidiary of Singapore's Keppel Offshore & Marine, has achieved five million work hours without a Lost time Incident. U.S.-based Kellogg Brown & Root's subsidiary Halliburton Produtos Ltda awarded FELS Setal the contract for the marine conversion of the FPSO in February 2001. When completed P-48 will have an oil processing capacity of 150,000 bbl per day, and will be deployed with Petrobras in the Caratinga filed in the Campos Basin, offshore Brazil.

USCG Accelerates OPC Program

The U.S. Coast Guard and Integrated Coast Guard Systems (ICGS) announced that preliminary design and final requirements work will commence immediately on the new Offshore Patrol Cutter (OPC) program. This effort will lead to a new type of highly capable, cutting-edge, medium-endurance cutter. This accelerates the effort to launch the OPC by a full three years, compared to the Deepwater program's originally proposed schedule. This initial OPC contract assigned to ICGS establishes the critical first-step engineering efforts that will occur over the next 12 months.

Northrop Grumman's Ship Systems sector has the lead on the OPC design effort with some of the contract going to their joint venture partner, Lockheed Martin, for co-development of engineering design and system integration. Each partner has been awarded a sub-contract to begin the effort, the full share of which will be determined as a result of technical scoping and level of effort determination.

"We are ready now to accelerate the design and production of this critical component of the Deepwater fleet," said Dr. **Philip A. Dur**, chairman of the board of ICGS and president of Northrop Grumman Ship Systems.

The notional design of the OPC anticipates a 341-ft. vessel with capabilities and equipment similar to the Coast Guard's new National Security Cutter, a 421-ft. world-class cutter that is completing final design and is soon to commence construction.

The final mission requirements and detail design of the OPC will be refined as a result of this contract, with additional funding available for follow-on contracts. With this accelerated contract, it is now expected that the first cutters could enter the Coast Guard fleet several years ahead of the original schedule date in 2012.

What About Cuba?

Political allegiance notwithstanding, continuing unrest and war in the energy critical Middle East continues to wreak havoc with world oil prices, with consumers around the world struggling to keep up with fast escalating gasoline prices. While (at press time) the benchmark prices for a barrel of crude have settled just under \$40, the situation has spurred new exploration and production ventures, one such speculation in the Gulf of Mexico off of Cuba.

According to a recent report in *The Economist* (June 5, 2004 edition, page 48), Spain's Repsol has moved into position a Deep Water drilling rig off of the country's northwest coast with the intention of drilling two wildcat wells in what could amount to a successful attempt to energize a failing economy. Should success be met — which, depending on many different sources is far from certain - it will interesting to watch big oil's potential pressure on Washington to eliminate the trade embargo on the country. While the prospect is interesting for commercial and political reasons, the immediate future may not be so immediately known, as - depending on the quality and quantity of product found among the country's 59 offshore blocks - development and delivery could take up to five years and \$1.5 billion.

Delmar, Shell E&P Set World Record

Delmar Systems and Shell Exploration & Production established a new world-record depth for moored vessels using suction anchor technology in the Gulf of Mexico. The Transocean fifth generation semi-submersible rig, Deepwater Nautilus, was moored in 8,951 ft. of water in Lloyd Ridge Block 399 with the deepest anchor at 9,205 ft. The ultra-deepwater mooring project was accomplished using high-strength synthetic mooring rope connected to suction anchors. The suction anchors were pre-installed using only one anchor-handling vessel, the Laney Chouest, owned by Edison Chouest Offshore. The eight mooring legs were then connected to the rig later using lighter weight polyester rope and the patented Delmar Subsea Connector. The reduced weight of the polyester rope increases the rig's variable deck load, permitting the rig to anchor in deeper waters.

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Dreyfus Buys Lowery Brothers Rigging Center

Dreyfus-Cortney, Inc. (Dreyfus) signed a definitive agreement to purchase the operations of Lowery Brothers Rigging Center, Inc. For over 50 years, Lowery and Dreyfus have each been leaders in their respective fields, supplying a variety of lifting, mooring and related products to domestic and international customers in the marine, construction, industrial and oil and gas industries. Dreyfus expects to close the transaction, subject to the satisfaction of several conditions and contingencies, as soon as possible. The Lowery operation will be integrated with the Dreyfus business at its existing facility at 2121 Poland Avenue in New Orleans.

Circle 98 on Reader Service Card

HOS Buys Boats

Hornbeck Offshore Services, Inc. exercised its option to purchase the HOS Hotshot, a new 165-ft. fast supply boat that it has been operating under a bareboat charter since it was delivered in April 2003. HOS also entered into a definitive agreement to purchase two 6,000 hp ocean-going tugs that were built in 1983. Hornbeck expected to close the tug acquisitions by the end of June 2004, at which time the vessels will be converted for service in the company's U.S. transportation fleet. The aggregate purchase price and conversion cost of the three vessels is expected to be \$12.6 million.

Carl Annessa, Vice President and

COO of Hornbeck, added, "As we reported on our last conference call, we are acquiring these two higher horsepower tugs to "power" the large double-hulled tank barges that we currently have under construction for delivery late this year."

GOM Contraction Drives Global from Market

Global Industries, Ltd., in a letter to its customers, said that it is no longer willing to slash pricing and accept the often onerous terms and conditions required by many operators in the Gulf of

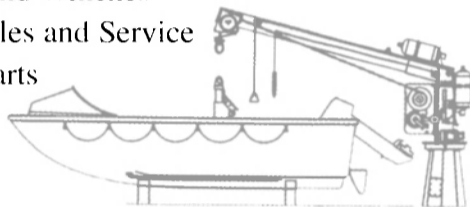
Mexico. "As our market indicators reflect continued lack of near-term offshore construction opportunities, we must take these measures to ensure reasonable levels of profitability," said William J. Dore, Global's Chairman of the Board and COO.

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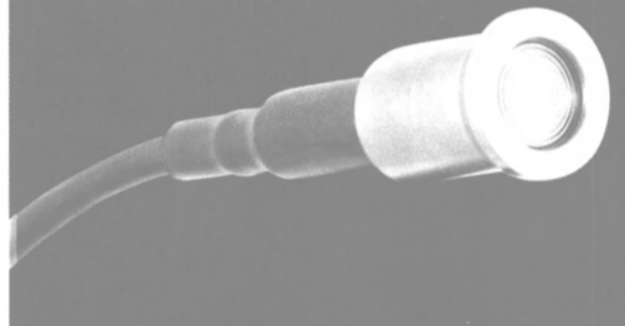
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Cianbro Earns Maritime Stripes

When Cianbro Corporation approached Petrodrill, an international rig-owning company with Brazilian and American shareholders, about completing two partially-built oil rigs in 2002, some thought Cianbro President and CEO **Peter Vigue** was out of his mind.

"What they didn't understand is that Cianbro has a secret: our people," said Vigue. "Our people were ready, willing, and able to take on this challenge. And, with two completed rigs to their credit, they were right."

The Maine firm had no experience or track record in oil rig construction when Vigue sought out the

Petrodrill project. One of the East Coast's largest construction companies, Cianbro was best known for large civil and heavy industrial projects. Two of the company's most recent major projects before taking on the rigs included North America's largest cement plant in northern Maryland and the eastern seaboard's heaviest lift span bridge in New Haven, Conn.

Vigue holds an engineering degree from Maine Maritime Academy, but he wasn't necessarily looking to branch the 2,200-member, employee-owned company out into shipbuilding. What he was looking for was a project that would permit many of the 1,200 workers

based in Maine to work there instead of traveling to project sites out of state. What he found was a pair of incomplete oil exploration rigs, orphaned by the bankruptcy of their original contractor.

Vigue realized that the part of the project least familiar to Cianbro's people had already been done. The structural components of the two rigs already existed. What was left to be done was essentially like any other large, industrial, construction project—and large, industrial, construction projects are Cianbro's bread and butter. What was more, ships are mobile. Within limits, they can go to where the workers are, rather than the

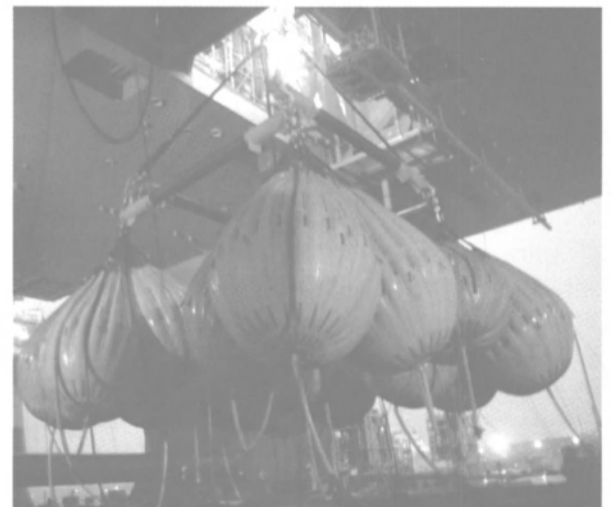
The driller's cabin.



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other way around. To Vigue, it was a perfect fit. He just had to persuade the rigs' owners that Cianbro was the right company for the job.

That reportedly wasn't easy, but in the end Petrodrill took a chance on the Maine-based company. Banking on the workforce flexibility, Cianbro put together a plan that enabled their workers to switch from mill construction to shipfitting without missing a beat.

"Cianbro has decades of experience in pulp and paper mills and other manufacturing facilities," said Alan Burton, Cianbro's director of safety and human resources. "The skills our people use every day such as welding, pipefitting, cabling, and more were exactly what we needed to complete the rigs."

Before striking any shipfitting deals, Cianbro had to have a place to work on them. The company leased what would become Portland Ocean Terminal, a vacant repair facility in Portland, Maine, to serve as its shipyard for this unconventional project. The facility, which once housed a dry dock, was uniquely qualified by its deepwater basin—a rare find on the East Coast and an important key to securing this project. To prepare the site, the company performed extensive renovations, including a rebuild of a 140,000-sq.-ft. warehouse with 87,000 sq. ft. of office space on the second floor.

The city of Portland benefits from the arrangement too. In addition to the million dollars a year they received for leasing the terminal to Cianbro and the improvements the company made to the facilities, Portland has used the project as the centerpiece of an effort to revitalize the shipyard component of its working waterfront. An active commercial shipyard is an important asset to any maritime community, and Cianbro's has provided hundreds of jobs beyond the company's own crews.

"Cianbro has helped lay the foundation for future marine industrial projects at this facility," said Jeffery Monroe, director of ports and transportation for the city of Portland. "We believed in Cianbro's ability and have worked in partnership with them. These rigs represent possibilities for future projects."

After the work site was prepared, the real fun began. The incomplete rigs, each still in two components — a set of pontoons with columns and a matching deck box — were towed and barged to Portland from their original construction sites on the Gulf of Mexico. Once there, the football-field-sized deck boxes had to be joined to the rigs' immense pontoon structures in a delicate operation called a floatover.

With the rigs' basic structures com-

plete, the Cianbro crew started work. Ductwork, bulkheads, insulation, millions of feet of wire and pipe—all the millions of things, big and small, that makes a ship a ship rather than just a big chunk of hollow steel—had to be fitted and installed. At the project's peak, more than a thousand people were work-

ing on the two, giant, 12,000-ton platforms. All told, about 850 Cianbro workers were employed on the project, with the balance of the workforce made up of workers for various subcontractors.

Less than two years after arriving in Portland in pieces, Cianbro handed over

the second completed rig to Petrodrill. Dave Leavitt, Cianbro's senior project manager, said, "These have been a very interesting and exciting two years for Cianbro. Our company has taken on and met significant challenges over our 55-year history. And, working with Petrodrill, we are extremely proud of the

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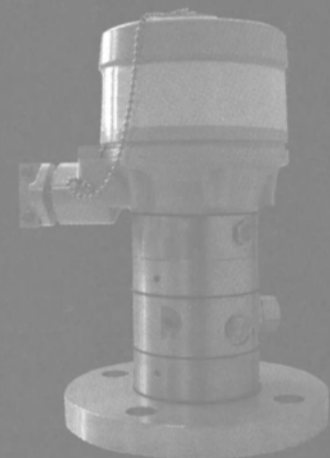
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Offshore/Gulf of Mexico Report

successful completion of these rigs — a brand new market for Cianbro."

The first of the two rigs, named Pride Rio de Janeiro, left port in February 2004, embarking on a 20-day trip to Curacao for sea trials. The second,

Pride Portland, completed sea trials off the Maine coast in mid-May. Both rigs are built for warm water exploration and the rigs' owners hope to obtain contracts to use at least one of the rigs off the east coast of South America. Housing crews

of more than a hundred people each, two sister rigs, built in Korea by Daewoo, are already on the job.

Derek Leach, project director for Petrodrill, said, "It is noteworthy that Cianbro's first oil rig construction proj-

ect was anything but easy, however, their team managed to rise to the challenge and helped bring this complex project to conclusion while achieving a high standard of safety and quality. It is fair to state that despite all the obstacles that had to be overcome the two rigs as delivered have achieved a standard every bit as good as that attained by the two sister vessels."

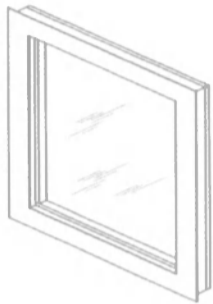
As for Cianbro, Vigue is already looking for the next big project for his company to tackle with its maritime credentials. He has his eye on something the person on the street would much more readily recognize as a ship — the SS United States.

*By Benjamin D. Hutchins
(All Photos by James Moscone)*

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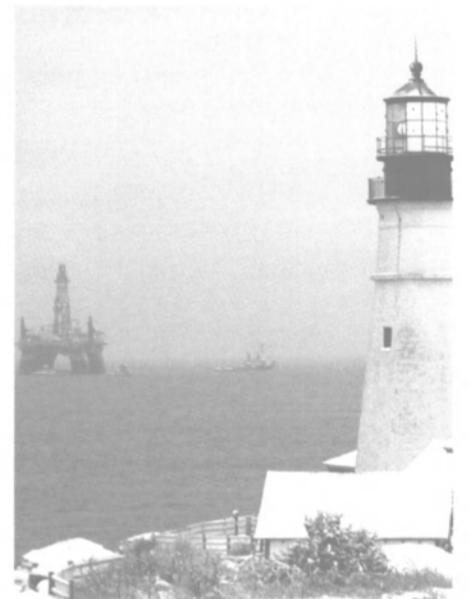
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German RoRo Bastion

Having logged fresh orders from existing clients UN RoRo (formerly UND) of Turkey and Denmark's DFDS group, Flensburger Schiffbau-Gesellschaft has taken its tally of RoRo trailerships contracted in recent years to 23. The volume of business puts the German yard to the fore in European RoRo freight vessel construction, with a prolific, current output rate of four such newbuilds per annum.

FSG's assumption of a high profile in the RoRo category is a mark of the company's meticulous attention to production processes, materials and equipment procurement and logistics, build quality and design added-value. Measures aimed at ensuring cost competitiveness in the international market are complemented by the maintenance of a large, in-house design resource, relative to the yard's modest size, and by an energetic commitment to research and development. Production is focused on a single, fully-enclosed building slipway, where hull dwell times have been progressively reduced.

Flensburg has emerged as a showcase for the competitive production of mercantile vessels in Europe, coupling investment in technological tools with the best German traditions in industrial enterprise, to give the lie to widely-held perceptions that Europe has no future in building ships of trade. For sure, FSG's posi-

tion has been hard won, and its absence of complacency is a strength, signified by new design endeavors and by a readiness to apply its concept to other fields of construction in the event of a fall-off in RoRo demand.

The string of export contracts for high-capacity trailerships has added significance for the considerable inroads made into the European market by the Chinese shipbuilding industry, which has taken great strides in the RoRo domain, not least among Nordic owners.

The latest business secured by the yard comprises a sixth ship in the Tor Magnolia class of 3,831 lane-m North Sea RoRo for DFDS Tor Line, and a repeat contract from UN RoRo for two trailerships of 3,735 lane-m capacity. Following completions of the first three DFDS ships, Tor Magnolia, Tor Petunia and Tor Primula, the new influx of work has boosted the present workload to seven RoRo freight vessels, comprising three of the new generation for DFDS, plus four of the latest design for the Turkish client.

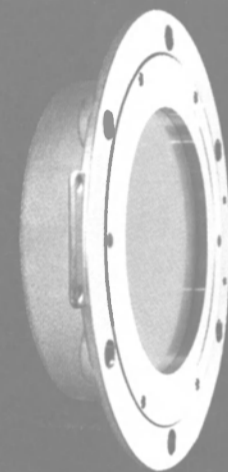
The delivery program has thereby been extended to mid 2006. The Tor Magnolia series, known as the 'Flower' class, has brought a 37% hike in unit lane-m capacity, at just a small

increase in length and breadth, in comparison with the Fincantieri-built Tor Selandia trailership type introduced in 1999 and 2000. Accommodating 253 trailers of 14-m length, the 'Flower' RoRos allow for year-round scheduling on the North Sea at 22.5-knots, about half a knot more than that of the Tor Selandia trio.

The width of the new ships is the absolute maximum for transiting the lock linking the tidal Humber with

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Tor Begonia, the latest of an innovative RoRo class for DFDS Tor Line.

Investment in Design

Immingham Dock, on the U.K. east coast, and the design is distinguished by the efficiency of cargo access and cargo working to the four freight decks. It is also unusual, in a shortsea RoRo context, for the adoption of a single-screw, single main engine installation, using a two-stroke 9L60MC-C diesel from MAN B&W.

The quartet of Turkish newbuilds on order at Flensburg have each been dimensioned for total freight stowage on four decks corresponding to 255 trailers of 13.6-m length, and will strengthen UN RoRo's services between Istanbul and the north Adriatic, an important conduit for Turkish hauliers and shippers. FSG delivered six ro-ros to the Turkish operator during 2000-2002, and the latest series will provide an advance in linear capacity on similar dimensions to the 3,256 lane-metre UND Ege type. Unlike the single driveline and low-speed diesel plant employed in the new DFDS generation, the Turkish ships have been specified with two medium-speed diesels driving controllable pitch propellers through reduction gearboxes.

Global Scope to Enviro Rules

At long last, Annex VI to IMO's Marpol Convention has been ratified by the requisite number of countries representing at least 50% of world tonnage, opening a new chapter in environmental regulation. Samoa's ratification took the number of accepting states to the 15 needed to trigger implementation, such that international limits on nitrogen oxide and sulfur oxide emissions from shipboard machinery will enter force on May 19, 2005.

Annex VI also prohibits deliberate emissions of ozone-depleting substances, including halons and chlorofluorocarbons (CFCs).

Many have welcomed the prospect of a firm date for the introduction of international regulation on air pollution from ships, fearing a proliferation of local or national rules, a process that is already well in train.

Nonetheless, the criteria laid down under the engine speed-related nitrogen oxide (NOx) emissions curve formulated by IMO established a common basis for the design optimization process needed to improve the environmental standing of marine diesel engines. Moreover, the parameters laid down under Annex VI

provide just a starting point for the industry, as progressively tougher international limits can be expected to be mandated in the years to come.

The regulations include a global cap of 4.5-percent sulfur content of fuel oil, and contains provisions for special 'SOx Emission Control Areas' (SECAs), in which the sulfur content must not exceed 1.5-percent. Alternatively, ships must fit an exhaust gas cleaning system, or use other technological means to restrict SOx emissions. The first SECA will be the Baltic Sea, with effect from 2006. It is anticipated that the North Sea and parts of the English Channel will be designated as SECAs in 2007.

Renewing the R&D Base

One hundred years on from the opening of the Felling site on Tyneside for the production of specialist marine paints, International Coatings' parent group has ploughed Euro 4-million into the creation of a new, purpose-built research and development laboratory at the U.K. premises. The project forms part of an ongoing program entailing expenditure of over Euro 10-

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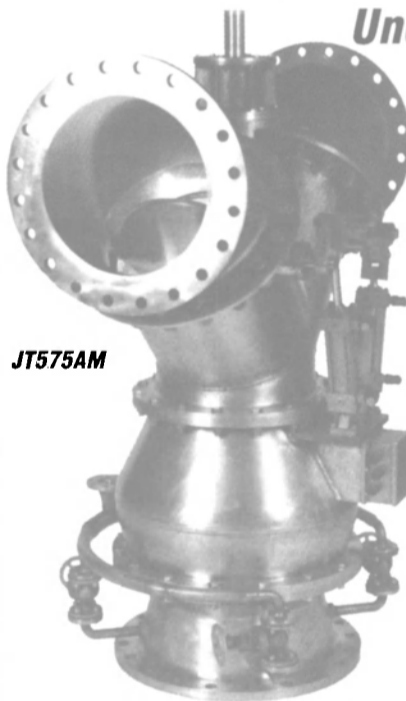
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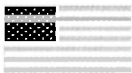
Circle 250 on Reader Service Card

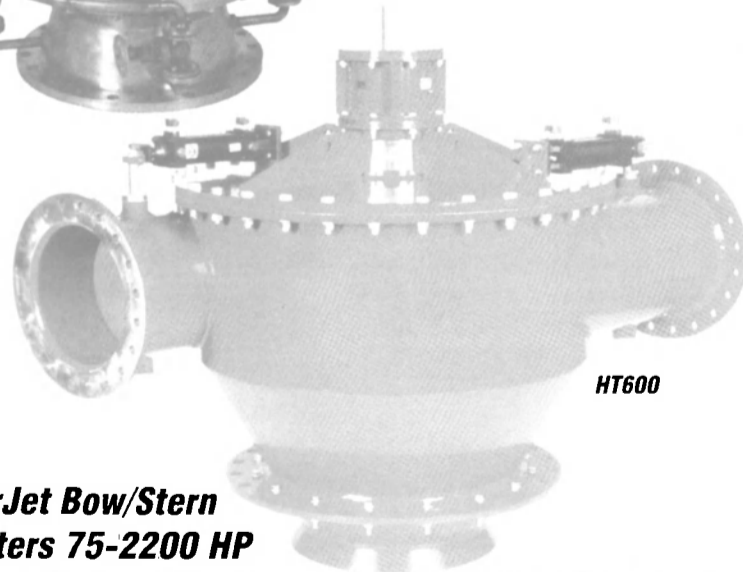


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Investment in Design

million in the company's R&D facilities worldwide, including further development of the modern site at Koje Island, within the Korean shipbuilding heartland.

Additional work has also been carried out at the Asia Pacific Technical Center (APTECH) in Jurong Town, Singapore.

The commitment to Tyneside, the fountainhead of International Coatings' technology and manufacturing operations, and one-time shipbuilding giant, has particular significance given the migration of commercial shipbuilding activity to the orient. However, the Felling plant, one of 19 manufacturing facilities worldwide, has already demonstrated an ability to maintain keen competitiveness without the benefit of critical mass in the domestic market, through its current, annual output of around 30-million liters of paint for the European market at large. As home to Dutch-based owning group Akzo Nobel's Marine and Protective Coatings business unit, Felling has more than 100 qualified research staff, a highpoint of whose work has been the development of the revolutionary Intersleek technology. The new Felling laboratory will play a signal role in maintaining the technical endeavors which underpin the compa-

ny's leading global market position in the field. It will focus on the formulation of innovative antifouling technologies, newbuild coatings and maintenance and repair coatings for the shipping and yacht markets. "Innovation means keeping one step ahead of customer require-

ments," observed Rudy van der Meer, member of Akzo Nobel's board of management responsible for coatings. "It should not only enable them to increase efficiency and productivity, but also to reduce costs," he added.

Leif Darner, general manager of the

Marine & Protective Coatings business unit, said "The existence of a worldwide network of integrated, first class laboratories capable of developing and testing products to the highest international standards is central to our ability to respond quickly to the constantly chang-

Mitsui Develops High Efficiency Engine

Mitsui Engineering & Shipbuilding Co. reportedly has developed what it claims is the world's most efficient 1,000-kW gas engine, according to wire reports. Mitsui Engineering said it will begin taking orders this month for the new engine, which has a power generation efficiency of 42.5 percent and is designed to be used in a private power generation system in mid-size and small buildings like hospitals or small factories. Mitsui Engineering said natural gas will be used as fuel for the new engine to help minimize toxic emissions. The company has already commercialized a cogeneration system featuring diesel engines. This time, it developed the gas engine based on a diesel engine manufactured by Daihatsu Diesel Mfg. Co., a unit of Daihatsu Motor Co.

Daewoo wins \$1.1B LNG Orders

Daewoo Shipbuilding and Marine Engineering won orders worth \$1.1 billion for four LNG ships. Norway's Bergesen apparently is the buyer for three of the ships.

New Joint Venture to Build LNG Ships

Itochu Corp. and Mitsui O.S.K. Lines Ltd. have apparently reached an agreement with Sonatrach, an Algerian state-owned oil and gas company, to build and operate ships to transport LNG. The three and a marine transport unit of Sonatrach will set up a company to build two 75,500-cu. m. LNG carriers. Japan's Universal Shipbuilding Co. will build the two carriers in 2007 and 2009, wire reports said, adding the carriers will be lent to Sonatrach for LNG shipping to Greece, Italy, Spain and other countries on the Mediterranean coast.



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Tokimec Inc. obtained EC Type Examination Certificate of the EC-7500, EC-7000 Electronic chart display and information system (ECDIS) from DNV on June

8, 2004. EC-7500, EC-7000 Electronic chart display and information system (ECDIS) are Tokimec's latest version of ECDIS products, and have the features of AIS Target overlay, navigation information display and adopt TFT display with size EC-7500:23.1 in., EC-7000:19 in.

Circle 35 on Reader Service Card

VOC Manager Installed at NASSCO

General Dynamic's National Steel and Shipbuilding Co. (NASSCO) installed Safinah's VOC Manager software program to handle its emissions reporting.

The VOC Manager software was installed in the Paint Blast Shop and is initially being used to monitor the paint consumption and VOC emissions from the two treatment lines installed at the yard. VOC Manager was developed in conjunction with the EU funded ECO-PAINT project. ECO-PAINT highlighted a shipbuilding need for the accurate recording of paint consumption to ensure that VOC emissions declared did not either penalize the yard for overestimating emissions or run the risk of non-compliance with the regulations by underestimating the emissions.

Circle 34 on Reader Service Card

Wärtsilä' Starts Prop Production in China

The joint venture company set up by Wärtsilä and CSSC (China State Shipbuilding Corporation) in China to design, manufacture and deliver Fixed Pitch Propeller (FPP) packages has officially started operating at the beginning of June 2004. The new



company, called Wärtsilä-CME Zhenjiang Propeller Co. Ltd, is 55%-owned by Wärtsilä and 45%-owned by

Zhenjiang CME Co. Ltd (CME), the latter being a wholly owned subsidiary of the CSSC. The joint venture will commence operations in CME's premises in Zhenjiang some 220 km west of Shanghai. The Chinese party is providing the plant's production equipment and personnel, while Wärtsilä's contribution will be the design and manufac-

turing expertise. The new company will have approximately 260 employees. Wärtsilä-CME Zhenjiang Propeller Co. Ltd will produce Lips- and Kaida-brand FPPs initially up to a weight of 75 tons but this will be increased to conform market requirement as production equipment is upgraded.

Circle 37 on Reader Service Card

TR-2500 Gets Approval

The TR-2500 Universal Automatic Identification System (AIS) by Jotron was type approved and wheel mark approved by BSH against IEC 61993-2, 60945 and ITU-R M.1371-1. Jotron claims it is the world smallest and most compact AIS, weighing just 2.8 kg.

Circle 47 on Reader Service Card

NEW LEADERSHIP. NEW COMMITMENT.



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



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

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

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

We have made other changes in our management team to include highly-qualified individuals who share our determination to giving you the best products and service in the industry.

We cordially invite you to give us the opportunity to show our renewed commitment to excellence.

Circle 206 on Reader Service Card

Rigdon Marine: PSV Orleans Now Working



(Photo Credit: www.steerprop.com)

Rigdon Marine has the Orleans, first of ten 210 x 54.1 x 19 ft. (64 x 16.5 x 5.8-m) diesel-electric ABS Classed DP-2 platform supply vessels from Bender Shipyards, now working in the Gulf of Mexico. A second vessel, the Bourbon, was to follow at the end of June with a third, the Royal, in August. These will be followed by seven more of these innovative vessels. The announcement of the ambitious build program, by Rigdon in 2002, received wide spread industry attention. **Fernando Malabet** of the boats' designer Guido Perla & Associates explains that the diesel electric propulsion system will provide superior performance in the dynamic positioning mode and maximize the design efficiency eliminating the need for long shafts and reduction gears.

The heart of the propulsion system for each of the new DP capable boats is a pair of Cummins Marine QSK60-D(M) Marine Generators. The 16-cylinder four-stroke engines each develop 2,548 bhp (1,901 kW) at 1,800 rpm which in turn produces 1,825 kW at 60 Hz. The generators power electrical motors that will turn a pair of Steerprop SP-18T 360-degree azimuthing drives with open 2300 m/m propellers.

The responsiveness of the diesel electric drives enables the propulsion system to more readily meet the demands of the vessels' level 2 dynamic positioning system. Additional electrical power is provided by a Cummins KTA-38-D (M) powered 900 kW generator set. Cargo provisions include 1200 metric tonnes of deck cargo carried on the 41.8 X 13.7-metre open aft deck. The deck is strengthened for up five tonnes per cubic metre. The vessels' tankage includes 765 cubic metres for fuel, 819.7 cubic metres for drilling mud and 202 cubic metres for bulk mud. Cargo water and ship's water will be 670.8 and 74.3 cubic metres respectively. Lube oil is stored in fore and aft tanks of 7.2 and 9.2 cubic metres.

The Orleans, with accommodation for 22 people has an operational speed of 13 knots loaded at a 4.9 metre loadline. Delivery of the balance of these boats will continue through 2005.

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Orleans Main Particulars

Owner	Rigdon Marine
Classification	ABS
Name	Orleans
Type	DP-2 Platform Supply Vessels's
Builder	Bender Shipyards
Total Sister Vessels	10
Designer	Guido Perla & Associates
Propulsion	Diesel Electric
Diesel engines	Cummins QSK60-D(M) Marine Generators
Azimuthing Drives	Steerprop
Length, o.a.	210 ft. (64 m)
Lpp	202 ft. (61.6 m)
Beam	54.1 ft. (16.5 m)
Draft, design	16 ft. (4.9 m)
Draft, light	7.9 ft. (2.4 m)
Deadweight	2,300 tons
Cargo deck	569 sq. m.
Bulk mud	202 cu. m.
Liquid mud	812 cu. m.
Rig fresh water	897 cu. m.
Propulsion power	2 x 1,566 kW

Embedded Shipboard Trainer for IBS

Northrop Grumman Corporation's Sperry Marine introduced an embedded training system designed to support onboard training for ships equipped with the Sperry Marine integrated bridge system. The Integrated Bridge System Trainer (IBS-T) is an embedded simulator system that runs on the ship's installed equipment to provide realistic training for the ship's navigators and bridge watch team in all aspects of navigation, seamanship and ship handling, as well as navigation planning, watch briefings for port entries and departures and other planned piloting evolutions. Sperry Marine developed it in conjunction with Computer Sciences Corporation and Buffalo Computer Graphics.

Circle 46 on Reader Service Card

New Gyrocompass Offered

Sperry Marine introduced its new-generation Navigat X MK 2 digital gyrocompass system, designed to be a compact, one-unit design that runs on a 24-volt power supply with two independent DC inputs. It provides five serial data outputs and one six-steps/degree output, and can drive up to four analogue repeaters. Based on the Sperry Marine NAVIGAT X MK 1 design, the new gyrocompass provides better than 40,000 hours mean time between failures. The system remains north-stabilized for up to three minutes in the event of a power interruption. The introduction of this new gyrocompass completes the Sperry Marine range of heading sensors.

Circle 48 on Reader Service Card

Carmanah Debuts Light



Carmanah Technologies introduced what it is calling the world's first completely unitized, GPS-synchronized marine light - a three nautical mile navigation

light that coordinates with GPS time signals to allow any number of units installed anywhere in the world to flash in perfect unison. Carmanah's new Model 701-GPS and 702-GPS marine lights use GPS satellite signals as a timing tool.

Built-in GPS receivers in Carmanah's lights require only one satellite signal to

precisely synchronize the beginning of each flash sequence to this time code, thereby perfectly matching the timing of any other GPS-synchronized light.

Multiple lights outlining features such as port entrances, channels and navigational hazards are easier to follow and to distinguish amidst background lighting

when they flash together.

Originally designed and built under contract with the U.S. Coast Guard and meeting the standards of the International Association of Lighthouse Authorities (IALA), the 700 Series are reportedly the first solar-powered lanterns using light-emitting diodes

(LEDs) approved for use in the U.S. Navigational Aid System.

Self-contained, waterproof and compact, the 700 Series are designed to be the next-generation replacement for traditional 155 mm 0.25 amp/0.5 amp navigation lights.

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2004 Diesel Engine Directory

Information for the 2004 Diesel Engine Directory was supplied by Worldmarine Ltd. (info@worldmarine.org).
 Publisher is not responsible for Errors or Omissions.

Model	Bore	Stroke	Cyl#	kW/cyl	RPM	BMEP	Model	Bore	Stroke	Cyl#	kW/cyl	RPM	BMEP	Model	Bore	Stroke	Cyl#	kW/cyl	RPM	BMEP
Anglo Belgian Corp							Cummins Marine							Guascor						
DX	242	320	3-8	46-110.4	600-750	6-12.5	18 D/SS BR 2	150	180	18	77.9-85.8	2050	14.3-15.3	E318	150	150	12	27.1-50.6	1800-2100	8.5-12.7
DZ	256	310	6-16	135-221	720-1000	16.5-18.1	QSM11	125	147	6	55-77.8	2300	19.2-22.8	F180	152	165	6	30.7-79.4	1800-2000	6.8-17.2
ADD							Cummins MerCruiser							Hanshin						
300	480	6-185	48.3	572.2	720-750	26.9-27	QSC8.3540	114	135	6	32.7-66.2	2000-2600	14.2-22.2	6L24GSH	240	400	6	79.7	400	13.2
M23R	230	390	6	86.0	440	14.5	QSM11	125	147	6	55.9-82	2100-2300	17.7-23.7	6LU24	240	410	6	103.5	410	16.3
Akasaka							Daewoo							Isotta Fraschini						
U26A (K)	260	380	6	220.5-270	750	17.5-21.4	V158TI	128	142	8	44.1-62.5	1800-2300	15.8-18.2	6LUD35	350	550	6	245.0	320	17.4
T26	260	440	6	104.2	350-400	13.4-15.3	V180TI	128	142	10	44.1-60.3	1800-2300	15.3-18.6	6LUN28	280	480	6	196-245.2	380-430	19-21
K26	260	480	6	159.2-171.5	410-420	18.3-19.2	V222TI	128	142	12	44.2-61.3	1800-2300	15.6-17.9	LH30L	300	600	6	220.5	300	20.8
U28A (K)	280	380	6-8	230-306	720	16.4-21.8	Daihatsu Diesel							Hedemora Diesel						
E28	280	480	6	220.5-245.2	420-450	21.3-22.1	6DLM16	160	210	6	73.6	1350	15.5	VA	185	210	12-18	91.7	1350	14.4
K28	280	500	6	171.5-196	380-410	18.3-18.6	6DLM19	190	230	6	85.9	900	17.5	VB	210	210	12-18	116.7	1350	14.3
A28/A28S	280	550	6	183.8-196	320-340	20.3-20.4	6DLM20	200	260	6	104.3	900	17	Himssen						
K31	310	550	6	196-245.2	340-380	17.3-18.6	DKM20	200	300	6-8	156-159	900	22.1-22.5	H21-32	210	320	5-9	160-200	720-1000	21.7-24.1
A31	310	600	6	220.8	290	20.2	6DKMS25	250	360	6	245	750	22.2	H25/33	250	330	5-9	290.0	900	23.9
A34C	340	620	6	270.0	310	18.6	DKM26	260	380	6	269.7	750	21.4	John Deere						
A34S	340	660	6	294.2	280	21	6DKMS28	280	385	6	306.4	750	20.7	6081AFM	116	129	6	29.2-55.9	2100-2400	12.2-20.5
S35	350	640	6	318.7	280	22.2	DKM28	280	390	6-8	313-319	720-750	20.8-22.1	6125AFM	127	165	6	42.3-65.3	1800-2100	13.5-19.7
A37	370	720	6	318.3	250	19.7	6DY28	280	530	6	171.7-220.7	395	16.3-20.9	Kelvin						
A38/S	380	740	6	343.3-367.7	240-250	20.4-21	DKM32	320	360	6-8	368.0	720	21.2	KEL140-6M	140	165	6	59.0	1800	15.1
DM40AK	400	640	6	392.2	340	17.2	DKM36	360	480	6-8	551.5	600	22.6	TBSC8	165	184	8	49.9	1350	11.5
DM41AK	410	640	6	441.2	350	17.9	DLM40A	400	480	6-8	552.0	515	21.3	KEL170-6M	170	170	6	93.3	1800	15.2
AH41AK	410	640	6	490.3	350	19.9	DEUTZ							Kolomna						
A41/S	410	800	6	404.2-441.2	230-240	20-20.9	FM1015	132	145	6-8	43.5-70.8	2100-2300	12.5-18.6	14/14	140	140	12	40.0-45.8	2100-2350	10.6
A45/S	450	880	6	490-551.5	210-220	20-21.5	2016	132	160	12-16	93.8	2300	22.3	D49	260	260	4-20	182.5-267.5	1000	15.9-23.2
Alaska Diesel Electric - Lugger / Northern Lights							Electro-Motive Division of General Motors Corp.							Komatsu						
SA6D140-1	140	165	6	62.2-87	1800-2100	16.3-19.6	645E6	230	254	8-16	93.3-98.1	900	5.9-6.2	117	117.9	150	6	58.2-64.4	2200-2300	19.4-20.5
SA6D170A-1	170	170	6	87-111.9	1800-2100	15-16.6	645F7B	230	254	8-20	149.3-163.1	900	9.4-10.3	CRM						
Baudouin							Fairbanks Morse							USA						
V71	120	110	12	26.4-50.3	2680-3000	15.0-17.0	38TD8-1/8	206.4	254	6-12	261.1-217.6	750-900	20.5	12 D/S/SS	150	180	12	52.1-51.3	1900-2075	9.4-15.3
R124 SR	124	165	6	49-62.5	1800-1900	16.4-19.8	GE Diesel							UK						
M26	150	150	6-12	55.2-79.7	1800-2000	13.9-18	7FDM	229	267	12-16	163.4-209.7	900-1050	19.8-21.8	BR-1/2000	150	180	18	61.3-74.2	2020-2075	11.4-13.5
Bergen							Grenaa							BR						
B32-40	320	400	6-12	500	750	24.9	F24T	240	300	3-6	40.5-81	500	7.2-14.3	Rua Gen. Mena Barreto 708						Sao Paulo, Brasil
C25-33	250	330	5-9	24-0	1000	17.8	F24TK	240	300	6	61.3-67.4	500	10.8-11.9	Tel: +55 11 887 9217						Fax: +55 11 887 2687
KRMB/KVBM	250	300	6-18	222.9	825	22	FR24	240	300	6	51.7-123	750	6.1-14.5							
Bez Motory							Guangzhou													
C28	275	330	6	234.2	750	19.1	230Z	230	300	6-8	135-176	750-900	17.1-22.6							
Callesen							John Deere													
425	250	300	3-4	44-59	500	7.3	7FDM-EFI	229	267	8-16	149.1-210	900-1050	19.9-21.9							
427	270	400	3-8	58.8-124.1	395-500	10.4	Kelvin													
Caterpillar							Komatsu													
C9	112	149	6	62.5	2500	20.4	14/14	140	140	12	40.0-45.8	2100-2350	10.6							
3176B	125	140	6	56-74.7	2300	17-22.7	D42-30/38	300	380	4-8	275-491.7	750	16.4-29.3							
C12	130	150	6	87	2300	22.8	Komatsu													
3400	137	152	6-16	26.4-99.5	1200-2300	8.5-21.3	117	117.9	150	6	58.2-64.4	2200-2300	19.4-20.5							
3412D	145	162	12	33.7-54.3	1800-2100	8.4-13.1	CRM													
C18	145	183	6	108.8-124.3	2200-2300	19.6-21.5	12 D/S/SS	150	180	12	52.1-51.3	1900-2075	9.4-15.3							
C30	145	152	12	93.3-96.3	2300	19.3-20	BR-1/2000	150	180	18	61.3-74.2	2020-2075	11.4-13.5							
C32	145	162	12	102.7	2300	20	18 D/SS	150	180	18	55.8-67.4	2010-2075	10.5-12.3							
3500	170	190	8-16	65.8-108.8	1200-1800	12.3-16.8	18 D/SS BR-1	150	180	18	61.3-74.2	2010-2075	11.5-13.5							
3500	170	190	8-6	93.3-139.9	1600-1925	14.4-20.2	USA													
3500B (HI-DISP)	170	215	12-16	104-158	1600-1800	16-21.6	P.O. Box 350465						Ft. Lauderdale, FL 33335							
3600	280	300	6-8	247.5-400	750-1100	20-24.7	Tel: 954-929-5200						Fax: 954-929-0102							

San Francisco, California - Nov. 22nd

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

Response & Results:

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



USA • P.O. Box 350465 • Ft. Lauderdale, FL 33335
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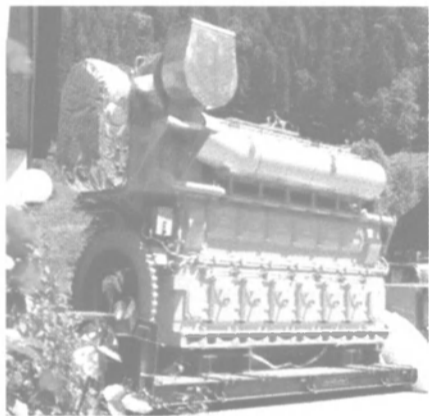
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Circle 251 on Reader Service Card

MAN B&W Debuts 32/40CR Engine in Austria

Late last month the MAN Group publicly announced the availability of a new engine which fully embodies the advantages of common rail diesel technology, meaning that it is designed to be particularly reliable, clean, economic and durable. "Now this technology is where we wanted to have it," says **Fritz Pape**, Member of the Executive Board of MAN B&W. This in-house development combines conventional components of existing MAN injection systems with up-to-date hydraulic and electronic elements that have been developed further. "It was a strategic decision to develop common rail for our engines ourselves in order to do better than what would have been possible with existing, external systems," said Pape. The result is the new engine type 32/40CR.



The Common Rail Advantage

In common rail diesel engines fuel is injected into all the cylinders via a "common rail". The generation of pressure and injection of fuel are not interconnected in a common rail system. Unlike in conventional systems, the injection pressure is independent of the engine speed. Thus there is always full pressure available. The fuel is first stored in the fuel line and then, when a signal is given by the engine controls to the magnetic valves, it is injected into the cylinders. This creates an extremely fine fuel-air mixture that burns particularly efficiently. For the engineers at MAN B&W the challenge was to apply this injection system to large marine engines - and to adapt it for operation on heavy fuel oil, which means dealing with a fuel heated to approx. 150°C.

The MAN injection system is based on conventional pressure-controlled injection. In usual stroke-controlled systems there is a permanently high pressure of 1,600 bar, for example, at the needle seat near the combustion chamber. In the MAN B&W system, the pressure on the valve needle is released by means of the solenoid valve controls, which is located away from the cylinder head, at the common rail accumulator (ist OK CV). As a result there is not permanent-

ly full pressure on the valve needle seat next to the combustion chamber and the electronic components are protected.

Extensive practical testing of the new MAN B&W common rail technology has commenced since the beginning of the year. One of the five auxiliary

engines of the Cornelia Maersk, a 6,600-TEU container vessel for the A.P. Moeller Group, is equipped with the new technology. The results so far are excellent: "The engine has been performing with convincing results for more than 1,200 operating hours," said

Stephan Haas who is assisting in the field trial from the development engineering side. The 32/40CR series engine will be available from 2005 onwards. Thanks to its modular design, the MAN B&W common rail system can also be retrofitted in almost all MAN B&W marine diesel engines.

Circle 96 on Reader Service Card

We have made the
diesel really fast



MAN B&W Diesel Ltd is recognised as a world leader in the fast commercial and military marine markets. Our quality design and manufacturing are proven in the most arduous conditions providing reliability and low cost of ownership. Our engines cover the power range 600kWb to 9000kWb and are in service throughout the world. They operate where high power, compactness, low weight and reliability are essential. Extensive application engineering capability enables us to meet specific customer requirements. Worldwide Diesel Service covers all aspects of after sales support.

MAN B&W Diesel - a member of the MAN Group
MAN B&W Diesel Ltd, Bramhall Moor Lane, Hazel Grove, Stockport, Cheshire, SK7 5AQ England
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Circle 236 on Reader Service Card

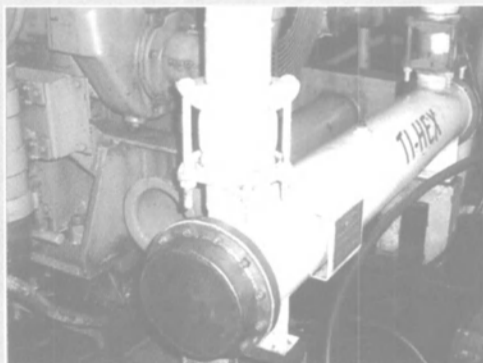
2004 Diesel Engine Directory

Information for the 2004 Diesel Engine Directory was supplied by Worldmarine Ltd. (info@worldmarine.org).
 Publisher is not responsible for Errors or Omissions.

Model	Bore	Stroke	Cyl#	kW/cyl	RPM	BMEP	Model	Bore	Stroke	Cyl#	kW/cyl	RPM	BMEP	Model	Bore	Stroke	Cyl#	kW/cyl	RPM	BMEP
122	121.9	150	6	67.4 - 74.6	2200 - 2300	21 - 23	S65ME-C	650	2730	5 - 8	1960 - 2870	81 - 95	16 - 20	UE85LSII	850	3150	4 - 9	1980 - 3860	54 - 76	12.6 - 17.0
125	125	150	6	61.3 - 68.4	2200 - 2300	18.2 - 19.4	L70MC	700	2268	4 - 8	1355 - 2830	81 - 108	11.5 - 18	SR	170	220	6 - 16	56.7 - 143.8	1350 - 2060	10.1 - 20.5
132	132.9	165	6	70.5 - 85.8	2100 - 2200	17.6 - 20.4	L70MC/ME-C	700	2360	4 - 8	2090 - 3110	91 - 108	15.2 - 19	SU	240	260	6 - 16	165 - 202.3	1060 - 1200	15.9 - 17.2
137	137.9	165	6	83.4 - 94.4	2100 - 2200	19.3 - 20.9	S70MC	700	2674	4 - 8	1350 - 2810	68 - 91	11.5 - 18	MTU						
140	140	165	6 - 12	55.2 - 94.3	1900 - 2100	11.1 - 16.8	S70MC/ME-C	700	2800	4 - 8	1490 - 3105	68 - 91	12.2 - 19	183	128	142	6 - 16	21.1 - 80.8	1900 - 2400	6.6 - 22.1
170	170	170	6	111.6 - 122.6	2000	17.3 - 19.1	K80MC/ME-C	800	2300	6 - 12	2470 - 3610	89 - 104	14.4 - 18	2000	130	150	8 - 16	50 - 91.9	1900 - 2350	15.9 - 23.6
MaK							L80MC	800	2592	4 - 12	1750 - 3640	70 - 93	11.5 - 18	2000CR	135	156	8 - 10	90 - 112	2250 - 2450	21.5 - 24.6
M20	200	300	6 - 9	170 - 190	900 - 1000	24.1 - 24.2	S80MC	800	3056	4 - 9	1740 - 3640	59 - 79	11.5 - 18	SERIES 60, 12.7L130	160	6	6	46.6 - 87	1800	14.6 - 21.4
M25	255	400	6 - 9	290 - 308.3	720 - 750	23.5 - 24.5	S80MC/ME-C	800	3200	6 - 8	1860 - 3870	57 - 76	12.2 - 19	SERIES 60, 14L133	168	6	6	46.6 - 102.5	1800	13.3 - 22.9
M32C L	320	480	6 - 9	480	600	24.9	K90MC/ME-C	900	2300	6 - 12	3100 - 4560	89 - 104	14.4 - 18	396	165	185	8 - 16	80 - 186.7	1600 - 2100	15.2 - 23.1
M32C V	320	420	12 - 16	480 - 500	720 - 750	23.7	K90MC ME	900	2550	4 - 12	2200 - 4570	71 - 94	11.5 - 18	4000	165	190	8 - 16	105 - 170	1700 - 2100	18.2 - 23.9
M43	430	610	6 - 18	900	500 - 514	23.7 - 24.4	L90MC/ME-C	900	2916	4 - 12	2070 - 4310	62 - 83	12.2 - 19	595	190	210	12 - 16	190 - 210	1600 - 1800	23.9 - 30.2
Makita							S90MC/ME-C	900	3188	6 - 9	3188 - 4890	61 - 76	15.2 - 19.1	1163	230	280	12 - 20	184 - 370	1200 - 1300	17.2 - 29.3
M30M	300	480	6	183.9	375	17.4	K98MC/ME-C	980	2400	6 - 18	4130 - 5720	94 - 104	14.6 - 18.2	8000	265	315	16 - 20	410 - 450	1150 - 1200	24.6 - 27
L30M	300	600	6	223.8 - 248.7	300 - 330	21.1 - 21	K98MC/ME	980	2660	6 - 18	4090 - 5720	84 - 104	14.6 - 18.2	Niigata Engineering Co.						
M31M	310	550	6	223.8 - 248.7	320 - 355	20.2 - 20	K10BME-C	1080	2660	6 - 14	5340 - 6950	90 - 94	14.6 - 18.2	NSAK	132.9	160	12 - 16	40.4 - 44.1	1950 - 2000	11.2 - 11.9
L31M	310	600	6	223.8 - 248.7	290 - 320	20.4 - 20.3	21-31	210	310	6 - 9	215	1000	24	NSF	132.9	160	6	51.3 - 61.3	2100 - 2200	13.2 - 15.1
M32M	320	550	6	223.8 - 248.7	315 - 350	19.3 - 20.2	23/30A/AE	225	300	6 - 12	133.3 - 160	800 - 900	16.8 - 17.9	NSE	150	165	6	67.3 - 76	1950 - 2100	14.2 - 14.9
M33M	330	600	6	248.7 - 286	290 - 330	20 - 20	27/38	270	380	6 - 9	340	800	23.4	NSD	150	210	6	79.7 - 88.2	1450 - 1500	17.3 - 19
LS33L	330	640	6	186.5 - 245.2	250 - 290	16.3 - 18.5	28/32A	280	320	6 - 16	245	775	23.5	NSDL	160	235	6	91.8 - 101.7	1400 - 1450	16.7 - 17.8
LS35L	350	680	6	211.4 - 282	245 - 275	15.8 - 18.8	32/40	320	400	6 - 18	480	750	23.9	MG17	165	215	6	92 - 101	1650 - 1700	34.3 - 36.6
LS38L	380	740	6	261.1 - 343.2	230 - 255	16.2 - 19.2	40/50	400	500	12 - 20	750	600	23.9	16EX	165	185	8 - 16	125 - 139.2	1950 - 2000	19.4 - 21.1
LS42L	420	840	6	317.1 - 416.8	205 - 227	15.9 - 18.9	40/54	400	540	6 - 9	700 - 720	500 - 550	23.2 - 24.8	18CX	180	240	6	79.0	950	16.3
MAN Nutzfahrzeuge AG							48/60	480	600	6 - 18	1050	500 - 514	22.6 - 23.2	MG19	190	260	6	122.5	1000	19.9
D28	128	142	6 - 12	31.6 - 91.9	1800 - 2300	10.7 - 26.2	48/60B	480	600	6 - 18	1200	500 - 514	25.8 - 26.5	20CX	200	260	6	98.0	900	16
V8-900 CR	128	142	8	82.8	2300	23.6	58/64	580	640	6 - 9	1390	428	23	20FX	205	220	12 - 16	250 - 270.8	1650 - 1695	25 - 26.4
2876	128	166	6	77.2 - 89.5	2100 - 2300	17.1 - 22.8	MAN B&W Diesel LTD							22X	220	250	6 - 12	123 - 232	1000 - 1100	14.1 - 24.4
MAN B&W AG							RK215	215	275	6 - 18	130 - 197.5	720 - 1000	21.6 - 23.9	MG22	220	280	6 - 18	171.5 - 220.7	1000	19.3 - 24.4
S26MC	260	980	4 - 12	275 - 400	212 - 250	14.8 - 18.5	RK270	270	305	8 - 20	246.7 - 377.5	720 - 1032	21.5 - 25.1	22LX	220	290	6	135.0	900	16.3
L35MC	350	1050	4 - 12	440 - 650	178 - 210	14.7 - 18.4	RK280	280	330	12 - 20	450	1000	26.6	25CX	250	320	6	171.0	750	17.4
S35MC	350	1400	4 - 12	475 - 700	145 - 170	14.7 - 18.4	VP185	185	196	12 - 18	166.7 - 222.2	1770 - 1950	21.1 - 25.9	MG25	250	350	6	220.5	750	20.5
L42MC	420	1360	4 - 12	480 - 995	132 - 176	11.5 - 18	Mitsubishi Heavy Industries Ltd.							26FX	260	275	12 - 18	312.6 - 378.8	1185 - 1290	21.7 - 24.1
S42MC	420	1764	4 - 12	695 - 1025	115 - 136	14.8 - 18.5	UE33LSII	330	1050	4 - 8	306.7 - 567.5	162 - 215	12.5 - 17.3	MG26	260	275	6 - 18	230.1 - 245.2	750 - 1000	18.9 - 21.1
S46MC C	460	1932	4 - 8	880 - 1310	108 - 129	15.2 - 19	UE37LA	370	880	4 - 8	280 - 520	158 - 210	11.4 - 15.7	M26	260	460	6	104.2 - 171.5	400 - 440	12.8 - 19.1
L50MC	500	1620	4 - 8	640 - 1330	111 - 148	10.9 - 17	UE37LSII	370	1290	5 - 8	420 - 772	158 - 210	12.5 - 17.3	28BX	280	320	6 - 16	221.0	720	18.7
S50MC	500	1910	4 - 8	690 - 1430	95 - 127	11.5 - 18	UE43LSII	430	1500	4 - 8	570 - 1050	120 - 160	12.5 - 18.1	MG28	280	370	8 - 18	294.1 - 367.8	750	20.6 - 24.4
S50MC/ME-C	500	2000	4 - 8	760 - 1580	95 - 127	12.2 - 19	UE45LA	450	1350	4 - 8	477.5 - 889	119 - 158	11.5 - 15.7	M28	280	480	6	171.5 - 220.5	390 - 450	17.8 - 19.9
L60MC	600	1944	4 - 8	920 - 1920	92 - 123	10.9 - 17	UE50LSII	500	1950	4 - 8	144.5 - 1445.1	95 - 127	12.5 - 17.3	M30	300	530	6	196.0 - 290.0	290 - 360	17.4 - 19.1
L60MC/ME-C	600	2022	4 - 8	1520 - 2230	105 - 123	15.2 - 19	UE52LA	520	1600	4 - 8	640 - 1180	100 - 133	11.3 - 15.7	31FZ	310	380	6 - 8	275.0	600	19.2
S60MC/ME	600	2292	4 - 8	980 - 2040	79 - 105	11.5 - 18	UE52LS	520	1850	4 - 8	720 - 1320	90 - 120	12.2 - 16.9	M31	310	530	6	220.5	290 - 360	18.4 - 20.1
S60MC/ME-C	600	2400	4 - 8	1090 - 2260	79 - 105	12.2 - 19	UE52LSE	520	2000	4 - 12	930 - 1700	95 - 127	13.8 - 19.4	32FX	320	340	12 - 16	440.9 - 485.4	920 - 950	21 - 22.4
MAN B&W Diesel LTD							UE60LA	600	1900	4 - 8	840 - 1550	83 - 110	11.3 - 15.7	MG32	320	360	8 - 18	367.7	650 - 750	20.1 - 20.3
RK215	215	275	6 - 18	130 - 197.5	720 - 1000	21.6 - 23.9	UE60LS	600	2200	4 - 8	950 - 1770	75 - 100	12.2 - 17.1	MG34	340	450	6 - 18	441.2 - 555	600	21.6 - 24.4
RK270	270	305	8 - 20	246.7 - 377.5	720 - 1032	21.5 - 25.1	UE60LSII	600	2300	4 - 8	1075 - 1986	79 - 105	12.5 - 17.3	M34	340	620	6	269.7 - 306.3	240 - 310	18.5 - 21.3
RK280	280	330	12 - 20	450	1000	26.6	UE75LSII	750	2800	4 - 9	1595 - 2940	63 - 84	12.5 - 17.0	M37	370	720	6	318.7	240	20.6
VP185	185	196	12 - 18	166.7 - 222.2	1770 - 1950	21.1 - 25.9	UE85LSC	850	2360	5 - 12	2115 - 3900	76 - 102	12.5 - 17.1	M38	380	700	6	343.2 - 367.8	240 - 300	18.5 - 21.6

AquaMarine Engineering Company

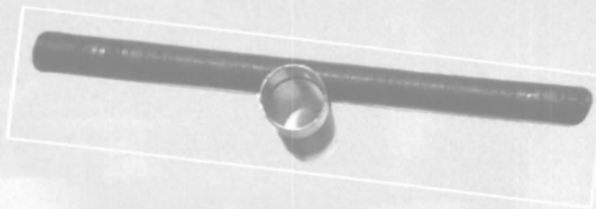
Aquamarine Engineering Company has concentrated on the use of Titanium in these shell-and-tube heat exchangers. The result is a design that effectively eliminates *Galvanic Corrosion*. We can equip your machinery with Titanium Heat Exchangers designed as "Drop-in" units for engines that include EMD, Caterpillar, Yanmar, Cummins and Detroit Diesel.



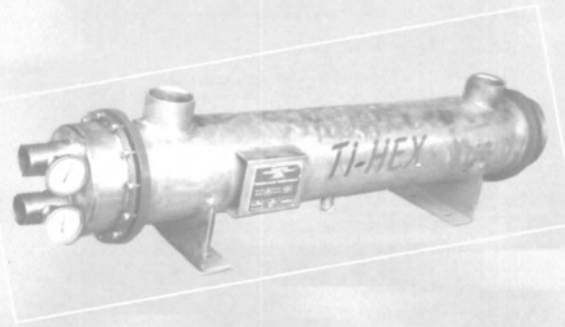
Ti-Hex JACKET WATER COOLER ON CATERPILLAR 3508 MAIN GENERATOR



FV Otoshiro Maru_750 ton bonita pole boat freezes fish with "Blue Ice" ammonia chiller using Lo-fin titanium tubes.



Lo-fin TITANIUM TUBES WITH 38% INCREASED SURFACE AREA PER LINEAL FOOT, PLUS THE UNIQUE INTERNAL PROFILE THAT INCREASES BOTH FLUID TURBULENCE AND HEAT TRANSFER



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Contact:
 Aquamarine Engineering Company
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 San Diego, California 92138
 Tele/Fax: 619-498-3899
 Email: Shimizu717@aol.com

Circle 266 on Reader Service Card

Model	Bore	Stroke	Cyl#	kW/cyl	RPM	BMEP	Model	Bore	Stroke	Cyl#	kW/cyl	RPM	BMEP	Model	Bore	Stroke	Cyl#	kW/cyl	RPM	BMEP				
40CX	400	520	6-8	405.0	450	16.5	PC2.6B	400	500	12-20	750.0	600	23.9	DI2	131	150	6	75.3-85.8	2100	2300	20.6	22.1		
MG40	400	520	6-8	441.3	450	18	PC4.2B	570	660	10-20	1325.0	430	21.9	D25	170	180	6	64.2-86.7	1200	1650	13.5	16.9		
41FX	410	440	12-16	750-825	700-720	22.1	23.7	PC40	570	750	5-10	1325.0	375	22.1	D30	170	220	6	64-116.8	1000	2000	13.1	15.4	
MG41	410	560	6-18	661.8	500	21.5	SKL Diesel						D34	150	160	12	51.6-58.4	1600	2000	11.6	13.7			
M42	420	820	6	429.0	230	19.7	18/16	160	180	6-8	90-108.8	1200-1800	16.6-20	D49	170	180	12-16	55-86.7	1600	1650	10.1	15.4		
MG46	460	600	6-16	823.8	450	22	26/20	200	260	6-8	88.3-110.4	1000-1100	13-16.2	D65A MT	170	180	16	78.1-86.3	1600	1650	14.3	15.3		
Scania						29/24	240	290	6-8	260	1000	23.8	Wartsila Corporation											
DI 12	127	154	6	51-83.9	1800	2300	17.4	22.7	48	320	480	6-8	121.3-139.7	428-428	8.8-10.1	200	200	240	12-18	175-200	1200	1500	21.2	23.2
DI 14	127	140	8	44.5-68.9	1800	2200	14.3	21.2	Sulzer						20	200	280	4-9	165-180	1000	22.5	24.5		
DI 16M	127	154	8	46-73.6	1800-2100	15.7	21.5	RTA48T	480	2000	5-8	820-1360	99	124	11-18.2	26	260	320	6-18	325.0	1000	23		
Seatek						RTA48TB	480	2000	5-8	1020-1455	102	127	13.3-19	26X	260	320	12-18	360-400	1000	25.4	28.2			
10.3 ENDURANCE127	135	6	116.3	3200	25.5	RTA/RT-flex50	500	2050	5-8	1130-1620	99	124	13.6-19.6	32	320	400	6-18	460.0	750	22.9				
10.3 OFFSHORE127	135	6	134.8	3350	28.2	RTA52U	520	1800	4-8	860-1560	98	135	10-18.1	38	380	475	6-18	660.0	600	24.5				
6.4V.10D B1	127	135	6	95.5	3100	21.6	RTA52UB	520	1800	5-8	1120-1600	110	137	12.8-18.3	38B	380	475	6-18	725.0	600	27			
6.4V.10D B2	127	135	6	95.5	3100	21.6	RTA58T	580	2416	5-8	1200-2000	82	103	10.9-18.3	46	460	580	6-18	1050.0	514	25.4			
6.4V.10.3 TWIN TURBO RACING	127	135	6	127	135	6	RTA/RT-flex58TB580	2416	5-8	1490-2125	84	105	13.3-19	64	640	900	5-18	1940-2010	333-426	18.9-25				
147.1	3250	31.7					RTA/RT-flex60C600	2250	5-8	1650-2360	91	114	13.6-19.5	Yanmar Diesel										
800 PLUS	127	135	6	100.5	3100	22.7	RTA62U	620	2150	5-8	1165-2220	82	113	10-18.2	SY	127	154	6-8	82.8-88.3	2300	22.1	23.6		
NAVY A1	127	135	6	80.8	3100	18.3	RTA62UB	620	2150	5-8	1600-2285	92	115	12.9-18.4	K	135	160	6	64.9	2100	16.2			
NAVY A2	127	135	6	80.8	3100	18.3	RTA/RT-flex68TB680	2720	5-8	2150-3070	76	95	13.7-19.6	LA	148	165	6-12	51.3-74.6	1800	1900	12	16.6		
SEMT Pielstick						RTA72U	720	2500	5-8	1640-2990	70	97	10-18.3	L	150	165	6-16	67.4-83.4	1650	1950	14.9	17.6		
PA4-185	185	210	6-18	123.3	1500	17.5	RTA72UB	720	2500	5-8	2155-3080	79-99	12.8-18.3	N165	165	232	6	98.0	1400	16.9				
PA4-200	200	210	8-16	165.6	1500	20.1	RTA84C	840	2400	6-12	2840-4050	82-102	12.6-17.9	UAI	200	240	6-12	102.0	1000	16.2				
PA4-200VG	200	210	8-18	141.0	1500	17.1	RTA84TB	840	3150	5-9	2130-3880	54-74	9.9-18	T220	220	280	6	135.0	900	16.9				
PA5-255	255	270	4-18	220.0	1000	19.1	RTA/RT-flex84TD840	3150	5-9	2940-4200	61-76	13.3-19	GL	240	290	6-12	147.0	750	17.9					
PA6	280	290	6-18	325	1050	20.8	RTA/RT-flex96C960	2500	6-14	4000-5720	92-102	13-18.6	6G250L	250	290	6	162.0	750	18.2					
PA6STC	280	290	12-16	323.3	1050	20.7	ZA40S	400	560	6-18	750-750	510-510	25.1-25.1	6T260L	260	330	6	184.0	750	16.8				
PA6B	280	330	12-20	405	1050	22.8	Volvo Penta						N260	260	380	6	196.2-245.2	1750	6.7	8.8				
PA6BSTC	280	330	12-20	405	1050	22.8	TAMD 71B	104.7	130	6	46.7	2600	19.2	ZL	280	340	6-12	221.0	750	16.9				
PA6CL	280	350	6-18	294.0	750	21.8	TAMD 165 P/A/C144	165	6	59.1-94.3	1800-2100	15.5-20.1	N280	280	380	6-8	239-306.5	1720	7.1	9.1				

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Höegh Fleet Assessed \$3.5M Waste Dumping Fine

Höegh Fleet Services A/S was sentenced to pay a \$3.5 million fine for seven felony charges relating to the falsification of records concealing the intentional dumping of waste oil into the ocean. Previously, on September 25, 2003, **Vincent Genovana**, an engineering officer on the M/V Höegh Minerva, pleaded guilty to falsifying documents

and covering up evidence in order to obstruct or influence a U.S. Coast Guard investigation.

In addition to the fine, U.S. District Court Judge **Ronald B. Leighton** ordered Höegh Fleet Services A/S to develop and implement a comprehensive environmental compliance plan for its fleet of 38 vessels that call on U.S.

ports, and serve four years on probation. A significant part of the criminal fine, \$1.6 million, will be used to fund environmental projects that benefit, preserve and restore ecosystems adjoining the coastlines of Washington and California.

The illegal operation came to light via a crew member aboard the M/V Höegh Minerva who blew the whistle, leading

to the discovery of the bypass pipe by state and federal inspectors. Judge Leighton granted the U.S.' request that the crew member receive a \$300,000 whistleblower award.

M/V Höegh Minerva possessed equipment to properly handle its waste oil, including an oil water separator to process oily water that collects in the lowermost compartments of the ship. According to the plea agreement and other court records: Genovana directed another crew member on board Höegh Minerva to fabricate a bypass pipe that was fitted into the existing vessel piping system for the oil water separator to allow crew members to pump inadequately treated oil contaminated waste water directly overboard into the ocean. Crew members referred to the pipe as the "magic pipe." The magic pipe was initially installed in June 2003 while the vessel sailed between Canada and Asia. It remained installed for several days at a time, allowing crew members to bypass the ship's pollution prevention equipment. None of the discharges were recorded in the Oil Record Book as required by international and U.S. law. Instead, crew members knowingly made false and fraudulent entries and omissions in the Oil Record Book in an effort to conceal the illegal discharges from U.S. Coast Guard inspectors.

The magic pipe was removed several days before Höegh Minerva arrived at the Port of Los Angeles on September 2, 2003. Following its removal, crew members painted the fittings where the magic pipe had been installed in an effort to conceal the prior use of the fittings. U.S. Coast Guard officials boarded the vessel at the Port of Los Angeles and, several days later, in Richmond, Calif. At both ports, ship officers failed to inform Coast Guard officials of the illegal dumping. Moreover, in Richmond, crew members presented Coast Guard inspectors with the falsified Oil Record Book. On September 11, 2003, the falsified Oil Record Book was again presented to U.S. Coast Guard inspectors at the Port of Vancouver, Wash. The illegal dumping onboard the ship came to light after a whistle-blower on board the ship secretly passed a note to Coast Guard inspectors describing the illegal activity. An investigation in Vancouver prompted by the whistle-blower note led to the discovery of the magic pipe.

Genovana cooperated with the government. As a result, he was sentenced in U.S. District Court in Tacoma to a 30-day term in custody, followed by two years of supervised release.

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Call For Papers

Rough drafts due for final review and preliminary acceptance

December 31, 2004 for SMTC&E

February 10, 2005 for Ship Production Symposium

Papers due for final review and acceptance

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Submit SMTC&E draft papers to Deborah Sirotiak at dsirotiak@sname.org

Submit SPS draft papers to Dolly Pelto at pelto@aticorp.org



Author instructions can be found at www.sname.org

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Maritime Security

Compliance • 2004

The Maritime Security ScoreCard

ISPS Code implementation status on June 25, 2004 (Source: IMO)

Ships

Governments (45 responses)

Number of ships liable to the Code	22479
Ship Security Plans (SSP) submitted	18778
International Ship Security Certificates (ISSC) issued	9292
Score:	41.3%

IACS

Number of ships liable to the Code	15631
Ship Security Plans (SSP) submitted	12457
International Ship Security Certificates (ISSC) issued	9502
Score:	60.8%

INTERCARGO

Number of ships liable to the Code	916
Ship Security Plans (SSP) submitted	769
International Ship Security Certificates (ISSC) issued	513
Score:	56%

INTERTANKO

Number of ships liable to the Code	2175
Ship Security Plans (SSP) submitted	2175
International Ship Security Certificates (ISSC) issued	1547
Score:	71%

IPTA

Number of ships liable to the Code	429
Ship Security Plans (SSP) submitted	420
International Ship Security Certificates (ISSC) issued	305
Score:	71.1%

ICCL

Number of ships liable to the Code	117
Ship Security Plans (SSP) submitted	117
International Ship Security Certificates (ISSC) issued	104
Score:	88.9%

BIMCO

Number of ships liable to the Code	2622
Ship Security Plans (SSP) submitted	2189
International Ship Security Certificates (ISSC) issued	488
Score:	18.6%

Port Facilities

Governments (66 responses)

Number of port facilities	7032
Port Facility Security Plans (PFSP) submitted	2901
Port Facility Security Plans (PFSP) approved	2243
Score:	31.9%

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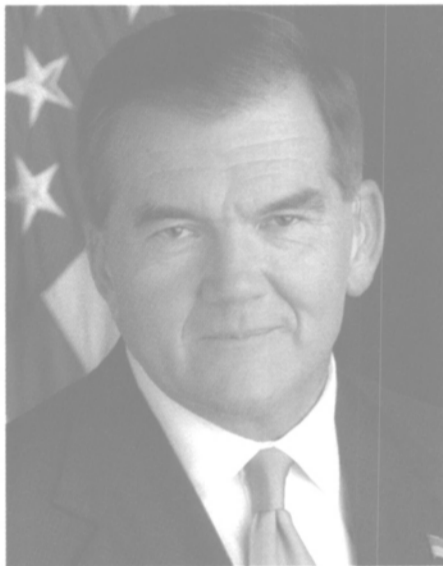
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After all the celebrations of the new year, Coast Guard Petty Officer 1st Class Scott Pressimone, 28, of Rochester, N.Y. stands watch on board the Coast Guard Cutter Penebscot Bay as it remains watching over the New York Harbor Jan. 1, 2004. USCG Photo PA2 Mike Hvozda

Secure Seas, Open Ports

Keeping our waters safe, secure and open for business



U.S. Homeland Security Secretary **Tom Ridge**

As new international and domestic regulations regarding shipping security enter force, the focus is not simply on security, but also on maintaining a healthy flow of commerce to keep the U.S. and world economy humming.

U.S. Homeland Security Secretary **Tom Ridge** recently announced the implementation of new security measures designed to build upon the layers of security that are already in place at the nation's ports. The new measures, required by the Maritime Transportation Security Act, add additional security protections to every port in the United States. Port and vessel protection continues to remain one of the Department of Homeland Security's highest priorities. The oceans and ports of the world are vital to the economic livelihood of the United States and countries throughout the world. Consider:

- **Over 95 percent of the nation's overseas cargo moves through U.S. ports.**
- **There are 76 million recreational boaters in the U.S. and they spent more than \$30.3 billion on boats and accessories in 2003.**
- **Worldwide, 5.8 billion tons of goods were traded by sea in 2001. This accounts for over 80 percent of world trade by volume.**
- **Over 318 billion gallons of petroleum products are shipped in vessels on U.S. waterways in a year.**
- **Cruise Ships calling at U.S. ports carry over 6 million passengers per year.**

New Security Measures

In addition to the international requirements of the International Ship and Port

While new maritime security measures promise to be enforced tightly, U.S. Homeland Security Secretary **Tom Ridge** (pictured left) promises a concerted effort to ensure that the commerce keeps flowing. Pictured is the U.S. Coast Guard Cutter *Brant* escorts the military outload ship *Cape Rise* into Corpus Christi, January 30. (USCG photo by CW02 Robert D. Wyman)

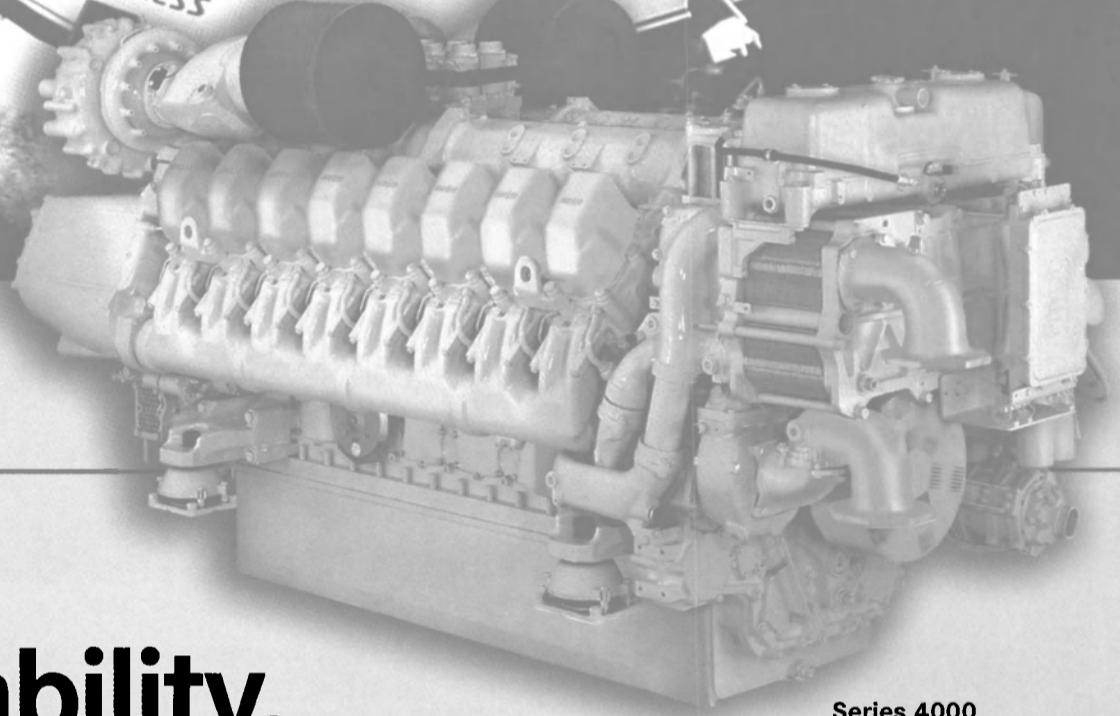
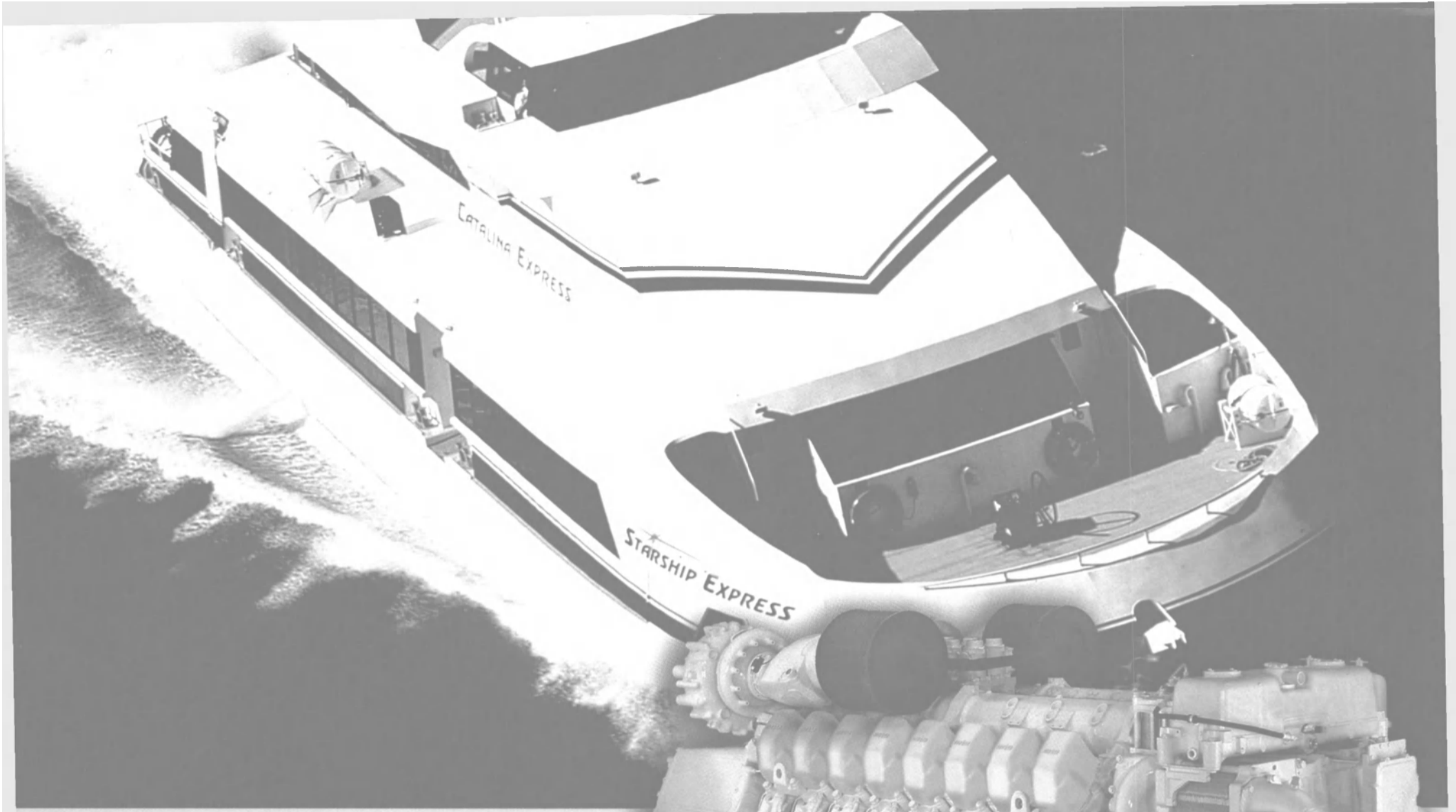


Security Code, the U.S. has required vessels and port facilities around the country to take additional security measures by July 1, as part of the domestic Maritime Transportation Security Act which establishes a new, robust baseline of security for our nation's ports. Ports around the country are now on target to meet the July 1 deadline to

implement additional port security measures.

Security Assessments and Plans: Port facilities and vessels across the nation were required to submit a security assessment and a security plan to the United States Coast Guard, now part of the Department of

Homeland Security. The submitted security assessments identified the aspects of each port facility and vessel that were deemed security vulnerabilities. The accompanying security plan outlined specific measures that would be taken by each port to address those vulnerabilities. Some 9500 vessels and 3500 facilities submitted both a security



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Maritime Security Compliance • 2004

assessment and a security plan earlier this year. In addition, the Coast Guard, examined the vulnerabilities of the port complexes as a whole and, working in conjunction with the local stakeholders, developed security plans that detail how the combined resources of an area will be used to deter, prevent and respond to terror threats. The Coast Guard analyzed each plan to ensure that it sufficiently and consistently addressed the security needs of the individual facility, port and vessel.

Implementation: The Coast Guard is overseeing the ongoing implementation of these security measures across the country. Each plan is different and uniquely tailored to the individual port, facility and vessel. Some of the specific security measures currently being implemented include increased iden-

tification checks on crew members and visitors to the ports; additional canine detection teams; expanded baggage and passenger screening efforts; strategically placed perimeter fencing equipped with newly installed surveillance cameras; targeted restricted access to sensitive areas of the port; x-ray machines on all large cruise ships; additional employee training procedures; increased security patrols; and implementation of a robust certification program to ensure foreign flagged vessels docking in U.S. ports have met the international security requirements, which the United States originally proposed to the international community in November 2001.

Continued Improvement: The U.S. Coast Guard will conduct assessments of the

nation's ports to determine which vulnerabilities still exist and where. These assessments consist of teams of analysts who craft possible terrorist plots against specific targets and then analyze how such targets would fare under those circumstances. Additional training and port security related exercises will also be part of ongoing port security effort. The U.S. Coast Guard has also implemented a verification program to ensure that all ports and vessels maintain their security measures. An Overview of Our Strategy

Layers of Security Systems: By taking a layered approach to security, the DHS has utilized the expertise of its bureaus - the U.S. Coast Guard and Customs and Border Protection - the private sector and state and

local authorities, to create a system of different security measures that ensure there are protective measures in place from one end of a sea based journey to the other. The layered security measures are designed to protect the three phases of the journey: overseas, in transit, and on U.S. shores.

Joint Effort. Securing our ports and waterways is a team effort - everyone, from local governments and private citizens to the international community play an important role in ensuring that our waterways remain open for business. The U.S. government does not have the resources to secure the ports and waterways alone. DHS must coordinate its efforts with the nation's trading partners, enlist the expertise of maritime industry and local government agencies, and use the eyes and ears of our citizens, who are the true regional experts, to notice when something is amiss. The goal is to find the appropriate balance between security and freedom - between inspecting every container and keeping trade moving - that is the measure of success.

Overseas

24-hr Advance Manifest Container Security Initiative Customs-Trade Partnership Against Terrorism ISPS Code International Port Security Program Operation Safe Commerce

In Transit

Smart Box Initiative Ship Security Alert System Automated Targeting System 96-Hour Advance Notice of Arrival

On U.S. Shores

National Targeting Center Security Boardings Automatic Identification System Security Committees Port Security Grants Rad., Chem., Bio. Screening Operation Drydock America's Waterway Watch

Intelligence Fusion Centers Operation Port Shield MTSA Port Security Assessment Program NII Technology Maritime Safety and Security Teams Transportation Workers Identity Card

Implementing the Strategy

Overseas

24-Hour Advanced Manifest Rule - Awareness All sea carriers with the exception of bulk carriers and approved break bulk cargo are required to provide proper cargo descriptions and valid consignee addresses 24 hours before cargo is loaded at the foreign port for shipment to the United States through the Sea Automated Manifest System. Failure to meet the 24-hour Advanced Manifest Rule results in a "do not load" message and other penalties. Through this program, administered by DHS's Customs and Border Protection (CBP), the department has greater awareness of what is being loaded onto ships bound for the United States and the advance information enables DHS to evaluate the terrorist risk from sea containers.

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Fax copies of ISSCs

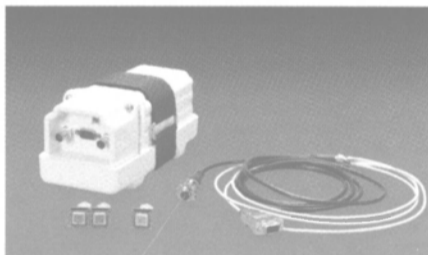
U.S. Coast Guard Headquarters advised that while it expects all arriving SOLAS ships to have original International Ship Security Certificates (ISSCs), it recognizes that in some cases the document may have been issued but has not yet arrived on board. Therefore, its Port State Control (PSC) officers will accept a facsimile copy of an ISSC in lieu of an original ISSC for a short period until the original arrives on board the ship so long as the document appears regular on its face and there is evidence that it was received from the appropriate flag administration or an authorized recognized security organization (RSO). In some instances, where the facsimile copy does not bear all the indicia of authenticity, the PSC officer may issue an administrative deficiency. This means that the ship is allowed to continue operations, but is expected to correct the deficiency in the near future. Plainly inadequate copies of ISSCs will be dealt with appropriately. Statements of Compliance and similar precursor documents will not be accepted as substitutes for ISSCs.

GE Honored for Security Products

At the Automated Best Value System award ceremony the Defense Supply Center Richmond honored GE Ion Track Inc., part of GE Infrastructure Security, as one of the government's best suppliers. Navy Rear Adm. **Mike Lyden**, commander of the supply center, presented the award. GE supplies its desktop Itemiser and handheld VaporTracer explosives trace detection and identification systems to the Department of Defense and other government agencies to help secure American military and government facilities worldwide.

Circle 41 on Reader Service Card

EMS Launches SSAS



EMS Satcom at Posidonia 2004 launched its Ship Security Alert System (SSAS). With an independent power supply and covert activation points, the EMS Satcom SSAS will automatically send an alert via the COSPAS-SARSAT network. This alert is then routed to the appropriate authority. Features of the EMS SSAS unit include an independent power supply with a seven-year, long-life battery, a simple interface for external GPS input, and low weight (1.27 kg). It will also have a significantly lower price than comparable alternatives. EMS has provided ground equipment and management systems for use with the COSPAS-SARSAT satellite system since its launch in 1981. The system has been credited with saving more than 15,000 lives by using spacecraft and ground facilities to detect and locate signals from distress beacons.

Neil Mackay, senior vice president and general manager of EMS's SATCOM Division, said "The EMS SSAS is a simple, standalone, reliable, low-cost alternative to existing systems. We are very proud to extend our search-and-rescue business into the security market."

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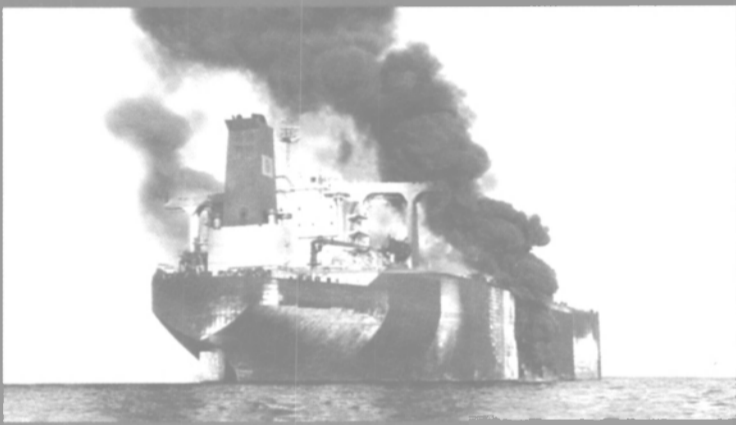
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Maritime Security Compliance • 2004

Awareness & Prevention Under the CSI program, the screening of containers that pose a risk for terrorism is accomplished by teams of CBP officials deployed to work in concert with their host nation counterparts. Nineteen of the top twenty ports have agreed to join CSI and are at various stages of implementation. These twenty ports account for approximately 66 percent of sea containers shipped to the United States. CSI operational seaports include: Rotterdam, LeHavre, Bremerhaven, Hamburg, Antwerp, Singapore, Yokohama, Tokyo, Hong Kong, Goteborg, Felixstowe, Genoa, La Spezia, Busan, Durban, Vancouver, Montreal, Halifax and Port Klang. Through CSI, potential suspect containers are targeted and identified before being loaded onto vessels.

Customs-Trade Partnership Against Terrorism (C-TPAT): Awareness & Prevention Through C-TPAT, thousands of importers, carriers, brokers, forwarders, ports and terminals and foreign manufacturers have taken the necessary steps to secure their supply chains. Under the C-TPAT initiative, business participants providing verifiable security information are eligible for special benefits. The security enhancements put in place by C-TPAT participant allow DHS to devote more resources to high-risk shipments.

International Ship and Port Facility Security (ISPS) Code: Awareness & Prevention By July 1, 2004, countries around the world will have implemented the first multilateral ship and port security standard ever created. The ISPS Code requires vessels and port facilities to conduct security assessments, develop security plans and hire security officers. By establishing a standard for security, the world has increased its ability to prevent maritime related attacks by making ports around the world more aware of unusual or suspicious activity.

International Port Security Program: Awareness & Prevention Under this effort, the U.S. Coast Guard and the host nations will work jointly to evaluate the countries' overall compliance with the ISPS Code. The Coast Guard will use the information gained from these visits to improve the United State's own security practices and to determine if additional security precautions will be required for vessels arriving in the United States from other countries.

Operation Safe Commerce (OSC): Awareness & Prevention This pilot program analyzes security in the commercial supply chain and tests solutions to close security gaps. The technologies tested through the program will enhance maritime cargo security, protect the global supply chain, and facilitate the flow of commerce. DHS has awarded \$58 million in grants to the private sector since its inception and will award another \$17 million this summer to private sector companies.

In Transit Smart Box Initiative: Prevention One core

element of CSI is using smarter, "tamper evident" containers that will better secure containerized shipping. Designed to be "tamper evident," the Smart Box couples an internationally approved mechanical seal affixed to an alternate location on the container door with an electronic container security device designed to deter and detect tampering of the container door. If someone attempts to open the cargo door after it has been sealed, the Smart Box device on the door would reflect that there had been an attempted intrusion into the container. Together with the results of technology testing, Operation Safe Commerce, DHS will have valuable information to assist in developing performance standards for container security.

Ship Security Alert System: Response Like a silent alarm in a bank, a SSAS allows a vessel operator to send a covert alert to shore for incidents involving acts of violence, (such as piracy or terrorism), indicating the security of the ship is under threat or has been compromised. The International Ship and Port Facility Security Code requires new passenger and cargo ships of at least 500 gross tons to install this equipment by July 1, 2004. Existing passenger vessels and cargo vessels must have the equipment installed prior to the first radio survey after July 1, 2004, or by July 1, 2006. Other types of vessels may carry and use SSAS voluntarily.

Automated Targeting System (ATS): Awareness CBP's ATS serves as the premier tool for performing transactional risk assessments and evaluating potential national security risks posed by cargo and passengers arriving by sea, air, truck, and rail. Using pre-arrival information and input from the intelligence community, this rules-based system identifies high-risk targets before they arrive in the United States.

96-Hour Advance Notice of Arrival: Awareness & Prevention Ships must notify the Coast Guard 96 hours before arriving in a U.S. port and provide detailed information on the crew, passenger, cargo and voyage history. This information is analyzed using databases and intelligence information, including reviewing previous security problems with the vessel or illegal activity on the part of the crew. Part of this analysis will also account for the security environment in previous ports of call. By obtaining this information well in-advance of a vessels arrival, the U.S. Coast Guard is able to make determinations about which vessels require additional attention, including security precautions such as an at-sea boarding or armed escort during transit to and from port.

In U.S. Waters & On U.S. Shores

National Targeting Center (NTC): Prevention & Response The priority mission of CBP's NTC is to provide tactical targeting and analytical research support for CBP anti-terrorism efforts. Experts in pas-



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senger and cargo targeting at the NTC operate around the clock using tools like the Automated Targeting System (ATS) to identify tactical targets and support intra-departmental and inter-agency anti-terrorist operations. The NTC also supports operations in the field including the Container Security Initiative (CSI) personnel stationed at critical foreign ports throughout the world.

Maritime Intelligence Fusion Centers: Prevention Located in Norfolk, Va., and Alameda, Ca., these units compile and synthesize intelligence products from the federal, state and local level dealing with maritime security. These intelligence products are then disseminated to homeland security professionals across the country responsible for securing our ports and waterways.

High Interest Vessels Boardings: Prevention Before they are allowed to enter port, all vessels are screened for the security risk they pose to the United States based on information about the vessel's cargo, size, voyage, security history and any intelligence information. Those identified as higher risk are targeted for offshore boardings to ensure potential security issues are addressed prior to entry into port. In addition, the Coast Guard randomly selects vessels for security boardings to ensure an element of unpre-

dictability and thus deterrence. Specially trained Coast Guard teams board the boats through traditional water based methods or via fast roping from helicopters.

Operation Port Shield: Prevention Operation Port Shield focuses on the implementation and enforcement of the new security measures implemented under the international requirements or MTSA between June 15 and December 31, 2004. Under this verification program, the Coast Guard will be boarding every vessel, at sea or at the dock, on its first visit to a U.S. port on or after July 1 to ensure that the vessel is compliant with U.S. security standards. These program officers will also visit foreign countries to evaluate antiterrorism measures in place at ports abroad.

Automatic Identification System: Awareness AIS is a type of vessel-tracking equipment that automatically sends detailed ship information to other ships and shore-based agencies, allowing for comprehensive, virtually instantaneous vessel tracking and monitoring, increasing security and safety in our shipping channels. Currently, most vessels required to use this technology are large vessels on international voyages. The Coast Guard is exploring possible ways to expand these requirements to other vessels and other


U.S. waters.

Area Maritime Security Committees: Awareness, Prevention & Response The Coast Guard has established committees in all the nation's ports to coordinate the activities of all port stakeholders, including other federal, local and state agencies, industry and the boating public. These groups are tasked with collaborating on plans to secure their ports so the resources of an area can be best used to deter, prevent and respond to terror threats.





Port Security Assessment Program: Awareness This program is aimed at increasing the information and best practices available to port officials across the country to help them make decisions about how to reduce the vulnerability of their ports. The Coast Guard is in the process of closely examining the key infrastructure in the nation's 55 most economically and strategically important ports for potential vulnerabilities. Those assessments will be completed by the end of the year. In addition to these assessments, the Coast Guard is creating a system to display key port information in an electronic geospatially referenced format to serve as a database that can be easily searched for national, regional and local information.




Port Security Grants: Awareness, Prevention & Response The Port Security Grant Program provides federal resources for projects to enhance facility and operational security for critical national seaports. Funds assist ports in analyzing vulnerabilities and then closing gaps in security through physical enhancements like access control gates, fencing, lighting and advanced communication and surveillance systems. The program also funds the implementation of security strategies to prevent and respond to terror threats. Over the past three years, \$516 million in grants have been allocated and another \$50 million are currently pending review.

Non-Intrusive Inspection Technology (NIIT): Prevention Non-Intrusive Inspection (NIIT) technologies allows U.S. Customs and Border Protection to screen a larger portion of the stream of commercial traffic in less time while facilitating legitimate trade. CBP officers use large-scale gamma ray and x-ray imaging systems to safely and efficiently screen conveyances for contraband, including weapons of mass destruction. These units can scan the interior of a full-size 40-foot container in under a minute. Inspectors also use personal radiation detectors to scan for signs of radioactive materials, as well as



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ACR Debuts GlobalWatchT UAIS



ACR Electronics introduced The GlobalWatchT UAIS, an Automatic Identification System (AIS) transponder designed for all Class A commercial vessels required to meet new stringent port security requirements. Designed to be lightweight and easy to integrate with a simple plug and play installation, ACR's GlobalWatchT UAIS is touted by the manufacturer as the world's most compact AIS transponder system, complete with an integrated alphanumeric keyboard and display. The GlobalWatchT UAIS is approved in the U.S. by the U.S. Coast Guard and the Federal Communications Commission and worldwide by Wheelmark (MED) and CCS (China Classification Society).

Circle 33 on Reader Service Card

Marlink Supports Security Solutions at Sea

Marlink will offer Inmarsat C, Mini-C, and a variety of Iridium satellite solutions to help ship owners meet the upcoming International Maritime Organization (IMO)-directed Ship Security Alert System (SSAS) communications requirements. These new satellite communications mandates are in response to growing maritime concerns over piracy and shipboard terrorist attacks. The IMO has defined a new set of communications requirements for ships at sea that are designed to improve security of ships and set to begin July 1, 2004.

The SSAS alert is a one-way, ship-to-shore alarm that originates aboard ship and is transmitted by an authorized communications provider to the competent authority as designated by the vessel's flag state. The flag state authority is then responsible for notifying the appropriate response agencies.

"Marlink wholeheartedly supports the IMO's industry-wide satellite communications initiative for mariners helping to improve the safety of lives at sea," said **Søren Einshøj**, managing director of Marlink. "Safety at Sea is a paramount focus for Marlink and to help ship owners and mariners comply with this new requirement, we will offer a variety of Inmarsat and Iridium SSAS solutions."

This new IMO SSAS directive requires certain vessel types to install a SSAS by July 1, 2004. Other types of cargo vessels and offshore facilities must comply by July 2006.

Circle 40 on Reader Service Card

Sensitive Security Information: New Rules

The Transportation Security Administration published an interim final rule that extends the protection, responsibility, and accountability for Sensitive Security Information (SSI) to all maritime security related documents effective on June 17, 2004.

Knowledge of the provisions in these regulations is important for all members involved with security plans or access to SSI material.

The rules impose new and immediate responsibilities on all PVA members who create, maintain

or use vessel and facility security plans. The rulemaking covers its applicability, definitions, description of sensitive security information (SSI), covered persons, restrictions on disclosure; need to know, marking/identifying SSI, consequences of unauthorized disclosure, and destruction of SSI material.

SSI, including vessel and facility plans, must be marked SENSITIVE SECURITY INFORMATION at the top of the front and back cover, any title page, and each page and have the following new wording for the SSI distribution limitation at the bottom "WARNING: This record contains Sensitive Security Information that is controlled under 49 CFR parts 15 and 1520. No part of this record may be disclosed to persons without a "need to know", as defined in 49 CFR parts 15 and 1520, except with the written permission of the Administrator of the Transportation Security Administration or the Secretary of Transportation. Unauthorized release may result in civil penalty or other action. For U.S. government agencies, public disclosure is governed by 5 USC 552 and 49 CFR parts 15 and 1520."

The entire rule making can be viewed as a .PDF file via the following web link: <http://www.regulations.gov/fredpdfs/04-11142.pdf>

Whittel Denounces Lack of Compliance

Robert Whittel

expressed his concern that, with only two weeks until the International Ship and Port Security (ISPS) code goes into effect, most U.S. ports and ships remained inadequately secure against potential terrorist attacks. Whittel, a Naval Reserve Officer and former American Maritime Officer, stressed that the security of American maritime facilities is one the most critical - yet overlooked - elements of U.S. homeland security. Along with his experience as an American Maritime Officer and as a graduate of the Merchant Marine Academy, Whittel also founded his own shipping business and reported directly to the CEO of one of the world's largest maritime fueling companies.

"I've served my country and the industry as an officer aboard a ship and understand the extent of destruction that terrorists could do if they gained access to one of our poorly secured ports," Whittel said.

DHS Appropriations Act, 2005

The Department of Homeland Security Appropriations Act, 2005 (H.R. 4567) has passed both the House of Representatives and the Senate and is being forwarded to the President for signature and enactment into law. Among other things, this bill provides the following: (1) for operations of Customs and Border Protection (CBP), \$4.6 billion; (2) for development of the Automated Commercial Environment (ACE), not less than \$321 million (with conditions); (3) for operations of Immigration and Customs Enforcement (ICE), \$2.37 billion; (4) for expenses related to maritime and land transportation security grants and services, \$65 million; (5) for expenses of the Coast Guard, \$5.17 billion; (6) for the USCG Integrated Deepwater Systems program, \$679 million (with conditions); and (7) for port security grants, \$125 million. (HK LAW).



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Port Captain USS Vessel Management Inc. Edison, NJ

USS Vessel Management Inc., a leader in the product and chemical tanker trade, has an immediate opening for a Port Captain at its office headquarters in Edison, NJ. This position is responsible for the effective and efficient administration of fleet deck department operations. Liaison with fleet Masters with regard to operational safety, flag state and port state regulatory requirements, pollution response, cargo operations, vetting inspections, manning and any operational matters affecting management of the vessel and compliance with company policy and procedures.

The duties and responsibilities include, but are not limited to, the following:

- * Attend vessels for cargo expediting, ship inspections, safety audits, and to discuss operational, safety and personnel issues with master.
- * Oversee vetting program for assigned vessels through monitoring approvals, scheduling renewals, preparing vessels and attending as Company Representative.
- * Conduct vessel incident investigations. Review root cause analysis and communicate lessons learned with fleet.
- * Review cargo orders/load plans and voyage orders to verify correct stowage, quantities, stress, and draft restrictions.
- * Perform cost and equipment analysis on proposed navigation, electronic and deck equipment acquisitions.
- * Provide technical information to customers and terminals regarding vessel characteristics and cargo loading capacities.

Candidates should possess of a valid USCG Unlimited Master License. A Bachelor of Science Degree - Marine Transportation or equivalent, and at least 5 years tanker experience sailing as a Deck Officer. Experience on chemical tankers is preferred. Must have excellent writing, communication and computer skills.

Ship Superintendent USS Vessel Management, Inc. Edison, NJ

USS Vessel Management, Inc. has an immediate opening for Ship Superintendent at its office headquarters in Edison, NJ. This position is directly responsible for the safe, efficient, economical and reliable operation of assigned vessels with particular focus on assuring continued performance of all onboard equipment and systems. Requires close liaison with vessel's senior officers, office staff members, ABS and USCG personnel, monitoring parts and material acquisitions and overseeing planned, as well as emergent, maintenance and repair activities including coordination of assistance provided by manufacturer and technical repair specialists.

The duties and responsibilities include, but are not limited to, the following:

- * Attends assigned vessels as required to have in-depth information of current material condition of vessel. Prepares Ship Visit report to document conditions observed. Reviews vessel reports to monitor operating condition and efficiency.
- * Reviews all vessel engineering logs, including, but not limited to, boiler water analyses, fresh water treatment, purging routines, megger and cathodic protection, to insure compliance with equipment guidelines.
- * Reviews all vessel maintenance and engine logs to insure that company policies and procedures are being followed in terms of equipment maintenance and inspections.
- * Inspects vessel planned maintenance programs and machinery histories. Makes recommendations for improvements in maintenance cycles; develops equipment change-out plans.
- * Monitors the vessel work requests in the SAFENET system. Evaluates requests for completion by most effective means on vessel or in shop, arranges vendors and material, confirms repair activity, monitors quality and cost, and finalizes the repair cost for accounting. On monthly basis reviews the open items for resolution and cost accrual.
- * Monitors that purchase requisitions are accurate and contain the information necessary to meet operational and quality criteria.
- * Prepares specifications for projects or dry-docking events. Coordinates the project or dry-docking, including the ordering of material, scheduling tech reps or specialists, sending specifications for quotation, evaluating bids, recommendation of vendors/dry-dock, on site management of project, maintains cost records and reports to management as directed, negotiates the final costs, and communicates to Operations Dept. vessel schedule as needed.
- * Maintains ongoing knowledge of current conditions of assigned vessels. Has ready file of pending work and keeps upper management notified of any work that may have schedule impact.
- * Assists in preparation of repair, project, and dry-dock budgets.
- * Provides technical consultation to vessel as required during routine or emergent repairs.
- * Coordinates regulatory inspections/surveys with ABS and USCG. Monitors existing OSR's or deficiencies and plans resolution in timely manner to minimize impact on schedule.

Candidates must have substantial engineering experience onboard vessels or shore-side. Candidates must possess of a valid USCG Marine Engineer's License (Steam or Motor). A Bachelor of Science Degree in Marine Engineering from Federal or State Maritime Academy and experience with ABS Safenet is preferred. Candidate must be willing to relocate to New Jersey area. This position requires 40% field and 60% office for drydocking years, and 30% field and 70% office for non-drydocking years.

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To learn more about USS Vessel Management, Inc.,
visit our website at <http://www.usshipllc.com>

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Maritime Security Compliance • 2004

special high-tech tools such as density meters and fiber-optic scopes to peer inside suspicious containers. Finally, if necessary, containers are opened and unloaded for a more intensive manual inspection.

Maritime Safety and Security Teams (MSSTs): Prevention & Response MSSTs are a Coast Guard rapid response force

assigned to vital ports and capable of nationwide deployment via air, ground or sea transportation to meet emerging threats. MSSTs were created in direct response to the terrorist attacks on Sept. 11, 2001. They have unique capabilities, including explosive-detection dogs, personnel trained to conduct fast-rope deployments from a helicopter to a hostile vessel, and anti-ter-

rorism/force protection small boat handling training. Eight teams are currently in operation and five more are scheduled to be commissioned by early 2005.

Guarding In-Between the Ports: Prevention Coast Guard, CBP Border Patrol, and Immigration and Customs Enforcement's Air and Marine Operations

units are responsible for patrolling and securing our nation's borders between the ports of entry. During FY04 to date, DHS personnel have apprehended more than 770,000 illegal aliens on land and over 9,000 at sea. By adding additional personnel, equipment and technology, the Department of Homeland Security has been able to broaden the areas of coverage. Through strong enforcement operations and the state of the art technology at the borders, the department has enhanced its operational effectiveness on the frontline.

Operation Drydock: Awareness & Prevention This Coast Guard and FBI investigation into national security threats and document fraud associated with U.S. merchant mariner credentials revealed nine individuals linked to terrorist groups that were holding maritime credentials. Merchant mariner credentials are often used as an identification document that allows mariners to come and go from the ship while it is docked in a foreign port. This investigation, enhancements to the criminal background check process for applicants, and increased security features on the cards themselves, has increased the U.S. Government's ability to monitor crews of the U.S. merchant fleet.

Transportation Workers Identity Card (TWIC): Awareness & Prevention The goal of the TWIC program is to develop a secure uniform credential to prevent potential terrorist threats from entering sensitive areas of our transportation system. When implemented, the TWIC program will ensure that credentials contain a biometric identifier to positively authenticate identities of TWIC holders. By having one universally recognized credential, workers avoid paying for redundant cards and background investigations to enter secure areas at multiple facilities. The Prototype Phase will be conducted at 35 facilities in six states including the ports of Los Angeles and Long Beach, California and the fourteen major port facilities in the state of Florida. The prototype is funded with \$50 million included in Homeland Security's Transportation Security Administration (TSA) budget and up to 200,000 port workers are expected to participate.

America's Waterways Watch: Awareness The goal of America's Waterway Watch is to help prevent acts of terrorism and other illegal activity that jeopardizes maritime homeland security by having members of the maritime and recreational boating industries, as well as the boating public, recognize and report to appropriate authorities suspicious activity that may be an indicator of potential terrorism. Any observations of suspicious or unusual activity could be extremely valuable to our national security and may provide clues to help uncover patterns of possible terrorist activity. Reports can be made to the Coast Guard, local law enforcement, or by calling 1-877-24-WATCH.

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Fritzner New CEO of SNTG

Stolt-Nielsen S.A. appointed **Otto H. Fritzner** as CEO of Stolt-Nielsen Transportation Group (SNTG). Fritzner most recently served as Managing Director, Ship Owning at SNTG. He succeeds **James B. Hurlock**, who was named Interim CEO of SNTG in July 2003. In other SNTG news, it was announced that:

- SNTG's global operations will be organized into three regions - the Americas, administered from Greenwich, Conn.; Asia-Pacific, administered from Singapore; and Europe, the Middle East, India and Africa (EMEIA), administered from Rotterdam, SNTG's corporate headquarters.
- SNTG's Indian Ocean Service and the Europe-to-Asia Pacific Service will be operated out of Rotterdam.

New President of Skaugen PetroTrans

I.M. Skaugen ASA announced that Skaugen PetroTrans (SPT), its 50 percent owned joint venture company, has appointed **Per Voie** as its President. He succeeds **Trygve Munthe**, who was named its President of SPT in 1993. Per Voie (52) comes to SPT after a 28-year career with the Stolt Nielsen Group. Skaugen PetroTrans is the leading US lightering company handling more than 1.2 million barrels of crude oil per day employing an average of 11 Aframax tankers.

Kleimola Named CIMAC President

Prof. **Matti Kleimola**, CTO, Wärtsilä Corporation, was elected as President of CIMAC (the International Council on Combustion Engines) for the next three-year term in the association's 24th World Congress in Kyoto in June 2004. Kleimola was formerly a Vice President for the CIMAC Executive Board.

Hellberg Takes Post at Wärtsilä

B.Sc. (Eng.) **Lars Hellberg** (45) has been appointed Group Vice President, Head of Engine division and member of the Board of Management as of June 1, 2004. He joins Wärtsilä from Saab Automobile AB in Trollhattan, Sweden.

Dougherty Appointed

Pennsylvania Governor **Edward G. Rendell** announced his appointment of **John J. Dougherty** to the Delaware River Port Authority of Pennsylvania and New Jersey (DRPA).

New Vice President at MAN B&W Diesel A/S

Lars Bonderup Bjørn has been named Vice President for MAN B&W Diesel A/S, with the responsibility of

managing the MAN B&W Denmark Four-stroke Division.

Hunter Wins Bateman Award

The American Shipbuilding Association (ASA) announced that Congressman **Duncan Hunter** (R-CA) would be the 2004 recipient of the **Herbert H. Bateman** Award. "Duncan Hunter, throughout his nearly 24 years on the Armed Services Committee, has been a tireless advocate of a stronger defense shipbuilding industrial base. He has consistently worked for larger defense procurement budgets to fund the required number of naval ships," said **Cynthia Brown**, President of the American Shipbuilding Association.

Brunswick, VT Halmatic Announce Agreement

Brunswick Commercial & Government Products (BCGP) and VT Halmatic Ltd. (VTH), two makers of boats for military and commercial use announced a joint marketing agreement to offer a wide array of products and services throughout the world. Under the agreement BCGP and VTH will offer an integrated line of products and services comprised of boats, ranging from 13 - 120 feet, and related parts and accessories for civil and military agencies as well as after-market technical support services.

PMI Conducts Foss Training Session

Gregg Trunnell, Director of the Pacific Maritime Institute (PMI), said that a training program designed to help deck officers assess their crewmembers' proficiency skills has now enabled Foss Maritime to keep up with licensing requirements and maintain its pool of future marine managers. PMI held three separate four-hour "assessor training" sessions for Foss during May and June. Captain Richard Brooks, an IMO certified instructor and 27-year veteran of Sealand Services, instructed the program. PMI's Assessor Training course curriculum includes information on how to write a "skill sheet," which identifies the performance of various tugboat skills, such as pulling a barge away from a dock. Deck officers are trained how to conduct objective assessments based on realistic performance standards. Additionally, all attendees review a presentation by Dr. **Alice Barnes**, a noted behavioral psychologist who works with the maritime industry.

Circle 33 on Reader Service Card

Nauticast, Sperry Marine Join Forces
AIS specialist Nauticast Navigationssysteme GmbH and

Northrop Grumman Sperry Marine, BV have signed a major global service deal, which became effective as of May 1, 2004.

Circle 34 on Reader Service Card

VT Halter Wins ATB Contract

VT Halter Marine Inc. signed a contract to build two articulated tug barge (ATB) units for Vessel Management Services, a subsidiary of Crowley Maritime Corporation. The total cost of the two vessels is expected to approximate an aggregate of \$85 million at delivery, which includes the cost of owner furnished equipment. The contract includes an option to purchase two additional units, which if exercised must occur within one and one and one-half years respectively. Delivery of the first unit of ATB is expected to take place in 1Q 2006 and the 2nd unit in 3Q 2006.

Circle 31 on Reader Service Card

US Navy Orders Gavia AUV

The Space and Naval Warfare Systems Centre (SPAWAR), San Diego has placed its initial order for a Gavia AUV for testing in mine countermeasures (MCM) applications, and has an option to procure up to 10 additional units under an existing contract awarded to Hafmynd Ltd.

C & C, Kongsberg Maritime Sign Agreement

Kongsberg Maritime, Inc., USA and Kongsberg Maritime, Norway have signed an agreement with C&C Technologies, Inc. for the sales and support of Hugin Autonomous Underwater Vehicles to the U.S. Government.

Transas, SevenCs Sign Agreement

Transas and SevenCs have signed a cooperation agreement based on the implementation of the Transas chart toolkit into the SevenCs EC2007 ECDIS Kernel Software. SevenCs Kernel user will have full access to the complete Transas World database in TX 97 format in addition to the other already embedded data formats. The chart distribution will be carried out by ChartWorld, a SevenCs owned company, and by all Transas companies worldwide.

MSC To Lease New Port Everglades Terminal

Mediterranean Shipping Company S.A. received final approval to operate a new marine terminal at Broward County's Port Everglades. MSC is expected to begin operations in October. MSC has the potential for 364 calls per year at Port Everglades on six trade lanes for a total of 83,800 TEUs (20-ft.

equivalent units - that standard industry measurement) annually.

GE to Power Japanese Destroyer

GE Marine will supply Ishikawajima-Harima Heavy Industries, Co., Ltd. (IHI) with four LM2500 gas turbines, which will be placed into propulsion modules by IHI to power the Japanese Maritime Self-Defense Force's (JMSDF) 15DDG AEGIS destroyer. The destroyer will be built by Mitsubishi Heavy Industries Nagasaki shipyard.

Circle 35 on Reader Service Card

Wartsila, Transocean Team for Maintenance

Wartsila North America signed a contract with Transocean for a Conditioned Based Maintenance (CBM) program. The contract covers three Transocean properties: the Deepwater Millennium and Deepwater Pathfinder drill ships and the Deepwater Nautilus semi-submersible drill rig.

Circle 36 on Reader Service Card

LR-Class Ship Enters USCG ACP

The 1,399 teu container ship Maersk Alaska, owned by Maersk Line, Limited, has become the first Lloyd's Register-classed ship to enter the U.S. Coast Guard's (USCG) Alternate Compliance Program (ACP). LR is one of only two non-U.S. classification societies to have ACP authorization from USCG.

Columbia Coastal Relocates

Columbia Coastal Transport moved its New Jersey Operations office from Union to Newark, NJ. This office has operations and customer service responsibilities for the companies Northern and MidAtlantic container barge services. The new address for the Operations group is: Columbia Coastal Transport, 99 Chapel Street, Newark, NJ 07105. The new phone number is (973) 466-3001, and the new fax number is (973) 466-3004. For more information, visit www.columbia-group.com

Klyne Tug Purchases AIS for Fleet

Marconi Selenia Marine was chosen by Klyne Tug (Lowestoft) Ltd. to supply, install and maintain Skanti U AIS 2100 and Satamatics D+ Security equipment for its fleet of deep-sea tugs. The engineers from the Hull office of Marconi Selenia Marine has recently completed the installation aboard the Klyne tug Anglian Monarch and engineers from the Lowestoft Office will commence work on Anglian Earl this month.

Circle 37 on Reader Service Card

IFSTA/Fire Services Program, 9030 N. Willis, Stillwater , OK 74078-8045
IMSSCO Corporation, 2040 Harbor Island Drive, Ste. 201 A, San Diego, CA 92101

FLANGES

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

FUEL INJECTORS

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

GALLEY EQUIPMENT

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

GALLEYS

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

GANGING & SAMPLING

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

GANGWAYS

WACO, 1330 KNECHT AVE, BALTIMORE, MD 21229

GAS GENERATION SYSTEMS

Air Products AS, Box 8100, Vagsbygd, NO-4675 Kristiansand S, Norway

GEARS & GEAR REPAIR

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

GENERATOR CONTROLS

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

GENERATOR PARALLELING EQUIPMENT

Selco USA, 2508 Lake Brook Court, Atlanta, GA 30360

GOVERNORS

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

GROUNDINGS

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

HATCHES & DOORS

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

HEAT EXCHANGERS

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

Alfa Laval Tumba AB, 147 80, TUMBA, Sweden

Aquamarine Engineering, P.O. Box 83495, San Diego, CA 92138

Duramax Marine LLC, 17990 Great Lakes Parkway, Hiram, OH 44234, 440-834-5400, 440-834-4950.

Contact: Richard Spangler

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

HEAVY FUEL TREATMENT

Alfa Laval Tumba AB, 147 80, TUMBA, Sweden

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

HIGH SPEED FERRY BUILDERS

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

HMI CONTROLS DISPLAY

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

HOISTS

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

HORNS/WHISTLES

Airchime Manufacturing Co., 5478 267th St., Gloucester Industrial Estate., Langley, BC V4W 3S8, Canada

Kahlenberg Brothers Co., P.O. Box 358, Two Rivers, WI 54241

Kockum Sonics LLC, 933 Industry Road, Suite 105, Kenner, LA 70062

HOSES/HOSE FITTINGS

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

HYDRAULIC SYSTEMS

Allied Systems, 2300 Oregon St., Sherwood, OR

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

INFRARED IMAGING EQUIPMENT

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

INSPECTION EQUIPMENT

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

INSULATION

M & A Supply LLC, 150 North Plains Industrial Rd., Wallingford, CT 06492, 203-294-9431, 203-294-1697, sales@ma-supply.com, Contact: Jeff Blake, www.ma-supply.com

Mascoat Products, 10890 Alcott, Unit 12, Houston, TX 77043

Shannon Enterprises of W.N.Y., Inc., 162 Sweeney Street, PO BOX 199, North Tonawanda, NY 14120-0199

Superior Energies Inc., 3115 Main Ave., Groves, TX 77619

INSURANCE SERVICES

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

INTERIORS

Directions In Design, Inc., 1849 Craig Road, St. Louis, MO 63146, 314 205-2010, 314 205-0889, May-Zinsers@didinc.com, Contact: Sharon May-Zinsers, www.didinc.com

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

Lit Industries, 516 Costner School Rd., Bessemer City, NC 28016-9801

JOINER- WATERTIGHT DOOR-PANELING-CEILING SYSTEM

Joiner Systems, 1925 52nd Avenue, Lacine, Quebec H8T 3C3, Canada

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

K-9 DETECTION

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

KEEL COOLERS

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

LASER ALIGNMENT

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

LEAK REPAIR

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

LIFEBOAT TESTING

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

LIFEBOATS/DAVITS

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

LIFEBOATS/RAFTS

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

LIFESAVING EQUIPMENT

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

LIFESAVING EQUIPMENT

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

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

LIFESAVING EQUIPMENT

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

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

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

LIFT EQUIPMENT TESTING

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

LIGHTING PRODUCTS

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

LIGHTING SYSTEMS/ EQUIPMENT

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

LIGHTING SYSTEMS/ EQUIPMENT

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

Maritime Associates, P.O. BOX 1788, Crystal Bay, NY 89402, 775-832-2422, 775-832-2424.

maritimeas@charter.net, Contact: unknown, www.marinesigns.com

LINE & NET CUTTERS

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

LUBRICANTS/LUBRICATION SYSTEMS

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

LUBRICANTS/LUBRICATION SYSTEMS

Machinery Maintenance, Repair & Testing Mackay Communications, 2721 Discovery Dr., Raleigh, NC 27616-1851

LUBRICANTS/LUBRICATION SYSTEMS

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

LUBRICANTS/LUBRICATION SYSTEMS

Marine & Offshore Signage Maritime Associates, P.O. BOX 1788, Crystal Bay, NY 89402, 775-832-2422, 775-832-2424.

maritimeas@charter.net, Contact: unknown, www.marinesigns.com

LUBRICANTS/LUBRICATION SYSTEMS

Marine Decking & Flooring Lenseal Flooring, 928 East 238th Street, Carson, CA 90745

LUBRICANTS/LUBRICATION SYSTEMS

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

LUBRICANTS/LUBRICATION SYSTEMS

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

LUBRICANTS/LUBRICATION SYSTEMS

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

DRS Technologies, 5 Sylvan Way, Parsippany, NJ 07054

Halleland Display, Bogstadveien, 19., N-0355 Oslo, Norway

Jotron Electronics, Box 85., NO-328OT Jodalynng Norge, Norway

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

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

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

LUBRICANTS/LUBRICATION SYSTEMS

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

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

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

LUBRICANTS/LUBRICATION SYSTEMS

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

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

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

LUBRICANTS/LUBRICATION SYSTEMS

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

LUBRICANTS/LUBRICATION SYSTEMS

Marine Glass ProCurve, 3535 Davisville Rd. Hatboro, PA 19040

LUBRICANTS/LUBRICATION SYSTEMS

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

LUBRICANTS/LUBRICATION SYSTEMS

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

LUBRICANTS/LUBRICATION SYSTEMS

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

LUBRICANTS/LUBRICATION SYSTEMS

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

LUBRICANTS/LUBRICATION SYSTEMS

Marine Power Plant Systems Auramarine Ltd., Box 849., FI-20101 Turku, Finland

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

LUBRICANTS/LUBRICATION SYSTEMS

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

LUBRICANTS/LUBRICATION SYSTEMS

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

LUBRICANTS/LUBRICATION SYSTEMS

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

LUBRICANTS/LUBRICATION SYSTEMS

Maritime Training & Schools Maine Maritime Academy, MMA, Castine, ME 04420-5000

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

LUBRICANTS/LUBRICATION SYSTEMS

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

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

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

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

LUBRICANTS/LUBRICATION SYSTEMS

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

LUBRICANTS/LUBRICATION SYSTEMS

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

LUBRICANTS/LUBRICATION SYSTEMS

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

LUBRICANTS/LUBRICATION SYSTEMS

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

LUBRICANTS/LUBRICATION SYSTEMS

Motion Control Systems Seastate Ply Ltd., 2 Egmont Road, Henderson WA 6166, Australia

LUBRICANTS/LUBRICATION SYSTEMS

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

LUBRICANTS/LUBRICATION SYSTEMS

Nav/Comm Equipment C-Map Commercial, 133 Falmouth Rd, Mashpee, MA 02649

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

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

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

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

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

LUBRICANTS/LUBRICATION SYSTEMS

Naval Architects, Marine Engineers A.K. Suda, Inc., 3004 19th St., Metairie, LA 70002-4989

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

OIL SPILL RESPONSE Donjon Marine, 1250 Liberty Avenue, Hillside, NJ 07205

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

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

Marine Spill Response Corporation, 220 Spring Street, Suite 500

Norwegian Maritime Equipment AS, BOX 244, NO-5480 HUSNES, Norway
Stearns Mfg. Co., PO Box 1498, St. Cloud, GA 56302-1498
Thordon Bearings Inc., 3225 Mainway, Burlington, Ontario L7M 1A6, Canada
Viking Life Saving Equipment, 1625 N. Miami Ave., Miami, FL 33136
Walport USA, 39-5A Dover Rd South, Toms River, NJ 08757
Warwick Mills, 301 Turnpike Rd, New Ipswich, NH 03071

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

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

SANITATION DEVICE- POLLUTION CONTROL
Envirovac Inc, 1260 Turret Dr., Rockford, IL 61111
EVAC Environmental Solutions, 1260 Turret Dr., Rockford, IL 61111
FAST@Systems, 8229 Brentwood Industrial Drive, Brentwood, MO 63144, 314-645-6540, 314-645-6131, solutions@marinefast.com. Contact: Alan Fleischer, www.marinefast.com

Headhunter Inc., 3380 SW 11th Ave., Ft. Lauderdale, FL 33315
Hydroxi Systems, 9800 McDonald Park Rd, Sidney, BC V8L 3S8, Canada
Microphor, 452 E. Hill Rd., Willis, CA 95490
Research Products-INCINOLET, 2639 Andjon Drive, Dallas, TX 75220, 800-527-5551, 214-350-7919, sales@incinolet.com

SATELLITE COMMUNICATIONS
EMS Satcom, Green Lane, Tewkesbury, Gloucestershire GL20 8HD, UK
Eurocom Industries AB, Box 7071, DK-9200 Aalborg SV, Denmark
France Telecom Mobile Satellite Communications, 16, bvd du Mont d'Est-BP 14-93161, Noisy le Grand, France, +33556223231, mobiles@francetelecom-mobilesat.com. Contact: unknown, www.francetelecom-mobilesat.com

Furuno USA Inc., 4400 NW Pacific Rim Blvd, Camas, WA 98607
KVH Industries Inc., 50 Enterprise Center, Middletown, RI 02842
Land Sea Systems, 509 Viking Drive, Suites K.L.M, Virginia Beach, VA 23452

Nera Satcom AS, Box 91, NO-1375 Billingstad, Norway
Petrocom, 5300 West Sam Houston Parkway North, Houston, TX 77041, 1-800-PETROCOM, 713-580-4150, sales@petrocom.com
Stratos, 1501 Metcalfe St. Ste 1900, Ottawa, Ontario K2P 1P1, Canada
Telenor Satellite Services-Marlink, NO-1331, Fomebu, Norway
Thrane & Thrane A/S, Lundtoftegardsvej 93D, DK-2800 Lyngby, Denmark

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

SEALS
Duramax Marine LLC, 17990 Great Lakes Parkway, Hiram, OH 44234
Kobelco Eagle Marine, Inc., 366 Fifth Avenue, Suite 312, NY, NY 10017, 212-967-5575, 212-967-6966, hawks@kobelco-eagle.com
Orkot Composites, 2535 Prairie Rd, Unit D., Eugene, OR 97402

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

SECURITY
Control Screening, 2 Gardner Rd, Fairfield, NJ 07004
GE Ion Track, 205 Lowell Street, Wilmington, MA 01887
Loronix Video Solutions, 1120 W. 122nd Ave, Suite 200, Denver, CO 80234
Smiths Detection, 30 Hook Mountain Road PO Box 410, Pine Brook, NJ 07058, 973 830-2131, 973-830-2200, susan.cooper@smithsdetection.com. Contact: Susan Cooper, www.smithsdetection.com
Vingcard Marine, Bryan Oaks Business Park 1500 N.W. 1st Street, Dania, FL 33004

SECURITY BARRIERS
Seacor Environmental Products, P.O. Box 3535, Seattle, WA 98124
Trelleborg Engineered Products, P.O. Box 98, Clearbrook, VA 22624

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

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

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

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

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

SHIP MANAGEMENT
Crowley Maritime, 9487 Regency Sq Blvd, Jacksonville, FL 32225
Eurasia Group, 22A Floor Chinachem Exchange Sq., 1 Hoi Wan St., Quarry Bay, Hong Kong
OCEAN TECHNICAL SERVICES, MILITARY OCEAN TERMINAL BAYONNE UNIT #8-FOOT OF 32ND STREET, BAYONNE, NJ 07002

SHIP REPAIR
Dubai Drydocks, P.O. Box 8988, Dubai, United Arab Emirates
HALIFAX SHIPYARD, 3099 BARRINGTON ST, HALIFAX, NS, Canada
Mantowoc Marine Group, 1600 Elv St., Marinette, WI 54143-2434

NORSHIPCO, PO BOX 2100, Norfolk, VA 23501-2100
Trident Technologies, 4011 C Highway 377 S., Fort Worth, TX 76109
United Marine Enterprises Inc., P.O. Box 22077, Beaumont, TX 77720

SHIP SIMULATORS
Kongsberg Maritime AS, PO Box 1009, 3194 Horten, Norway
SHIPBUILDING-REPAIRS, MAINTENANCE, DRYDOCKING

American Ship Repair, 1011 38th St, Brooklyn, NY 11219
Atlantic Marine, Inc., P.O. Box 3202, mobile, AL 36652
Austal USA, 100 Dunlap Dr., Mobile, AL 36633
Blount Marine, 461 Water St., Warren, RI 02885
Bollinger Lockport & Larose, P.O. Box 250, Lockport, LA 70374
Curacao Drydock Co., Box 3012, Willemstad, Curacao, Netherlands Antilles
Damen Shipyards, P.O. Box 1 Gorinchem, 4200AA Holland, Netherlands
Enavi Reparos Navais Ltda, 169 Barreto., Niteroi, RJ 24110-200, Brazil
Fincantieri Cantierieri Navali Italiani Spa, Merchant Shipbuilding Div., 34123 Trieste, Italy
Gladding Hearn, 1 Riverside Ave., Somerset, MA 02725
Grand Bahama Shipyard, PO BOX F-42498-411, Freeport, Bahamas
GTR Campbell Marine, 24 Lambton Street, Ormstown, Quebec J0S 1A0, Canada
In-Place Machining, 1929 N. Buffum St, Milwaukee, WI 53212
Leevac Industries, LLC, P.O. Box 1190, Jennings, LA 70546
Motor-Services AB, Box 2115, Ronninge S- 144 04, Sweden
NASSCO, 2798 E HARBOR DR, SAN DIEGO, CA 92113
Newport News Shipbuilding, 4101 Washington Ave., Newport News, VA 23607
Signal International LLC, 1011 S.Hwy 6, Ste 108, Houston, TX 77077
United Defense, 1525 Wilson Blvd., Ste 700, Arlington, VA 22209-2444
United Marine Enterprises Inc., P.O. Box 22077, Beaumont, TX 77720
VT Haller, PO Box 3029, Gulfport, MS 39505
Washburn Doughty, P.O. Box 296, E. Boothbay, ME 04544
Willard Marine Inc., 1250 N. Grove St., Anaheim, CA 92806

SHIPYARDS
Alabama Shipyard, P.O. Box 3202, Mobile, AL 36652
Atlantic Marine, Inc., P.O. Box 3202, mobile, AL 36652
Bollinger Shipyards, 8365 Hwy 308 South, Lockport, LA 70374, 985 532-2554, 985 532-7225, RobertS@bollingershipyards.com. Contact: Robert A. Socha, www.bollingershipyards.com
Bradford Manne, 3051 State Rd 84, Fort Lauderdale, FL 33312
Derecktor Shipyard, 311 E. Boston Post Rd., Mamaroneck, NY 10543
Jeffboat, 1030 E.MARKET STREET, JEFFERSONVILLE, IN 47130
Kvaerner Masa-Yards Oy, BOX 132, FI-00151, Helsinki, Finland
Leevac Industries, LLC, P.O. Box 1190, Jennings, LA 70546
Offshore Inland, 3521 Brookdale Dr. S., Mobile, AL 36618
United Defense, 1525 Wilson Blvd., Ste 700, Arlington, VA 22209-2444

SILENCERS
EM Products, 5380 Cottonwood Lane, Prior Lake, MN 55372, (952) 440-9200, (952) 440-3400, sales@zerostart.com
Silex Inc., 6659 Ordan Dr., Mississauga, ON L5T 1K6, Canada

SIMULATION TRAINING
Marine Safely International, Marine Terminal 1, Laguardia Airport, NY 11371
Maritime Institute of Technology, 5700 Hammonds Ferry Rd, Luthicum Heights, MD 21090
Poseidon Simulation AS, Box 89, NO-8370 Leknes, Norway
Transas Marine Overseas Ltd., 12 Obukhovskoy, Oboron. St, Petersburg 193019, Russian Federation

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

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

SOFTWARE
Autoship Systems Corp., 611 Alexander Street, Suite 312, Vancouver, BC V6A 1E1, Canada, 604-254-4171, 604-254-5171, sales@autoship.com. Contact: Samantha Lucas, www.autoship.com
Creative Systems Inc., P.O. Box 1910, Port Townsend, WA 98368

Loadmaster International, St. Varvgarten 11B SE, 211 19 Malme, Sweden
Resurgence Software Inc., 2021 Lakeshore Dr., Ste 21D, New Orleans, LA 70122

STEERING GEARS/ STEERING SYSTEMS
A. Van der Velden B.V., Dorpsstraat 67a, PO Box 2061, 2930 AB Knippen a/d Lek, Netherlands
CS Controls Inc, 101 Dickon Road, Houma, LA 70363, 985-876-6040, 985-876-0751, info@cscontrols.com, Contact: Paul Srigley, www.cscontrols.com
Jastram Engineering, 467 Mountain Hwy, North Vancouver, BC V7J 2L3, Canada
Kobel Manufacturing Co. Ltd., 8238-129 Street, Surrey, BC V3W0A6, Canada
Offshore Inland, 3521 Brookdale Dr. S., Mobile, AL 36618

STERN TUBE BEARINGS/ BUSHES
Duramax Marine LLC, 17990 Great Lakes Parkway, Hiram, OH 44234, 440-834-5400, 440-834-4950, Contact: Richard Spangler
Orkot Composites, 2535 Prairie Rd, Unit D., Eugene, OR 97402
Thordon Bearings Inc., 3225 Mainway, Burlington, Ontario L7M 1A6, Canada

STERN TUBE SEALS
Superbolt, PO Box 683, Carnegie, PA 15106

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

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

SURFACE PREP TOOLS
Aurand Mfg., 1210 Ellis St., Cincinnati, OH 45223
Dalseide Shipping Services, NO-5397, BEKKJARVIK, Norway
Flow International Corp., 23500 64th Ave., South Kent, WA 98059
NLB Corp., 29830 Beck Road, Wixom, MI 48383, 248-624-5555, 248-624-0908, nlbmtg@nlbusa.com, Contact: Jenna Eads, www.nlbcorp.com
Ultrastrip Systems Inc., 3515 SE Lionel Terrace, Stuart, FL 34997, 772-287-4846, 772-781-4778, sales@ultrastrip.com, Contact: John Odwazny, www.ultrastrip.com

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

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

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

King Engineering Co, PO Box 1228, Ann Arbor, MI 48106
Kockum Sonics LLC, 933 Industry Road, Suite 105, Kenner, LA 70062
Saab Manne Electronics, Box 13045, 402 5Goleborg, Sweden
Technical Manne Services, 6040 North Cutter Circle, Portland, OR 97217

TEAK DECK SEALANT
Boatlife Industries, 2081 Bridgeview Drive, N. Charleston, SC 29415, 800-382-9706, 843-566-1275, Contact: Louise Schmidt

TESTING SERVICES
Wyle Laboratories, 7800 Governor's Dr. S.W., Huntsville, AL 35807

THICKNESS GAUGES
StressTel Ultrasonic Testing, 2790 West College Avenue, State College, PA 16801-260

THRUSTER SYSTEMS
Omnithruster, 30555 Solon Industrial Parkway, Cleveland, OH 44139, 440 542-9260, 440 542-9265, widmer@omnithruster.com, Contact: Kurt Widmer, www.omnithruster.com
Thrustmaster of Texas, Inc., 12227 FM-529, Houston, TX 77041, 713 937-6295, 713 937-7962, info@thrustmastertexas.com, Contact: Bert Ault, www.thrustmastertexas.com

TRAINING
International Maritime Training, 910 SE 17th St., Ste 200, Fort Lauderdale, FL 33316
SUNY Maritime College, 6 Pennyfield Ave, Bronx, NY 10465-4198
USMMA- Global Maritime and Transportation School, 300 Steamboat Rd., Kings Point, NY 11024

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

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

TRAVEL SERVICES
Marine Travel Services, 200 Golden Oak Court, Suite 120, Virginia Beach, VA 23452

TURBOCHARGERS
ABB Turbo Systems AG, CH 5401, Baden, Switzerland

TURBOCHARGERS- REPAIRS
Motor-Services Hugo Stamp, 3101 S.W. 3rd Ave., Ft. Lauderdale, FL 33315
Napier Turbochargers, P.O. Box 1, Waterside, South Lincoln LN5 7FD, UK

ULTRA HIGH MOLECULAR WEIGHT MARINE FENDERING
Ultra Poly, Inc., 2926 So. Steele Street, Tacoma, WA 98409

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

ULTRATHIN (UHMW) NON-SKID DECKING
Ultra Poly, Inc., 2926 So. Steele Street, Tacoma, WA 98409

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

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

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

VALVES & FITTINGS
Leslie Controls, 12501 Telecom Dr., Tampa, FL 33637
William E. Williams, 38-52 Review Ave, Long Island City, NY 11101

VENTILATION SYSTEMS / PRODUCTS
Delta T Systems, 858 West 13th Court, Riviera Beach, FL 33404
Dry Air Technology, 313 North Oak St., Burlington, VA 88233
Jon M. Liss Associates, PO Box 5005-73, Rancho Santa Fe, CA 92067

VIBRATION ANALYSIS
Ludeca, Inc., 1425 NW 88th Ave, Miami, FL 33172
Maritech, LLC, 100 Powermill Rd., Acton, MA 01725

VISCOMETERS
Cambridge Applied System, 196 Boston Ave., Medford, MA 02155

VOYAGE DATA RECORDERS
Rutter Technologies Inc., 22 Pearl Place, P.O. Box 207, St. John's NL A1C 5N8, Canada

WASTE WATER TREATMENT
FAST@Systems, 8229 Brentwood Industrial Drive, Brentwood, MO 63144, 314-645-6540, 314-645-6131, solutions@marinefast.com, Contact: Alan Fleischer, www.marinefast.com
Marine Environmental Partners, 3874 Fiscal Ct, Suite 200, West Palm Beach, FL 33404
RWO Leerkampe 3, D- 28259 Bremen, Germany

WATER JET CLEANING
Flow International Corp., 23500 64th Ave., South Kent, WA 98059
Gardner Denver Water Jetting Systems, 12300 N. Houston Rosslynn Road, Houston, TX 77086
NLB Corp., 29830 Beck Road, Wixom, MI 48383

WATER PURIFIERS
Alfa-Laval Separation, Inc., 955 Meams Rd., Warminster, PA 18974
Everpure, 502 Indiana Avenue, Sheboygan, WI 53081, 866-873-7506, 866-203-7361, customerservice@plymouthwater.com, Contact: Jerry Letcher, www.everpure.com

Gardner Denver Water Jetting Systems, 12300 N. Houston Rosslynn Road, Houston, TX 77086

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

WELDING PRODUCTS & POWER EQUIPMENT
ESAB Welding and Cutting Products, 411 S. Ebenezer Rd, PO Box 100545, Florence, SC 29501, 843-664-4411, 843-664-4258, dterry@esab.com, Contact: Donna Terry, www.esabna.com

WINCHES & FAIRLEADS
Coastal Marine Equipment, Bldg 9114 MISAAP Ind. Complex, Stennis Space Center, MS 39529
Coastal Marine Equipment Inc., BLDG. 9114 MISAAP Industrial Complex, Stennis Space CTR., MS 39529, 228-813-1700, 228-813-1709, sales@coastalmarineequipment.com, Contact: Ralph Waguespack, www.coastalmarineequipment.com

CS Controls Inc, 101 Dickon Road, Houma, LA 70363, 985-876-6040, 985-876-0751, info@cscontrols.com, Contact: Paul Srigley, www.cscontrols.com
Intercontinental Engineering, PO Box 9055, Kansas City, MO 64168

Jeamar Winches, 1051 Clinton St., Buffalo, NY 14206
Markey Machinery, P.O. Box 24788, Seattle, WA 98124
McElroy/Catchot Winch Company, Inc., P.O. Box 4632, Biloxi, MS 39535-4632, 228-875-6327, 228-872-7880, hcatchot@bellsouth.net, Contact: Harold Catchot, www.mcelroycatchotwinch.com

MMC International, 60 Inip Dr, Inwood, NY 11096
Nabrico Marine Products, 1050 Trinity Road, Ashland City, TN 37016

Skookum, P.O. Box 280, Hubbard, OR 97032
Smith Berger Marine, 7915 10th Ave S., Seattle, WA 98108
Superior Lidgerwood Mundy, 1101 John Ave., Superior, WI 54880
Timberland Equipment Ltd & Almon Johnson, 459 Industrial Ave., Woodstock, ON N4S 7Z2, Canada

WINDLASSES (ANCHORS)
Coastal Marine Equipment, Bldg 9114 MISAAP Ind. Complex, Stennis Space Center, MS 39529
Coastal Marine Equipment Inc., BLDG. 9114 MISAAP Industrial Complex, Stennis Space CTR., MS 39529, 228-813-1700, 228-813-1709, sales@coastalmarineequipment.com, Contact: Ralph Waguespack, www.coastalmarineequipment.com

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

McElroy/Catchot Winch Company, Inc., P.O. Box 4632, Biloxi, MS 39535-4632, 228-875-6327, 228-872-7880, hcatchot@bellsouth.net, Contact: Harold Catchot, www.mcelroycatchotwinch.com

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

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

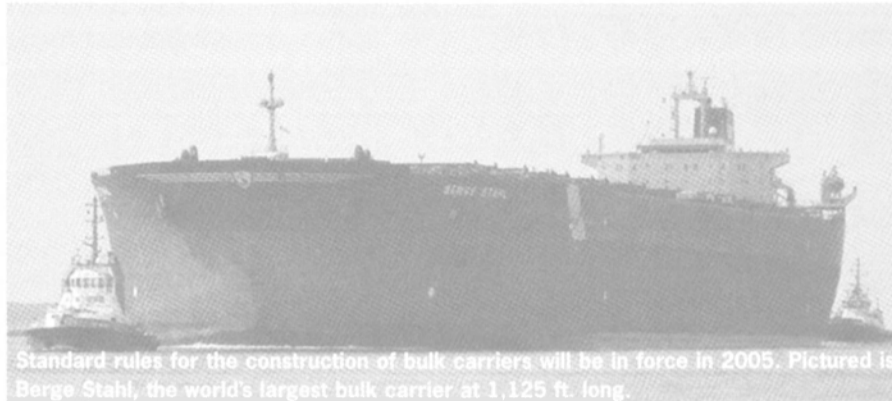
Joint Bulker Project Seeks Industry Input

In an effort to ensure uniform ship quality and construction standards around the world, there are currently two initiatives underway which seek to formulate a common set of rules for the construction of the world's most common ships, bulk carriers and tankers.

Common rules for bulk carriers have taken another step forward as the IACS Joint Bulker Project (JBP) team have made a series of presentations to shipowners, events meant to convey information as much as they are designed to seek industry input to the rules.

The JBP is a collaboration of the world's leading classification societies, and includes BV, CCS, ClassNK, GL, KR, RINA and RS. The aim of the Joint Bulker Project is to develop a set of common IACS rules and procedures to determine the scantlings of structural members of single or double hull bulk carriers of more than 295 ft. (90 m) in length. The first draft of those rules has now been presented to industry in Shanghai, Tokyo, Pusan, New York and Rome, and a review of the draft will be complete by October 2004.

The new rules are scheduled to enter into force with all IACS members on



Standard rules for the construction of bulk carriers will be in force in 2005. Pictured is Berge Stahl, the world's largest bulk carrier at 1,125 ft. long.

July 1, 2005.

Jean-François Segretain, regional Marine manager at Bureau Veritas, is a member of the Steering Committee of JBP, and said "We have had excellent feedback from owners at all our consultation meetings, and after the meeting in London today we will be well placed to complete work on the rules. The shipping industry and IMO want to see class deliver a common high standard. These new rules are the first concrete evidence of the hard work and co-operation which IACS members have put into meeting those demands." The expected benefits of the new rules are:

1. To offer to the Industry a classification standard valid for both single hull

and double hull vessels allowing fair comparison between these competing designs.

2. To eliminate competition between class societies with regard to structural requirements and design and construction standards.

3. To embrace the intentions of the anticipated IMO requirements for Goal-Based Standards for new buildings.

4. To ensure that a ship meeting these new standards will be recognized by the Industry as being safe, robust and fit for the purpose.

A number of innovative requirements will be included in the new rules:

1. For single hull vessels, more accurate formulas for the scantlings of the lower and upper frame brackets, explicit consideration for fatigue and new requirements for scantlings of connecting brackets and hatch end beams.

2. Adoption of net scantlings and values of corrosion additions based on 25 years conventional service life for all designs.

3. New sea loads formulas based on hydrodynamic computations and test model basin results.

4. Closed-form formulas for buckling, allowing complete and accurate determination of the scantlings of the secondary structure of the ship (plates and ordinary stiffeners) at an early stage of the approval process.

5. Explicit computation of the ultimate strength of the hull girder allowing a better assessment of deck and bottom structure in order to avoid breakage of the ship into two parts at sea or in port.

6. New fatigue procedure based on the combined previous experience of all members of the project.

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Products



ADG

American Diesel & Gas has recently introduced its light weight noise suppression generator covers to its product line of patented insulation technologies which cools intake air, reduces the size of insulation materials by 50 percent or more, offers extended durability and significantly reduces engine room heat and fuel consumption.

Circle 101



Amdetech

American Detection Technologies, Inc., provides the premier detection service available. Amdetech's canines are "Bred to Detect and Protect" through rigorous training, and then only the top performers are selected to work for the company. Their services include explosive detector dog teams, narcotic detector dog teams, hand-held ION scanner searches and narcotic substance and residue testing.

Circle 102



Ciserv

Ciserv CGI is a leader in developing and implementing cost-effective techniques to reconditions two and four stroke diesel engine component to the latest OEM specifications and modifications. Recondition is an ideal way to achieve maximum service life of components, while minimizing costs.

Circle 103



Defelsko

Defelsko Corporation, announced the new PosiTest DFT coating thickness gage. Available in two models, Ferrous for steel or Combo for all metals, the PosiTest DFT is the economical choice that provides the proven quality of Defelsko inspection instruments. To eliminate guesswork, the PosiTest DFT Combo uses patented technology to automatically recognize the substrate and take a measurement.

Circle 104



Autoship Systems

Autoship Systems provides integrated CAD-CAM software for vessel concept design right through to build drawings and nested part files. By connecting with third party software shipyards can realize improved workflow, shorter project times, reduced production costs and better overall yard efficiency.

Circle No. 105



E-Crane

E-crane International is dedicated and committed to the E-Crane product line. E-Crane provides engineering, sales, marketing, product, spare parts and management services for the support of present and futures sales of the E-Crane in North and South America.

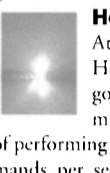
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Anchor Lamina

Versatile hydraulic drill system is portable like electric drills, but lasts longer (typically 10 to 20 years) with little maintenance. It drills or taps up, down and sideways, even underwater. Six interchangeable heads, with a variety of quick-change tools and simple, convenient controls. Meets NEMA, CE and other global standards.

Circle 107



Heinzmann

At the heart of Heinzmann's digital governor beats a 32-bit microprocessor capable of performing up to 8 million commands per second. They feature governor dynamics under a number of circumstances. Millions of times per second, the processor adapts the governor's dynamics to external factors, such as load, temperature and engine speed.

Circle 108



Kranendonk

Kranendonk is a supplier of automated production systems to the industry. Their automation is designed to improve productivity, functionality and user-friendliness instead of complicating things. The custom designed systems are delivered turn-key, and customer training is part of the supply. This assures a smooth introduction of the new technologies in your production environment.

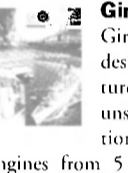
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Nupus-Cadmatic

Nupus-Cadmatic is a joint venture of Cadmatic Oy and Numeriek Centrum Groningen B.V. By combining their resources the companies have created a solution that exceeds the level of traditional software offered to the market. It is a unique CAD/CAE/CAM solution for shipyards and consulting engineering offices interested in improving their efficiency in design, engineering and production.

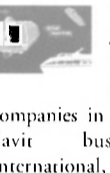
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Giro

Giro Engineering Ltd., designs and manufactures sheathed and unsheathed fuel injection pipes for diesel engines from 5 to 25,000 HP to SOLAS regulations. Giro holds type approvals from LR, ABS, BV and MoD(N) and is an approved supplier to the British MOD(Navy). Giro is LRQA audited to ISO 9001:1994

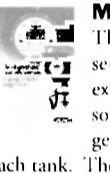
Circle 111



Schat-Harding

Schat-Harding evolved from a merger of the three most respected companies in the survival craft and davit business- Watercraft International, Harding Safety and Schat Davit Company- each of which served the requirements of the offshore industry for decades. Each had different ranges of equipment for the offshore sector, comprising conventional survival craft, freefall survival craft and launching arrangements.

Circle 112



MMC

The MMC Oxygen-sensor tells you the exact depth of the sensor and percent of oxygen in the inert gas in each tank. There's no mess or guesswork. The unit is battery operated, completely portably, with a built-in self-calibrating feature and is approved by BASEEFA as intrinsically safe. Just lock it on an MMC vapor control valve and lower the sensor to the correct ullage level.

Circle 113



Viking

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

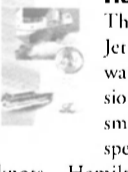
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Ocean-Crest

Ocean-Crest is a specialized supplier, that undertakes projects and implements customized equipment procurement. Upgrading and reverse engineering of old generation ships is their main stay. They are the choice of reputed companies for Ship, FSO, FPSO and Offshore refurbishments.

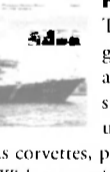
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Hamilton Jet

The larger Hamilton Jet HM Series of waterjets are an extension of their range of smaller jets. As boat speeds rise above 25 knots, Hamilton Jet waterjets return higher propulsive coefficients than conventional propellers. Hamilton Jet innovation is the result of ongoing R&D utilizing its on-site hydrodynamic test rig facility and test boat program.

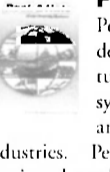
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Renk

The marine planetary gear units of series PLS and PWS have been specially designed for use in fast vessels, such as corvettes, patrol boats and yachts. With a capacity range from 1,500 to 10,000 kW and reduction ratios from 1.5 to 7.1, they cover all known requirements. The RENK planetary gears for fast vessels are available as a disconnectable reduction gear unit and as a reversing gear unit.

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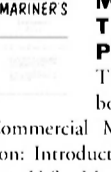
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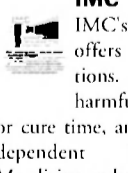
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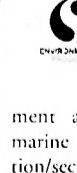
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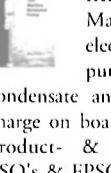
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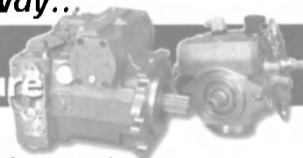
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Progress Fuels Corporation (PFC), a coal purchasing and Transportation Company, has a marine transportation contract expiring March 31, 2005. This contract provides for cross gulf shipment of Dry Bulk Fuel (DBF) from ports in New Orleans (NOLA) and Mobile to Progress Energy Florida's (PEF) Crystal River power plant complex, located on the west coast of Florida. Typically, 2.1 to 2.3 million tons are shipped annually to PEF.

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As part of an upcoming formal solicitation for this business, due to the unique nature of the Crystal River channel, turning basin, and dock, PFC would like to provide an opportunity for potential bidders for this business to demonstrate their delivery capabilities by making a minimum of two DBF voyages to Crystal River this year. The specific purpose of pre-bid demonstration is to provide an advance period, in addition to the more constrained time available after bids are received, for PFC, PEF, and bidders to resolve any questions regarding loading in either NOLA or Mobile, channel constraints, or unloading parameters. Further this demonstration will allow PFC, PEF, and bidders to more completely evaluate the prospect of a potential commercial relationship. **Any bidder who is unable to successfully demonstrate its delivery capabilities will not be eligible to receive a contract for PFC'S Gulf transportation business.** However, a successful demonstration will not in any way obligate PFC to award a contract.

Should your firm be interested in considering the prospect of PFC's cross gulf transportation needs you are encouraged to contact F. Michael (Mike) Lelak, Manager of Transportation, at 727-824-6680 or at email address Michael.Lelak@ProgressFuels.com at your earliest convenience.

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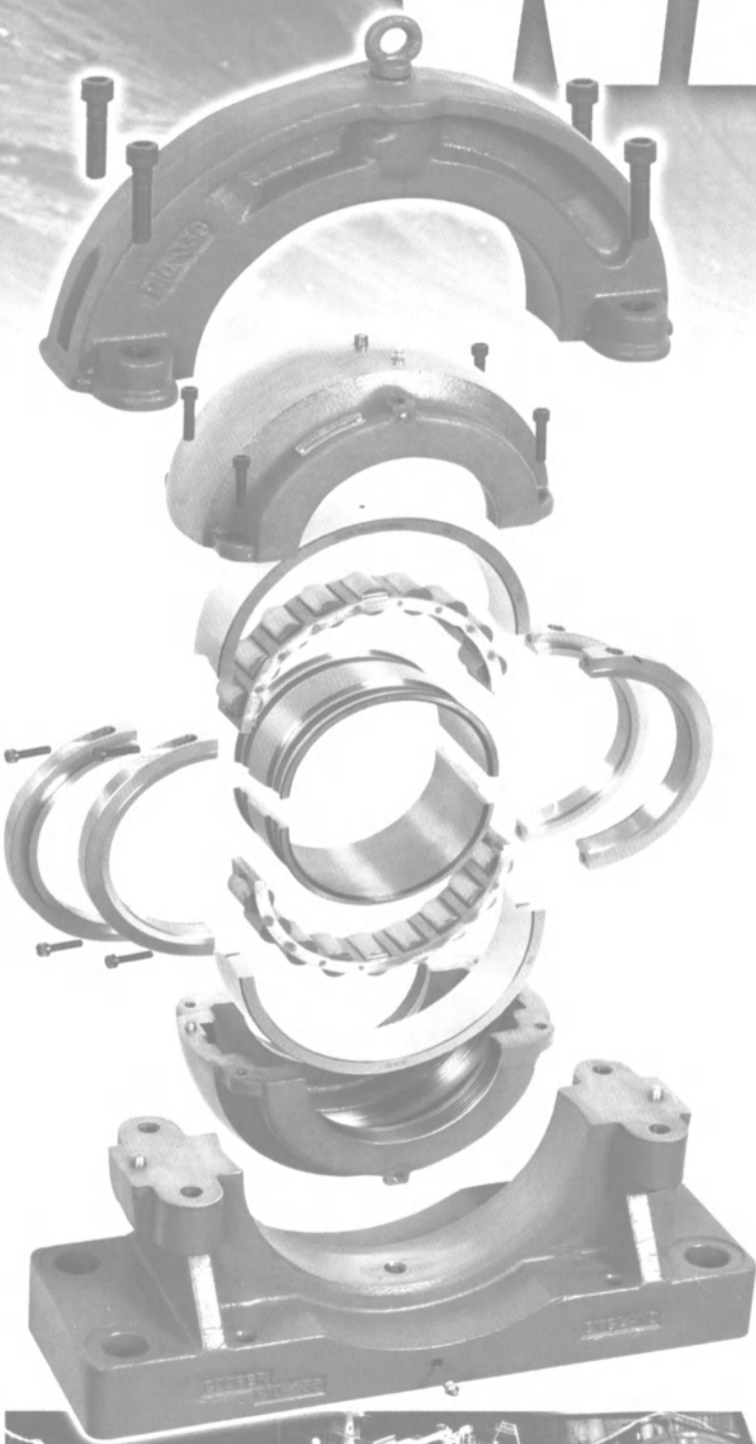
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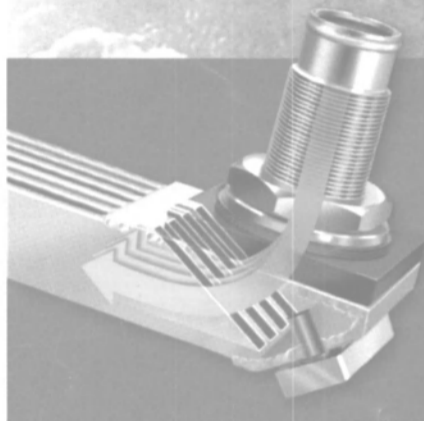
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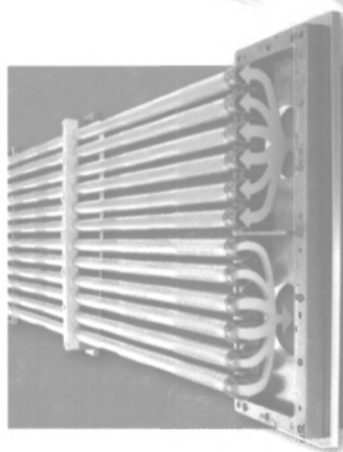
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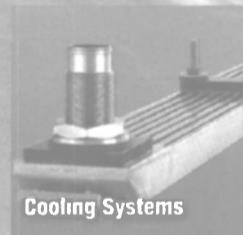
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